Adobe Photoshop Help Index

This index lists Adobe Photoshop Help topics. Use the scroll bar to see topics not visible in the Help window. Click on underlined green text to jump to other topics. Click and hold down the mouse button on dotted underlined text to see glossary definitions.

For information on using Windows Help systems, press F1.

The following Help categories are available:

Keyboard

Commands

Procedures

Tools and Palettes

Screen Elements

Glossary

Commands

[File Menu](#)

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Procedures

Importing and Exporting Images

Converting Image Types

Working with Selections

Working with Paths

Altering Images and Selections

Displaying and Viewing Images

Tools and Palettes

The toolbox contains tools for selecting, viewing, painting, and editing images. It also contains controls for choosing the foreground and background colors, switching to Quick Mask mode, and changing the screen display mode.   Select a tool by clicking on its icon.   Access tool options by double-clicking on the icon.

Floating palettes for Channels, Colors, Brushes, Info, and Paths are opened and closed using the Window menu.

Tools:

Rectangular Marquee

Elliptical Marquee

Lasso Tool

Magic Wand Tool

Cropping Tool

Type Tool

Hand Tool

Zoom Tool

Paint Bucket Tool

Gradient Tool

Line Tool

Eyedropper Tool

Eraser Tool

Pencil Tool

Airbrush Tool

Paintbrush Tool

Rubber Stamp Tool

Smudge Tool

Blur/Sharpen Tool

Dodge/Burn Tool

Pen Tool

Toolbox Controls:

Foreground/Background Color Picker

Mode Controls

Window Display Controls

Palettes:

Brushes Palette

Channels Palette

Colors Palette

Info Palette

Paths Palette

Related Topics:

Tips on Using Tools

Tips on Using Palettes

Keyboard

You can use the keyboard to choose commands and tools, and to perform many Adobe Photoshop operations.

[Painting](#)

[Selecting](#)

[Viewing](#)

[Pen Tool Shortcuts](#)

[Function Key Shortcuts](#)

[Other Keyboard Shortcuts](#)

Painting Keystrokes

Operation	Keystroke
Select background color	Alt +
Fill selection with foreground color	Shift + Backspace
Change cursor to	Ctrl + any painting/editing tool
Change cursor to Alt + painting tool	
Set paint opacity (10% increments)	Number key + any painting/editing tool
Constrain stroke to straight line	Shift + any painting/editing tool
Cross-hair pointer	Caps Lock key + any painting/editing tool
Erase entire image	Double-click +
Magic eraser Alt +	
Remove color from Colors palette	Ctrl + any tool
Replace color in Colors palette	Alt + any tool

Selecting Keystrokes

Operation	Keystroke

Constrain marquee to circle or square   Shift + ⬚ or

⬚

Draw marquee from center   Alt + ⬚ or

⬚

Add to a selection	Shift + selection tool
Subtract from a selection	Ctrl + selection tool
Select intersection of a selection	Ctrl + Shift + and drag with selection tool
Move a copy of a selection *	Alt + drag selection
Move selection border only *	Ctrl + Alt + drag selection
Move selection in 1-pixel increments	Direction keys

Press Shift key to constrain movement to a straight line

Viewing Keystrokes

Operation	Keystroke
Fit artwork in window	Double-click

1:1 magnification Double-click

Magnify selected area Drag with

Operation	Keystroke
Zoom and resize window	Ctrl + (plus key or minus key)
Magnify image *	Ctrl + spacebar and click with any tool
Zoom out of image *	Alt + spacebar and click with any tool

* including when a dialog box is open

Pen Tool Keystrokes

Operation		Keystroke
Change cursor to		Ctrl +

 or

 or

 or

| Add or delete anchor point | Ctrl + Alt + |

Related Topics:

Using the Pen Tool

Function Key Shortcuts (for extended keyboards)

Key	Result
F1	Index
F4	Toggle status
F5	Show Brushes command
F6	Show Channels command
F7	Show Colors command
F8	Show Info command
F9	Show Paths command
Shift + F1	Help
Shift + F4	Tile Windows command
Shift + F5	Cascade Windows command
Alt + F4	Exit
Alt + Tab	Program Manager
Ctrl + Esc	Task List

Other Keyboard Shortcuts

Operation	Keystroke
Cancel operation	Esc
Apply last filter	Ctrl + "F" key
Open last filter dialog box	Ctrl + Alt + "F" key
Reset any Image/Map or Adjust adjustment	Alt + click reset button in dialog box

Glossary

Click on a term to view its definition

A

additive primary colors

alpha channel

anchor point

anti-aliasing

arbitrary map

ASCII

aspect ratio

B

bitmapped image

black generation

black point

brightness

bull's eyes

C

calibration bars

caption

channel

clipping path

CMYK

CMYK image

color correction

color separation

color table animation

color wheel

contrast

crop

crop marks

D

densitometer

density

density range

direction line

Screen Elements

[Menu Bar](#)

[Tool Box](#)

[Palette Windows](#)

[Rulers](#)

[Screen Display Options](#)

File Menu

The File menu contains commands for manipulating files:

New

Open

Open As

Place

Close

Save

Save As

Revert

Acquire

Export

Page Setup

Print

Preferences:

General

Memory

Units

Monitor Setup

Printing Inks Setup

Separation Setup

Separation Tables

Exit

Edit Menu

The Edit menu contains commands for editing and moving images or selected portions of images:

Undo/Redo

Cut

Copy

Paste

Paste Into

Paste Behind

Clear

Fill

Stroke

Crop

Define Pattern

Take Snapshot

Composite Controls

Mode Menu

The Mode menu contains commands for converting image types:

Bitmap

Grayscale

Duotone

Indexed Color

RGB Color

LAB Color

CMYK Color

Multichannel

Color Table

Image Menu

The Image menu contains commands for manipulating selections, resizing images, and performing color correction:

Map

Adjust

Calculate

Flip

Rotate

Effects

Image Size

Canvas Size

Histogram

Trap

Filter Menu

The Filter menu contains commands used to apply special effects to your images. More than two dozen built-in filters are included with the Photoshop program. Additionally installed third-party filters are also contained in this menu.

Filters are accessed through the appropriate submenu command in the Filter menu. See Chapter 13 of the *Adobe Photoshop User Guide* for examples of filter effects. See Using Filters for information on applying filters to images.

Blur Filters

Distort Filters

Noise Filters

Sharpen Filters

Stylize Filters

Video Filters

Other Filters

Select Menu

The Select menu contains commands for working with selections:

All

None

Inverse

Float

Grow

Similar

Border

Feather

Defringe

Hide/Show Edges

Load Selection

Save Selection

Window Menu

The Window menu contains commands for showing, hiding, and arranging windows in your workspace:

New Window

Cascade

Tile

Arrange Icons

Close All

Zoom In

Zoom Out

Show/Hide Rulers

Show/Hide Brushes

Show/Hide Channels

Show/Hide Colors

Show/Hide Info

Show/Hide Paths

Show/Hide Status Bar

Help Menu

The Help menu lists the main categories in the on-line help system for Adobe Photoshop.   Click on a category to open a menu of Help topics.

For information on using Windows Help systems, press F1.

The following Help categories are available:

Keyboard

Commands

Procedures

Tools and Palettes

Screen Elements

Glossary

New Command

Choose New from the File menu to open a blank, untitled window. When you choose this command, a dialog box appears so you can set the characteristics of the document. If an image is on the Clipboard, the size of the new document corresponds to the size of the Clipboard image, so that the image can be pasted without <u>cropping</u>.

You can have multiple documents open at one time, and each document can have several open windows. Use the New Window command in the Window menu to open additional windows. The bottom of the Window menu lists all open windows.

Related topics:

<u>Importing Images</u>

<u>Scanning Images</u>

Open Command

Choose Open from the File menu to display an existing image. The file appears in the Open dialog box, and Adobe Photoshop automatically selects the correct file format. Open a document by highlighting the file name and clicking OK.

You can have multiple documents open at one time, and each document can have several open windows. Use the New Window command in the Window menu to open additional windows. The bottom of the Window menu lists all open windows.

If the file extension cannot be recognized by Adobe Photoshop, you must use the Open As command to open the document.

Related topics:

Importing Images

Scanning Images

Open As Command

Opening and placing Adobe Illustrator™ Images

Open As Command

Use the Open As command if you know that the file extension is missing or incorrect, or if the file does not appear in the Open dialog box.

To open a file using the Open As command:

1 Choose Open As from the File menu. The Open As dialog box appears.

2 Choose a file type from the File Format drop-down list and click OK.

The file opens in the selected format.   In some cases, a dialog box appears, allowing you to set the options. The formats requiring an Open As dialog box are discussed in the following sections.

Opening PhotoCD files

You can open images stored in the Kodak® PhotoCD format in Adobe Photoshop. In the PhotoCD dialog box, enter a file format and a resolution for the image.

The Lab file format preserves all the color information in the image. Use Lab if you will be using the image for color separations. The Gray file format removes the color information from the image. The RGB file format opens the image in the RGB color mode.

Choose a resolution for the image. The number of pixels in the image appears to the right of each resolution option.

NOTE: You cannot save files in the PhotoCD format in Adobe Photoshop.

Related topics:

Importing Images

File Formats

Open As RAW

Open As EPS

Acquiring Plug-in Modules

Open As RAW Dialog Box

A Raw format consists of a stream of numbers that describes the color information in a file. The color value of each <u>pixel</u> in the file is described in binary format, where 0 equals black and 255 equals white. For RGB and CMYK color images, more than one <u>channel</u> is needed to describe the color.

The Raw format is designed to accommodate images saved in undocumented formats, such as those created by scientific applications. The Raw import format supports only uncompressed files. Compressed files, such as TIFF files with the LZW option and GIF files, cannot be opened using this format.

To open a file in Raw format:

1 Choose Raw from the File Format drop-down list in the Open As dialog box.

The Raw dialog box appears.

2 Specify the document parameters by entering the width, height, number of channels, and header (if desired).

If you are missing the dimensions or header value, you can have Adobe Photoshop estimate the parameters. Enter either the correct height and width values to estimate the header size, or enter the correct header size to estimate the height and width, and then click the Guess button.

If more than one set of height-width values matches the file size data, the first click of the Guess button selects the height-width ratio closest to a square, the second click selects the next ratio that divides evenly, and so on, until the evenly divisible ratios have been exhausted.

To reverse the order of the width and height values, click Swap.

Related topics:

<u>Importing Images</u>

<u>File Formats</u>

Open As EPS Dialog Box

When you choose the EPS file format in the Open As dialog box, the EPS Rasterizer dialog box appears.

☐ Indicate the file dimensions, resolution, and mode. To keep the same file size, select the Constrain Proportions option.

☐ Select the Anti-aliased option to improve the quality of the image being rasterized as it is opened.

Related topics:

Importing Images

File Formats

About Resolution

Color Modes in Photoshop

Opening and Placing Adobe Illustrator™ Images

Place Command

Places an Adobe Illustrator file in an existing Photoshop document.

The Place command does not import pattern files, stroked text, or any artwork that has been placed into the Adobe Illustrator file. If you want to open the Illustrator file as a new Adobe Photoshop document, use the Open command instead of the Place command.

Related topics:

Opening and Placing Adobe Illustrator™ Images

File Formats

Close Command

Closes the current document.   Adobe Photoshop will prompt you if there are any unsaved changes to the document.

Save Command

Choose Save from the File menu to save a document in its current file format.

Related topics:

Save As command

File Formats

Exporting Images

Save As Command

Choose Save As from the File menu to give the document a different name or save the ducument in a different format.

You can save Adobe Photoshop documents as EPS or TIFF documents, and then place these documents in page layout programs that support these file formats. You can also save Adobe Photoshop documents in formats that can be read by Macintosh computers and Scitex image-processing systems.

To save a document in another file format:

1 Choose Save As from the File menu.The Save As dialog box appears.

2 Choose a format from the File Format drop-down list. In some cases a dialog box appears.

3 Type a file name with up to 8 characters and choose a location for the file; then click Save.

Certain file formats do not support some of the image types available in the Adobe Photoshop program. For example, you can't save an RGB image in MacPaint format, because MacPaint format accepts only black-and-white image data. Formats that aren't available are not visible in the drop-down list.

Related topics:

Save As RAW

Save As TIFF

Save As EPS

Save As BMP

Exporting Images

File Formats

Save As Raw Dialog Box

The header parameter is the number of bytes of information that will appear at the beginning of the document, before the actual image information. This value defines the number of zeros that will be placed at the beginning of the document as place holders. By default, there is no header (header size = 0). After you save the document, you can use a file-editing program to replace the zeros with header information.

You can choose to save the image in an interleaved or non-interleaved format. If you choose the interleaved format, the color values (red, green, and blue, for example) are stored sequentially. The choice you make depends on the requirements of the application you plan to use to open the document.

Related topics:

File Formats

Exporting Images

Save As TIFF Dialog Box

When you save an Adobe Photoshop image in TIFF format, you can choose to save in a format that can be read either by IBM PC-compatible or by Macintosh computers. You can also choose to compress the document to a smaller size automatically by selecting the LZW Compression option.

Adobe Photoshop reads and saves captions in TIFF files. This feature is of particular use with the Associated Press Picture Desk system, which uses the same TIFF caption fields. To access the captions, click the Caption option in the Page Setup dialog box.

Related topics:

File Formats

Exporting Images

Save As EPS Dialog Box

Preview options

Some graphics applications, such as Adobe Illustrator, let you display, or preview, a TIFF representation of a PostScript™ language image saved in the EPS format. The TIFF preview image gives you an idea of what the image will look like when it is printed and allows you to accurately place the image on the page. In the EPS Format dialog box, indicate the type of preview (if any) that you want to use.

Encoding options

The encoding options in the EPS Format dialog box control what type of information is saved in the document, either ASCII or binary. The Binary option results in a file that is about half the size of an image saved with the ASCII encoding option and takes half as long to transfer to the printer. However, some applications (such as Aldus PageMaker®) might not support binary EPS documents.

For these applications, you should select the ASCII encoding option. In addition, some commercial print spooling software does not support binary encoding. If you experience printing errors, it may be that your print spooler requires ASCII encoding.

Additional options

You can choose to include the EPS file halftone screen information (including the frequencies and angles of the screens) and transfer function information when you save the file. If you include the halftone screen information and place it in another application, such as Adobe Separator, the PostScript interpreter overrides the application's own settings when the color separations are generated. The transfer information overrides the printer's default functions if you have selected the Override Printer's Default Functions option in the Transfer dialog box.

When you save a CMYK document in EPS format, you have the option of saving the document as five separate EPS documents. This is an extension of the standard EPS format developed by Quark and is called Desktop Color Separations (DCS). It allows you to save color separations in a format that can be read by certain applications that use this format, such as QuarkXPress. Four of the files contain the high-resolution color information; the fifth, or master, file contains a TIFF preview of the image. You also have the option of including in the master file a low-resolution PostScript language version, in CMYK color or grayscale, for proofs. If you want to be able to proof the image accurately from within the target application, you should include the CMYK version in the master file. Keep in mind, however, that this will substantially increase the size of the file.

In addition, when you save a bitmapped image in EPS format, you have the option of making the white areas in the document appear transparent.

Related topics:

File Formats

Exporting Images

Exporting Paths to Adobe Illustrator

Save As BMP Dialog Box

In the BMP Options dialog box, specify either Microsoft Windows or OS/2® format and a 1- to 24-bit depth for the image.

Related topics:

File Formats

Exporting Images

Revert Command

Used to undo a series of operations that you have performed.   You lose all changes made to the image since the last time it was saved.

You can also restore part of an image to its previously saved version using the From Saved option of the rubber stamp tool and the magic eraser option of the eraser tool.

Related topics:

Rubber Stamp Tool

Eraser Tool

Acquire Command

Adobe Photoshop includes <u>plug-in modules</u> for importing EPS JPEG files and files scanned using the TWAIN interface.

To use an import module:

1   Choose Acquire from the File menu; then select the import module from the submenu.

2   A dialog box appears.The options for some import modules are discussed in the following sections.

Acquiring an EPS file saved with JPEG compression

Use the Decompress EPS JPEG plug-in module to open EPS files saved using the Adobe JPEG Compress module.

Acquiring a TWAIN interface file

TWAIN is a cross-platform interface for acquiring images captured by certain scanners and frame grabbers. The device manufacturer of the TWAIN device must provide a Source Manager and TWAIN Data source for your device, or the module will not work.

The first time you use the TWAIN device, choose TWAIN Acquire and select the device you're using. You do not need to repeat this step for subsequent use of the TWAIN module, unless you switch devices.

If more than one TWAIN device is connected to your system and you want to switch devices, use the TWAIN Select Source command to choose the device.

Related topics:

<u>Importing Images</u>

<u>Scanning Images</u>

<u>Using Plug-in Modules to Import and Export Images</u>

Export Command

Used to select an export plug-in module.

Adobe Photoshop includes plug-in modules for saving files in Amiga HAM format, and exporting paths to Adobe Illustrator.

To use an export module:

1 Choose Export from the File menu, and select an export format from the submenu.

2 Select the file you want to export and click OK. A dialog box appears.

Compressing EPS files with JPEG

You can save an EPS file using JPEG compression. When you choose Compress EPS JPEG from the Export menu, a dialog box appears so you can name the file and indicate the quality for the compression.

In general, images compressed using the Excellent quality option have compression ratios of between 5:1 and 15:1. A trade-off exists between the image quality and the amount of compression: an image compressed using the Excellent quality option is less compressed (and thus takes up more disk space) than an image compressed using the Fair quality option.

You can also choose to save the file as EPS only in this dialog box.

Exporting Amiga HAM files

Adobe Photoshop includes a plug-in module for exporting images in Amiga's HAM (Hold and Modify) format. Hold and Modify is an encoding scheme that packs the approximate equivalent of 12 bits of image data into 6 bits per pixel. This format is generally not supported on the PC and is designed specifically for transferring PC images to the Amiga. While Adobe Photoshop can read Amiga images, it cannot write them without this plug-in module.

Initially, HAM images could be only one of two sizes (320 x 200 pixels or 320 x 400 pixels). Now, however, many illustration and page layout programs can handle nonstandard HAM images. For these images, the programs use nonsquare pixels.

To maintain the proportions of your Adobe Photoshop image in the target application, you should use the Image Size command in the Image menu to resize the image 83 percent vertically or 120 percent horizontally if it is a non-interlaced image, and 166 percent vertically and 60 percent horizontally if it is an interlaced image. Because the PC always uses square pixels, the image will appear distorted; however, it will display correctly on the Amiga.

In the HAM Options dialog box, select the Interlace option. If you don't select this option, the program will try to guess whether or not the image is interlaced. Interlacing affects the ordering of vertical scan lines.

Related topics:

Exporting Paths to Adobe Illustrator

Exporting Images

File Formats

Page Setup Command

Displays the Page Setup dialog box, used to specify various printing options.

Related topics:

Using the Page Setup Dialog Box

Previewing Page Size and Layout

Page Setup Dialog Box

The various printing options appear in the Page Setup dialog box, displayed by choosing Page Setup from File menu. The exact appearance of this dialog box varies depending on your printer. Not all options are available for all printers. To preview the results of your printing options, click the page preview box in the lower left corner of the document.

Selecting a printer

In the top half of the Page Setup dialog box, select the name of the printer you will use to print, either the default or a specific printer. The Specific Printer drop-down list includes all currently active printers. You can use the Windows Control Panel to add or delete printers.

Selecting paper and page orientation

The Page Setup dialog box lets you select the page orientation you want. The default orientation is Portrait, a vertical orientation. The other page orientation option is Landscape, a horizontal orientation.

From the Paper Size drop-down list select the paper you are using. Select the paper source from the Paper Source drop-down list. The default source is Upper Tray.

NOTE: Adobe Systems recommends that, rather than using Landscape orientation, you rotate the image 90 degrees using the Rotate command in the Image menu, and print using Portrait orientation. Printing a page with the Portrait setting is much faster than printing with the Landscape setting.

Setting additional printing options

Click Options in the Page Setup dialog box to set specific options for the printer you have selected.

Setting halftone screen attributes

Halftone screen attributes include the screen frequency and dot shape for each screen used in the printing process. For color separations, you must also specify an angle for each color screen. Click the Screens button to define the screen attributes.

Printing a border

You can specify the width of a border that you want to appear around an image using the Border button. The border is printed in black.

Displaying the transfer functions

The Transfer button lets you adjust the transfer functions that Adobe Photoshop uses to print the image. Transfer functions are traditionally used to compensate for dot gain   or dot loss that may occur when an image is transferred to film.

Printing a caption

Using the Caption button lets you enter text that will appear below an image. The caption is saved with the Adobe Photoshop document. You can print up to six lines of text as a caption; additional text does not appear on the image. The text is printed in 9-point Helvetica plain. This font cannot be changed.

Selecting a background color

The Background button in the Page Setup dialog box lets you select a background color to be printed on the page outside the image area. This option is especially useful if you are printing slides to a film recorder, since a black or colored background is often preferable for slides. To use this option, click

Background; then select a color from the color picker dialog box. The Background option is a printing option only and does not affect the image area itself.

Printing labels

The Labels option in the Page Setup dialog box prints the document and <u>channel</u> name on the image.

Printing crop marks

The Crop Marks option in the Page Setup dialog box prints <u>crop marks</u> near the edges of the image. The crop marks indicate where the image is to be trimmed.

Printing calibration bars

The Calibration Bars option in the Page Setup dialog box prints an 11-step grayscale. The steps represent a transition in <u>density</u> from 0 to 100 percent in 10-percent increments.

In addition, when you print a CMYK color separation, a gradient tint bar is printed on the left of each of the plates; a progressive color bar is printed on the right.

NOTE: This setting affects Postscript printers only.

Printing registration marks

The Registration Marks option in the Page Setup dialog box prints <u>registration marks</u> on the image, including <u>bull's-eyes</u> and <u>star targets</u>, to help you align multiple plates. These marks are used primarily for aligning color separations and duotones.

Printing a negative

The Negative option in the Page Setup dialog box prints an inverted version of the image. Unlike the Invert command in the Image menu, the Negative command converts only the output (not the on-screen image) to a negative. If you are printing separations directly to film, you will probably want a negative, although in many countries it is common to print film positives. Check with your print shop to find out if it requires a film positive or negative. If you are printing to paper, print a positive.

Specifying an emulsion side

Emulsion refers to the photosensitive layer on a piece of film or photographic paper. When the emulsion is up (right-reading), type in the image is readable when the photosensitive layer is facing you; this is the default. The Emulsion Down option (also right-reading) means that type is readable when the photosensitive layer is facing away from you. Normally, images printed on paper should be printed emulsion up.

To determine the emulsion side of a piece of film, examine the film under a bright light after it has been developed. The dull side is the emulsion; the shiny side is the base. Check with your print shop to see whether it requires film as a positive emulsion up, negative emulsion up, positive emulsion down, or negative emulsion down.

NOTE: This setting affects Postscript printers only.

Using interpolation

Some PostScript Level 2 printers can reduce the jagged appearance of a low-resolution image by automatically resampling up an image while it is printing. If your printer does not have this capability, this option has no effect.

NOTE: This setting affects Postscript printers only.

Related topics:

Halftone Screens Dialog Box

Halftone screen attributes include the <u>screen frequency</u> and dot shape for each screen used in the printing process. For color separations, you must also specify an angle for each color screen. Setting the screens at different angles ensures that the dots placed by the four screens blend to look like continuous color and do not produce moiré patterns.

Check with your print shop for the preferred frequency, angle, and dot settings before creating your halftone screens.

To define the screen attributes:

1 Click Screens in the Page Setup dialog box. The Halftone Screens dialog box appears.

2 Set the screen frequency and angle for each screen.

> NOTE: For optimal printing, your image resolution should be twice the halftone screen frequency. If the resolution is more than 2.5 times the screen frequency, Adobe Photoshop displays an alert message.

To print a grayscale halftone:

1 Enter a screen frequency from 1 to 999.999 in the Frequency text box; then choose the unit of measurement you want from the   drop-down list.

2 Enter a <u>screen angle</u> from - /+ 180 degrees in the Angle text box.

To print halftones for a color separation:

☐ Choose the color of the screen from the Ink drop-down list and manually enter the frequency and angle for each of the four screens; or

☐ Click the Auto button and enter the resolution of the output device and the screen frequency you intend to use in the Auto Screens dialog box.

☐ If you are using a high-resolution output device equipped with PostScript Level 2 or an Emerald controller, make sure that the Use Accurate Screens option is selected. This lets the program access the correct angles and halftone screen frequencies for high-resolution output. If your output device is not equipped with PostScript Level 2 or an Emerald controller, do not choose this option.

3 Choose the dot shape you want from the Shape drop-down list. If you want all four screens to have the same dot shape, select the Use Same Shape For All Inks option.

Choosing Custom from the Shape drop-down list displays a dialog box so you can define your own dot shapes using PostScript commands. The Custom feature is useful for printing with nonstandard halftone algorithms.

> NOTE: To use the default halftone screen built into the printer, select the Use Printer's Default Screens option. The specifications from this dialog box are then ignored when the halftone screens are generated.

Saving and loading halftone screen settings

You can save your halftone screen settings to use with other Adobe Photoshop documents using the Save and Load buttons in the Halftone Screens dialog box.

Related topics:

<u>Generating Halftone Screens Automatically</u>

<u>Specifying Printing Options</u>

<u>Determining Scanning Resolution</u>

<u>About Resolution</u>

Auto Screens Dialog Box

You can generate halftone screens automatically by clicking the Auto button in the Halftone Screens dialog box. This brings up the Auto Screens dialog box.

To generate halftone screens automatically:

1 Enter the resolution of the output device.

2 Enter the screen frequency you intend to use.

3 Click Accurate Screens.

4   Click OK.

When you click OK in the Auto Screens dialog box, Adobe Photoshop determines the best frequencies and angles for the four halftone screens and enters these values in the Halftone Screens dialog box. Changing these values may result in moiré patterns.

If you are using a high-resolution output device equipped with PostScript Level 2 or an Emerald controller, make sure that the Use Accurate Screens option is selected in the Auto Screens dialog box. This lets the program access the correct angles and halftone screen frequencies for high-resolution output. If your output device is not equipped with PostScript Level 2 or an Emerald controller, do not choose this option.

Related topics:

Tips on Printing

Specifying Halftone Screen Attributes

Specifying Printing Options

Custom Halftone Dot Function

In the Halftone Screens dialog box, choosing Custom from the Shape drop-down list displays a dialog box so you can define your own dot shapes using PostScript commands. The Custom feature is useful for printing with nonstandard halftone algorithms, such as the Flamenco technology by The Color Group in Richmond, California. For information about using PostScript commands, see the PostScript Language Reference Manual published by Addison-Wesley, or consult the imagsetter's manufacturer.

Related topics:

Specifying Printing Options

Specifying Halftone Screen Attributes

Print Border Command

Used to specify the width of a border you want to have appear around an image. The border is printed in black.

To specify the width of a border:

1 Click Border in the Page Setup dialog box. The Border dialog box appears.

2 Choose the unit of measurement you want from the drop-down list.

3 Enter a value between 0 and 10 for the width of the border; then click OK. You can specify decimal values for the width.

Related topics:

Page Setup Dialog Box

Print Caption Command

Lets you enter text that will appear below an image. The caption is saved with the Adobe Photoshop document. You can print up to six lines of text as a caption; additional text does not appear on the image. The text is printed in 9-point Helvetica plain. This font cannot be changed.

To define a caption:

1 Click Caption in the Page Setup dialog box. The Caption dialog box appears.

2 Type the caption text; then click OK.

Related topics:

Page Setup Dialog Box

Transfer Function Dialog Box

Lets you adjust the transfer functions that Adobe Photoshop uses to print the image. Transfer functions are traditionally used to compensate for <u>dot gain</u> or dot loss that may occur when an image is transferred to film.

Compensating for dot gain when the image goes to film

The Adobe Photoshop transfer function is designed to compensate for dot gain due to a miscalibrated imagesetter. For example, if your imagesetter is miscalibrated, a dot that you specified as a 50-percent screen might actually print at a value of 58 percent. To compensate for this dot gain, you use the Transfer Function dialog box to specify a different output <u>density</u> for each level of pixels.

To adjust the transfer function values:

1 Use a transmissive <u>densitometer</u> to record the density values at the appropriate steps in your image on film.

2 Choose Page Setup from the File menu. The Page Setup dialog box appears.

3 Click the Transfer button. The Transfer Functions dialog box appears.

4 Calculate the required adjustment, and enter the values (as percentages) in the Transfer Functions dialog box.

For example, if you have specified a 50-percent dot, and your imagesetter is printing it at 58 percent, you know that you have an 8-percent dot gain in your midtones. To compensate for this gain, enter 42 percent (50 percent minus 8 percent) in the 50-percent text box of the Transfer Functions dialog box. The imagesetter then prints the 50-percent dot that you want.

If you are printing a color separation, enter the same values for all four colors. Adobe Photoshop interpolates any intermediate values that you leave blank.

When entering transfer function values, keep in mind the density range of your imagesetter. On a given imagesetter, a very small highlight dot might be too small to hold ink; beyond a certain density level, the shadow dots might fill into solid black, removing all the detail in shadow areas.

Saving and loading transfer function settings

Use the Save and Load buttons in the Transfer Functions dialog box to use transfer function settings with other Adobe Photoshop documents. To save the current transfer function settings as the default, hold down the Alt key (the save button changes to "--> Defaults") and click. To load the default settings, hold down the Alt key (the save button changes to "<-- Defaults") and click.

Related topics:

<u>Compensating for Dot Gain in Proofs</u>

<u>Page Setup Dialog Box</u>

Print Command

Used to print the image using Adobe Photoshop default settings or the user settings in the Page Setup dialog box.

Some printing options are selected in the Print dialog box, displayed by choosing Print from the File menu. These options let you print only a selected area of an image, transfer image data to the output device in <u>ASCII</u> format, and print a color-corrected composite image on a color printer. The appearance of this dialog box varies depending on your printer.

Printing a selected area only

You can print a selected part of an image if the selection is a rectangle and 100 percent of all pixels within the rectangle are selected:

1 Select the part of an image you want to print using the rectangular marquee tool (this is the only selection tool you can use)

2 Choose Print from the File menu.

3 In the Print Range Options dialog box, click Selection; then click OK.

Printing a color-corrected image

To print a CMYK version of an RGB, Lab, or Indexed Color image, click the Print in CMYK option in the Print dialog box. Before using this option, make sure you have entered the correct settings in the Printing Inks Setup dialog box.

This option causes Adobe Photoshop, instead of your print shop, to make the conversion to CMYK colors. This method usually produces better results. The option works with both color PostScript and GDI printers.

NOTE: The Print in CMYK option is not recommended for PostScript Level 2 printers.

Printing the separate plates of a CMYK image

For a separate printout of each <u>channel</u> in a CMYK image, select the Print Separations option.

Printing with print spoolers and across networks

By default, Adobe Photoshop transfers binary information to printers. However, some print spooler programs and computer networks don't support files that are binary encoded. In these situations, you can choose to transfer the document in ASCII format. Files that are encoded in ASCII format require about twice as much time to transfer as binary files, because they contain about twice as many characters.

To select the ASCII encoding option, click ASCII in the Print dialog box.

Related topics:

<u>Page Setup Dialog Box</u>

<u>Printing Inks Setup</u>

Exit Command

Exits the Adobe Photoshop program.

Undo/Redo Command

Many operations can be undone using the Undo command in the Edit menu. To correct a mistake, choose Undo immediately after performing the action. This command reverses only the last action that you performed.

After you choose Undo, the command changes to Redo, and it can then be used to cancel the Undo operation.

If an operation can't be undone, the Undo choice is dimmed and reads Can't Undo.

Related Topic:

Revert Command

Cut Command

Removes the current selection from the image and places it on the Clipboard.

☐ A <u>floating selection</u> is deleted and the underlying image remains intact.

☐ A nonfloating selection disappears and is replaced by the current background color.

The cut selection can be pasted into another part of an image or into another document.

Related topics:

<u>Making Selections</u>

<u>Cutting, Copying, and Pasting Selections</u>

Copy Command

Creates a copy of the current selection and places it on the Clipboard. You can paste the copy elsewhere in the image or into other Adobe Photoshop documents.

Related topics:

Making Selections

Cutting, Copying, and Pasting Selections

Paste Command

For pasting a selection into another part of an image or into another document. When you choose Paste from the Edit menu, the last selection you cut or copied appears in the center of the active window, and becomes the current selection. If there is already a selection in the image, the pasted selection appears on top of it. Pasted selections are <u>floating</u>.

Photoshop offers a range of pasting options that control how the pasted selection appears in the image.   Use the Paste Into command, the Paste Behind command, and the Composite Controls command for varying the way a selection is pasted into an image.

Related topics:

<u>Cutting, Copying, and Pasting Selections</u>

<u>Pasting Into Another Selection</u>

<u>Pasting Behind Another Selection</u>

<u>Using Composite Controls</u>

Paste Into Command

Allows you to paste a cut or copied selection (referred to here as the source selection) inside another selection in the image (referred to here as the target selection).

You can use the Paste Into command to replace a selection that was cut or to place a copied selection exactly on top of itself.

To paste one selection into another:

1 Cut or copy the part of the image you want to use as the source selection.

2 Use a selection tool to select the part of the image you want to paste the selection into.

3 Choose Paste Into from the Edit menu.

The source selection appears as the current selection and is masked by the target selection.

4 Drag the source selection until the part you want to see is in the target selection; then deselect the selection.

Related topics:

Cutting, Copying, and Pasting Selections

Pasting Behind Another Selection

Using Composite Controls

Paste Behind Command

Allows you to paste the contents of the Clipboard (the "source selection") behind a selected area (the "target selection") so that the target selection covers part of the source selection. For example, you might use this command to place a background behind a set of selected objects.

To paste an image behind the current selection:

1. Cut or copy the part of the image you want to use as the source selection.

2. Select the part of the image behind which you want to paste the source selection.

3. Choose Paste Behind from the Edit menu. The source selection appears as the current selection behind the target selection.

4. Drag the source selection to reveal the part of it that you want to display; then deselect the selection.

Related topics:

Cutting, Copying, and Pasting Selections

Pasting Into Another Selection

Using Composite Controls

Clear Command

Clears the current selection.

☐ A <u>floating selection</u> is deleted and the underlying image remains intact.

☐ A nonfloating selection disappears and is replaced by the current background color.

Fill command

Fills a selection with the current foreground color or a pattern. The default foreground color is black. You can specify the opacity and the transfer color mode of the fill.

To fill a selection with a color:

1. Select the part of the image you want to fill.

2. Choose Fill from the Edit menu to fill the selection.

   A dialog box appears.

3. Select Foreground Color or Pattern.

4. Specify the opacity of the fill. To make the fill more transparent, use a low percentage value. A setting of 100 percent makes the fill nearly opaque.

5. Select a color mode for the fill. You can choose from several modes to affect how the pixels are affected by the fill.

To fill a selection with a pattern:

Before you fill a selection with a pattern, you must define the pattern using the Define Pattern command in the Edit menu.

1. Click the rectangular marquee tool in the toolbox, and drag to select the part of the image you want to use as the pattern.

2. Choose Define Pattern from the Edit menu.

3. Select the part of the image you want to fill.

4. Choose Fill from the Edit menu, and select Pattern in the Fill dialog box.

   The pattern you defined is repeated as tiles within the selection.

Using PostScript patterns to fill a selection

The Adobe Photoshop software contains a set of PostScript patterns in the PATTERNS subdirectory that you can use to fill selections. Each file in this subdirectory contains a single Adobe Illustrator format pattern that can be scaled and rendered at any resolution.

To use a pattern from the PostScript patterns subdirectory:

1. Choose Open from the File menu. A dialog box appears.

2. Choose the pattern file (*.AI extension) you want to use and click Open. The EPS Input Options dialog box appears.

3. Select the options you want; then click OK. The pattern opens in an Adobe Photoshop file.

4. Choose Select All from the Select menu.

5. Choose Define Pattern from the Edit menu. The pattern is defined as an Adobe Photoshop pattern.

6. Select the part of the image you want to fill; then choose Fill from the Edit menu, and click Pattern in the Fill dialog box.

Related topics:

Selecting Colors

Color Modes in Photoshop

Selecting a Painting or Editing Mode

Filling and Stroking Selections

Stroke Command

Allows you to stroke a border around the selection.You can specify the <u>opacity</u> and the color mode to be used for the stroke.

To stroke a selection:

1. Choose Stroke from the Edit menu.

   A dialog box appears.

2. Specify the width and location of the border. Values for the width can range from 1 to 16 <u>pixels</u>.

3. Specify the opacity of the stroke. To make the stroke more transparent, use a low percentage value. A setting of 100 percent makes the stroke nearly opaque.

4. Select a color mode for the stroke. You can choose from several modes to affect how the pixels are affected by the stroke.

Related topics:

<u>Selecting Colors</u>

<u>Selecting a Painting or Editing Mode</u>

Crop Command

Lets you select part of an image and discard the rest.

To crop an image using the Crop command:

1 Click the rectangular marquee tool and select the part of the image you want to use.

2 Choose Crop from the Edit menu.

Cropping can also be done using the cropping tool in the toolbox. When you crop using the cropping tool, you can rotate and <u>resample</u> the area as you crop.

Related topics:

<u>Cropping Tool</u>

<u>Resizing Images</u>

Define Pattern

Before you fill a selection with a pattern, you must define the pattern using the Define Pattern command in the Edit menu.

To define a pattern:

1. Click the rectangular marquee tool in the toolbox, and drag to select the part of the image you want to use as the pattern.

2. Choose Define Pattern from the Edit menu.

   The pattern as defined by the marquee is available for use with the Fill command or paint bucket tool.

Related topics:

Filling a Selection

Using the Fill Command

Using the Paint Bucket Tool

Take Snapshot Command

Stores the current selection in the buffer. By default, each new image has an empty buffer associated with it.

The contents of the image buffer can be selectively painted onto the image using the rubber stamp tool with the From Snapshot option selected.

Related topics:

Rubber Stamp Tool

Composite Controls

The composite controls determine how the <u>floating selection</u> is composited (or blended) with the underlying image. By default, every <u>pixel</u> in the floating selection is visible when you paste the selection. Using the Composite Controls command, you can specify which pixels in a floating selection will replace the pixels in the underlying image. You can also make a floating selection opaque or transparent, and composite using a specific painting mode.

To select composite options for a floating selection:

1 Paste a selection into an image, or use the Float command to make a nonfloating selection into a floating selection.

2 Choose Composite Controls from the Edit menu. The Composite Controls dialog box appears.

  NOTE: If you hold down the Alt key as you choose a Paste command, the Composite Controls dialog box appears automatically.

3 Select the Preview option to see the effect of your adjustments as you make them.

4 Select the ranges, <u>opacity</u>, and mode for the paste operation. These options are described in the following sections.

5 When you have the effect you want, click OK.

The options apply only to the current selection. Once a selection is deselected, the options in the Composite Controls dialog box revert to their default settings.

Specifying a color range for compositing

The sliders in the Composite Controls dialog box allow you to define which pixels are composited by indicating a range of color values for the replacement pixels. You can specify these values based on the floating selection or based on the underlying image. Color values are measured on a scale from 0 (black) to 255 (white).

If the color values of the pixels in the floating selection are inside the range specified on the Floating slider, they are composited into the image. For example, if you set the Floating slider to 0 and 235, the pixels in the floating selection with a value of 235 to 255 are not composited and do not appear in the final image. Excluding pixels in the floating selection from compositing is a good way to eliminate a white background when you paste the floating selection.

If the color values of the pixels in the underlying image are outside the color range specified by the Underlying slider, they are protected from compositing. For example, if you set the Underlying slider to 19 and 255, pixels in the underlying image with a value between 0 and 19 appear in the final image. The pixels in the floating selection that overlay pixels with a value of 0 to 19 are not composited.

To define a color range for the compositing operation:

1 Choose an option from the Blend If menu in the Composite Controls dialog box. The menu contains all the active <u>channels</u> in the image:

  ☐ The Gray option sets the range of values for all the pixels in the image.

  ☐ The individual colors set the range for specific color channels (for example red, green, and blue values for RGB images; and cyan, magenta, yellow, and black values for CMYK images).

2 Drag the Floating or Underlying sliders to set the color range. Drag the white triangle to set the high value of the range; drag the black triangle to set the low value of the range.

  NOTE: To create a smooth transition between composited and noncomposited areas, you can define a range of pixels that are only partially composited. If you hold down the Alt key as you drag a triangle, half of the triangle moves in the direction you drag. Two

values appear above the slider. The pixels between these two values appear with only part of their original color.

Specifying a painting mode when pasting

Choose an option from the Mode menu in the Composite Controls dialog box to determine which pixels in the floating selection will replace the underlying pixels, based on a comparison of the pixels.

You can choose from 12 painting modes. The first ten modes are the same as the painting modes found on the Brushes palette.

The Composite Controls dialog box offers two additional modes that are used for compositing soft-edged images:

☐ Black Matte mode removes the remnants (ghosting) of black around the edges of images created on black backgrounds.

☐ White Matte mode eliminates the remnants (ghosting) of white around the edges of images created on white backgrounds.

Controlling the opacity of a floating selection

Use the Opacity option in the Composite Controls dialog box. Specify a high percentage to make the floating selection opaque. Specify a low percentage to make the floating selection transparent.

NOTE: If a selection tool is active, you can also select a painting mode or control the opacity of a floating selection using the slider in the Brushes palette.

Related topics:

Selecting a Painting or Editing Mode

Pasting Into Another Selection

Pasting Behind Another Selection

General Preferences

The General Preferences options apply to general use of the program, including choice of color picker, interpolation method, display options, and Clipboard options.

To change the General preferences:

Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.

Color picker

Select your choice of the Adobe Photoshop color picker or the Windows color picker.

Interpolation

To calculate the color values of <u>pixels</u> that are added or deleted during manipulations or resizing, Adobe Photoshop uses the interpolation method selected from the Interpolation drop-down list:

☐ The Bicubic option offers the most precise form of interpolation; however, it is significantly slower than Bilinear interpolation.

☐ The Nearest Neighbor option is the fastest method, but it is also the least precise. This lack of precision is evident in the jagged appearance of modified selections, especially when you're distorting or resizing an image, or performing multiple manipulations on a selection.

☐ The Bilinear option produces medium quality somewhat between the other two options.

Display options

€ CMYK Composites - For a CMYK image, you can choose between seeing the actual CMYK values or an interpolation of the values in the CMYK display. The Faster option interpolates the RGB values from a lookup table and is almost as fast as the normal RGB mode. The Smoother option uses the theoretically correct values for each pixel but takes longer to display the image.

€ Color Channels in Color - Click this option to see individual <u>channels</u> in color.

€ Use Common Palette - With this option selected, Photoshop uses the System palette to display the active document.

€ Use Diffusion Dither - Select this option to use diffusion <u>dithering</u> instead of pattern dithering (Photoshop default).

€ Video LUT Animation - This option is available when using 16- or 24-bit color. With this option selected, the color lookup table is animated for each RGB component, decreasing the time it takes to display editing changes to a color image.

Additional options

€ <u>Anti-alias</u> PostScript - Select this option to improve the quality of the selection being rasterized as it is pasted into Adobe Photoshop. Using this option can increase the time it takes to import the selection.

€ Export Clipboard - Select this option to save the contents of the Clipboard when you exit Adobe Photoshop. If you turn off this option, the contents of the Clipboard are deleted when you switch applications or leave the program.

€ Short PANTONE Names - This option ensures that the PANTONE color names will match the naming convention used in other applications. This is important if you plan to export images to other applications.

€ Restore Windows - Adobe Photoshop remembers the position of open palettes when you exit the program. If you want the program to open using the default windows (that is, only the toolbox and Brushes palette are open), deselect the Restore Windows option in the General Preferences dialog

box.

€ Beep When Done - Selecting this option in the General Preferences dialog box tells Photoshop to sound a beep whenever the program finishes performing a task requiring a progress bar. When you hear the beep, you can continue working with the program.

Related topics:

Using the Photoshop Color Picker

Using the Windows Color Picker

Cutting, Copying, and Pasting Selections

Color Display Options

Unit Preferences

The Unit Preferences options apply to the units of measurement used by the rulers, the Image Size command, and the Canvas Size command.

To change the units of measurement:

1 Choose Preferences from the File menu and Units from the submenu. The Unit Preferences dialog box appears.

2 Choose the units you want to use from the Ruler Units drop-down list.

3 Choose a point and pica size. Leave the setting at PostScript if you are printing to a PostScript device.

4 Indicate a column width. Column widths are used in some layout programs to specify the display of an image across columns. The setting in this option is used by the Image Size and Canvas Size commands.

Related topics:

Using Rulers

Changing Image Size

Changing the Canvas Size

Memory Preferences

Changes the location of the scratch disk.

A scratch disk (also called virtual memory) is temporary disk space used for storing data and performing computations on files during a work session, when the random-access memory (RAM) is insufficient. By default, the Adobe Photoshop program uses your startup disk for virtual memory; however, you may wish to change the primary scratch disk or designate a secondary scratch disk. You will probably want to use your fastest hard disk, or the one with the most available space, as your primary scratch disk.

To change the scratch disk:

1 Choose Preferences from the File menu and Memory from the submenu. The Memory Preferences dialog box appears.

2 Select the disk you want to use from the drop-down list. You can also set the percentage of available RAM to be used by the Adobe Photoshop program. The new settings don't take effect until after you quit and then restart the program.

See *Getting Started with Adobe Photoshop* for more information on using virtual memory.

Monitor Setup

Adobe Photoshop uses the information in the Monitor Setup dialog box to compensate for factors affecting the monitor display: the target gamma and white point, the type of phosphors in the monitor, and the room lighting conditions.

In addition to affecting the overall monitor display, the Monitor Setup information is used to determine how the program converts colors between modes. This means that Monitor Setup options will affect how an RGB image is converted to CMYK mode and how CMYK (or duotone) colors are displayed on-screen. If you change these settings after you have converted an image to CMYK mode, only the display is affected. You must revert to the original RGB image (using the Revert command in the File menu) and then reconvert the image to CMYK for these changes to affect the separation data.

To enter Monitor Setup information:

1 Choose Preferences from the File menu and Monitor Setup from the submenu. The Monitor Setup dialog box appears.

2 Choose the monitor you are adjusting from the Monitor drop-down list.

3 Choose a setting from the White Point drop-down list.

If you are using a third-party monitor calibration device, choose the white point value established by that device; otherwise, leave this value at the default value of 6500K. If the value you need is not in the list, choose Custom and type in your own values.

4 Choose the monitor type from the Phosphors drop-down list.

If the correct type is not in the menu, choose Custom and enter the red, green, and blue chromaticity coordinates, as specified by your monitor manufacturer. This option compensates for the different red, green, and blue phosphors used by monitors to display color.

5 Choose a setting from the Ambient Light drop-down list:

□ Select High if your room lighting is brighter than the on-screen image .

□ Select Low if it is not as bright.

€ Select Medium if the light levels are about the same.

Remember that it is important to maintain consistent room lighting.

6 Enter a value for Target Gamma. This sets the desired gamma for viewing RGB, grayscale, or indexed color images. Photoshop simulates the gamma according to this setting. The default setting is 1.8.

A target gamma of 1.8 is recommended for most images. If you plan to print or display the image using another application or on another platform, use a gamma of 1.8. Images intended for video should have a target gamma of 2.2, since this is the typical gamma of most television sets. When importing images that were created on a Macintosh, the Target Gamma should match the setting used on the Macintosh in order to get consistent results.

Saving and loading monitor settings

Use the Save and Load buttons in the Monitor Setup dialog box to save and load the settings for different monitors or different lighting environments. You might also want to save the monitor settings if you are using different gamma settings for output devices.

Related topics:

Calibrating the Monitor

Monitor Calibration

Adobe Photoshop provides the capability for calibrating the <u>gamma</u>, color balance, and <u>black and white points</u> of color and grayscale monitors. The settings in the Monitor Calibration dialog box let you eliminate any color cast in your monitor display and standardize the display of images on different monitors, so that an image looks the same with different monitor and video card combinations.

If you have a third-party monitor calibration system installed, use either that system or the Adobe Photoshop capability, not both. A third-party calibration system updates Photoshop's color space descriptor file. Using both utilities will miscalibrate the monitor. If you are using a third-party calibration system, you can skip the following section on the built-in monitor calibration utility.

To calibrate your monitor using the built-in calibration utility:

1 Make sure that your monitor has been turned on for at least a half hour so that the monitor display has stabilized.

2 Set the room lighting at the level that you plan to maintain; then adjust the brightness and contrast controls on your monitor. Because changes in these factors can dramatically affect your display, you should close your room off to external light sources and tape down the monitor and room lighting controls once they have been set.

3 Choose Preferences from the File menu and Monitor Setup from the submenu. Click the Calibrate button on the right side of the Monitor Setup dialog box.

The Calibration dialog box appears.

4 Hold up a white piece of paper similar in color to the stock on which you will be printing. Click the White Pt button and drag the three slider triangles until the monitor white matches the paper as closely as possible. This process allows you to adjust for the bluish tint found in most monitor displays.

For maximum accuracy, view the paper under controlled lighting, such as a light box or a combination of fluorescent and tungsten light bulbs.

5 Adjust the gamma by dragging the Gamma slider until the solid gray areas match the patterned gray areas in the gamma strip above the slider.

6 Adjust the color balance by clicking the Balance button and dragging the three slider triangles until the gray areas in the strip below the sliders become a neutral gray. This adjustment controls the monitor's mixture of RGB and compensates for color casts in the monitor.

7 Adjust the black point by clicking the Black Pt button and dragging the three slider triangles until there is no color tint in the shadow tones in the gray strip below the sliders. You should also see a distinct gradation between each swatch.

8 If necessary, readjust the color balance and then the gamma.

9 Click the Preview button to observe the effects of monitor calibration settings before closing the dialog box.

Saving and loading custom gamma settings

In general, you should save and load custom monitor calibration settings for paper stocks with different tints. To reuse the calibration settings, use the Save Settings and Load Settings buttons in the Calibration dialog box.

Related topics:

<u>Entering Monitor Setup Information</u>

Custom Monitor White Point

This specification is used if the white point value established by your third-party monitor calibration device is not listed under Monitor Parameters in the Monitor Setup dialog box.

Enter x and y values for the custom white point.

Related topics:

Entering Monitor Setup Information

Custom Monitor Phosphors

If your monitor type is not included in the Phosphors drop-down list under Monitor Parameters in the Monitor Setup dialog box, choose Custom.

In the dialog box, enter the red, green, and blue chromaticity coordinates as specified by your monitor manufacturer.

Related topics:

Entering Monitor Setup Information

Printing Inks Setup

The Printing Inks Setup dialog box information specifies the properties of the inks and paper stock you will be using to reproduce your images, as well as the <u>dot gain</u> expected on the output device.

Like the Monitor Setup dialog box information, the information in the Printing Inks Setup dialog box is used when Adobe Photoshop converts data between modes. If you change these settings after you have converted an image to CMYK mode, only the display is affected. You must revert to the original RGB image (using the Revert command in the File menu) and then reconvert the image for the changes to affect the separation data.

In addition, clicking the Use Dot Gain for Grayscale Images option adjusts the display of grayscale (and Duotone mode) images to reflect the expected dot gain.

> NOTE: In most cases, printing ink characteristics do not vary greatly from printer to printer within the same printer type. For example, one QMS ColorScript® printer will print ink <u>hues</u> that are very similar from printer to printer. The amount of dot gain, however, can vary quite a bit from machine to machine. Although it may not be necessary to recalibrate the printing ink colors for a different printer of the same type, you may need to change the dot gain setting in the Printing Inks Setup dialog box.

Selecting the ink colors

The default color values used in the color separation calculations are designed to produce quality separations using SWOP (standard web offset proofing) inks on coated paper. These inks differ slightly from those used in Europe, as well as from the pigments used in color wax transfer printers such as the QMS ColorScript printer. Similarly, the color and ink absorption qualities of the paper stock affect the final printed result. You can think of this information as telling the program what printed cyan looks like, what printed magenta looks like, and so on, given a certain set of inks and paper stock.

To adjust the color values for different ink colors:

1 Choose Preferences from the File menu and Printing Inks Setup from the submenu. The Printing Inks Setup dialog box appears.

2 Choose the ink type from the Ink Colors drop-down list.

If you choose Custom from the Ink Colors drop-down list, the Ink Colors dialog box appears.

3 Verify the dot gain percentage.

The default dot gain estimate reflects the estimated dot gain between film and final output. You should not adjust this value until you have run a proof and have measured the density values on the proof with a reflective <u>densitometer</u>.

If you are calibrating the system for grayscale images, click the Use Dot Gain for Grayscale Images option.

4 To adjust the gray balance (color cast) of the printed image, enter adjusted <u>gamma</u> values for the channels in the Gray Balance text boxes.

Related topics:

<u>Custom Ink Colors</u>

<u>Compensating for Dot Gain</u>

<u>Compensating for Color Casts in a Printed Image</u>

Custom Ink Colors

In most cases, the Ink Colors options in the Printing Inks Setup dialog box accurately provide the necessary compensations for various printing inks. In some situations, however, you might want to further adjust the ink colors using a color proof. For example, you might be using ink sets that are not available in the Ink Colors drop-down list.

To adjust for custom ink colors:

1 Choose Preferences from the File menu and Printing Inks Setup from the submenu. The Printing Inks Setup dialog box appears.

2 Choose Custom from the Ink Colors drop-down list. The Ink Colors dialog box appears.

The Ink Colors dialog box displays the various combinations of CMYK and the CIE coordinates used to generate them. CIE coordinates are an international color definition standard that is supported by PostScript Level 2.

The Ink Colors dialog box defines colors as x, y, and Y (luminance) values. The current ink sets are calibrated for viewing conditions of 6500K (D65), 2 degrees.

NOTE: The Ink Colors drop-down list reflects calibrations of some of the most commonly used ink sets and color printers. If your printer is not listed, contact your printer manufacturer to find out whether a set of Adobe Photoshop color patch values is available for your printer.

3 Using your printed CMYK proof, take a reading of the color values using a spectrophotometer or a colorimeter; then enter those values in the Ink Colors dialog box.

Alternatively, you can click the color patch of the ink color you want to adjust, and then adjust the color on-screen until it matches the patch on the color proof; then click OK.

Related topics:

Printing Inks Setup

Separation Setup

In most cases, the Adobe Photoshop color separation defaults produce excellent results. Depending on your printer's specifications, however, you might want to use the Separation Setup dialog box to adjust how the CMYK plates are generated. If you have already converted the image to CMYK mode, you must reconvert the image after adjusting the Separation Setup options.

To open the Separation Setup dialog box, choose Preferences from the File menu and Separation Setup from the submenu.

The Separation Setup dialog box displays a graph showing how the neutral colors in the image will separate given the current values of the Separation Setup parameters. The x-axis represents the neutral color value, from 0 percent (white) to 100 percent (black). The y-axis represents the amount of each ink that will be generated for the given value.

Choosing the separation type

By default, Adobe Photoshop uses the gray component replacement (GCR) type of color separation. Click UCR if you want to use undercolor removal. In general, use the GCR option for coated stock, and use UCR for uncoated stock and newsprint. Check with your print shop to find out which type of separation to use.

Choosing the degree of black generation

For GCR separations, you choose the degree of black generation, as well as setting ink limits and indicating undercolor removal.

You can choose from several Black Generation settings in the Separation Setup dialog box:

☐ The Medium option is the default and produces satisfactory results in most cases. The Light and Heavy options let you slightly decrease and increase the effect of the Medium setting.

☐ The None option generates the color separation using no black plate.

☐ The Maximum option maps the gray value directly to the black generation value. This option is useful for images that contain a large amount of solid black against a light background, such as screen shots from a computer.

☐ The Custom option allows you to adjust the black generation curve manually.

Choosing the ink limits

For both GCR and UCR separations, the black generation uses the ink limit settings you enter in the Separation Setup dialog box. The total ink limit is the maximum ink density that your press can support. By default, the black ink limit is 100 percent; the total ink limit is 300 percent. Check with your print shop to find out if you should adjust these values. Note that in the Separation Setup graph, these limits determine the cutoff points for the CMYK curves.

Reducing undercolor removal

The UCA (undercolor addition) option lets you reduce the amount of undercolor removal in the very dark areas to create more saturated blacks. This option is available only for GCR separations.

Increasing the UCA value will reduce the amount of CMY removed from beneath black. Values can range from 0 to 100 percent. Check with your print shop for the preferred value. If you are unsure about this value, leave it set at 0 percent.

Saving and loading Separation Setup settings

You can use the Save and Load buttons in the Separation Setup dialog box to save settings for black generation and undercolor removal. This is particularly useful when you are creating custom black

generation curves. The most recent black generation curve is saved by default in your Preferences file. Use the Save and Load buttons to save and load additional curves.

Related topics:

About Black Generation

Custom Black Generation

Custom Black Generation

For <u>GCR</u> separations, you can manually adjust the <u>black generation</u> curve in the Separation Setup dialog box.

To use the Custom option:

1 Choose the Black Generation option (Light, Medium, Heavy, or Maximum) that is closest to the type of black generation you want. This gives you a black generation curve to use as a starting point.

2 Choose Custom from the Black Generation drop-down list. A dialog box appears.

3 Position the pointer on the curve and drag to adjust the black curve. The curves for cyan, magenta, and yellow are adjusted automatically according to the new black curve.

Related topics:

<u>About Black Generation</u>

Separation Tables

In the Separation Tables dialog box, specify whether the CMYK conversion is to be based on the Separation Setup or a loaded separation table.

You can also specify how Photoshop converts a CMYK image to an RGB image. If you originally used a table to convert the image, be sure to load that table and click the Use Table option (in the From CMYK section) to reconvert the image. To use the current settings in the Printing Inks Setup dialog box instead of the table, you must choose the Use Printing Inks Setup option in this dialog box.

You can save individual color tables and use them with other Adobe Photoshop documents. You might want to save different tables when you frequently print images using different printers, inks, or papers.

To save a color separation table:

1 Choose Preferences from the File menu and Separation Tables from the submenu. The Separation Tables dialog box appears.

2 Click Save. A dialog box appears so you can name the new color table.

Adobe Photoshop builds the color separation tables using the settings in the Separation Setup and Printing Inks Setup dialog boxes.

Once you have selected a separation table, the table overrides any options you might change in the Printing Inks Setup or Separation Setup dialog boxes. You must return to the Separation Tables dialog box and select the Use Separation Setup option (in the To CMYK section) to use the dialog box settings.

To load a saved color table:

1 Before converting the image to CMYK, choose Preferences from the File menu and Separation Tables from the submenu. The Separation Tables dialog box appears.

2 Click Load.

3 Select the table you want to use from the directory dialog box and click Open.

You return to the Separation Tables dialog box. The Use Table option is selected and the name of the table appears in the option.

4 Click OK to use the table in the CMYK conversion.

Related topics:

Separation Setup

Printing Inks Setup

Converting to CMYK

Tips on Color Separation

Bitmap Mode Conversions

Bitmapped images are made up of one bit of color (black or white) per <u>pixel</u>. Grayscale images, with up to 256 levels of gray, can be converted directly to Bitmapped mode.

To convert a color image to a bitmapped image, you must first convert it to a grayscale image. This removes the <u>hue</u> and <u>saturation</u> information from the pixels and leaves the <u>brightness</u> values.

To convert a grayscale image to a bitmapped image:

1 Open the grayscale image; then choose Bitmap from the Mode menu. The Bitmap dialog box appears.

2 Choose the units of measurement you want from the drop-down list.

3 Enter a value for the output <u>resolution</u> of the bitmapped image. By default, the current image resolution appears as both the input and the output resolution.

4 Select one of the five bitmapped conversion methods; then click OK.

The conversion options determine the quality of the new bitmapped image, ranging from a high-contrast, black-and-white image to a textured or <u>halftone</u> screen for output on non-PostScript printers.

50% Threshold option

The 50% Threshold option converts pixels with a gray value above the middle gray level (128) to white, and pixels below the middle gray level to black. The result is a high-contrast, black-and-white representation of the image.

Pattern Dither option

The Pattern Dither option converts an image by organizing the gray levels into geometric configurations of black-and-white dots.

Diffusion Dither option

The Diffusion Dither option uses an error-diffusion process to convert the image. The program starts at the pixel in the upper left corner of the image and evaluates its gray level value. If the value is above middle gray (128), the pixel is changed to white. If the value is below 128, the pixel is changed to black.

Halftone Screen option

The Halftone Screen option simulates the effect of printing a grayscale image through a halftone screen.

To specify the halftone screen for a bitmap image:

1 Choose Bitmap from the Mode menu. The Bitmap dialog box appears.

2 Click Halftone Screen; then click OK. The Halftone Screen dialog box appears.

3 Choose the units of measurement you want from the drop-down list.

4 Enter a value for the screen frequency. Values can range from 1 to 999 for lines per inch, and .400 to 400 for lines per centimeter. You can enter decimal values.

The screen frequency is the ruling of the halftone screen. The frequency depends on the paper stock and type of press used for printing. Newspapers commonly use an 85 line screen. Magazines use higher resolution screens, such as 133 and 150. Check with your print shop for the correct screen frequency to use.

5 Enter a value for the screen angle in degrees. Values can range from - 180 to +180.

The screen angle refers to the orientation of the screen. Continuous-tone and black-and-white halftone screens commonly use a 45-degree angle.

6 Choose the dot shape you want from the Shape drop-down list; then click OK.

You can save the halftone screen settings and reuse them with other documents using the Save and Load buttons in this dialog box.

Custom Pattern option

The Custom Pattern option in the Bitmap dialog box simulates the effect of printing a grayscale image through a custom halftone screen. This method allows you to apply a screen texture, such as a wood grain, to an image.

You can create a pattern that represents the texture you want, and then screen the grayscale image to apply the texture to the image. If you want the pattern to cover the entire image, create a pattern that is as large as the image; otherwise the pattern will be tiled. For example, if you apply a 1-by-1-inch pattern to an image that is 4 inches by 4 inches, the pattern appears as 16 squares.

The Adobe Photoshop software contains several self-tiling patterns that can be used as halftone screen patterns. For instructions on how to define a pattern, see Define Pattern Command.

Related topics:

Image Types

Making Grayscale Conversions

Making Color Conversions

Grayscale Mode Conversions

You can convert both bitmapped and color images to grayscale images.

Converting a bitmapped image to a grayscale image

A bitmapped image converted to a grayscale image consists of one gray level (black). Since few editing options are available in Bitmap mode, you might convert a bitmapped image to a grayscale image for editing, and then convert it back to a bitmapped image for export.

To convert a bitmapped image to a grayscale image:

1 Choose Grayscale from the Mode menu. The Grayscale dialog box appears.

2 Enter a value for the size ratio.

The size ratio is the factor by which you want to scale down the size of the image. For example, to reduce the size of the grayscale image by 50 percent, enter 2 for the size ratio. If a number greater than 1 is entered, multiple pixels in the bitmapped image are averaged to produce a single pixel in the grayscale image. This allows you to create a grayscale image from an image scanned on a 1-bit scanner.

Converting a color image to a grayscale image

When Adobe Photoshop converts a color image to grayscale, it discards all color information in the original image. When you convert from an RGB, CMYK, Lab, or Multichannel image, the gray levels of the converted pixels represent the luminosity of the pixels.

Related topics:

Image Types

Making Bitmap Conversions

Making Color Conversions

Creating Duotones

Adobe Photoshop allows you to create monotones, duotones, tritones, and quadtones. Monotones are grayscale images printed with a single, nonblack ink. Duotones, tritones, and quadtones are grayscale images printed with two, three, and four inks, respectively. In these types of images, different colored inks are used to reproduce different levels of gray, rather than to reproduce different colors. The following discussion uses the term duotone generically to refer to duotones, monotones, tritones, and quadtones. See Chapter 11 of the *Adobe Photoshop User Guide* for more information on duotones.

Converting grayscale images to duotones

Only grayscale images can be converted to duotone images. To use color images as duotones, first convert the image to a grayscale image using the Grayscale command in the Mode menu.

To convert a grayscale image to a duotone image:

1 Choose Duotone from the Mode menu. The Duotone Options dialog box appears.

2 Specify the type of image, the ink colors, the duotone curves, and the overprint colors for the duotone image. Duotone curves and overprint colors are described under their own topic headings.

Choosing the image type

Use the Type drop-down list to specify whether you are working with a monotone, duotone, tritone, or quadtone. This option determines how many ink controls are active.

Specifying the ink colors

To specify an ink color, click the color swatch (the solid square) for that ink. Use the color picker or the Custom Colors dialog box to select the ink you want. When you close the dialog box, the ink color appears in the color swatch, and the color name appears in the text box.

IMPORTANT: Since the PANTONE colors in the Adobe Photoshop custom color picker represent the most recent specifications from PANTONE, Inc., some ink names may be slightly different from those available in programs that use older PANTONE specifications. When you're using PANTONE colors in documents that you plan on exporting to other applications, such as Adobe Illustrator, PageMaker, or QuarkXPress, make sure that the Short PANTONE Names option is selected in the General Preferences dialog box. This ensures that the PANTONE color names will match the naming convention used in the other applications.

If the ink is to be separated on a process color plate, name it cyan, magenta, yellow, or black.

Printing and Exporting Duotones

See Chapter 11 of the *Adobe Photoshop User Guide* for information on printing and exporting duotones.

Related topics:

Adjusting Duotone Curves

Specifying the Overprint Colors

Using the Color Picker

Image Types

Duotone Curves

The duotone curves specify how each ink is distributed across the shadow and highlight areas of the image. This curve maps each grayscale value on the original image to the actual ink percentage that will be used when the image is printed. You specify a duotone curve for each ink used to print a duotone, tritone, or quadtone image.

To modify the duotone curve for a given ink:

1 Click the curve box next to the ink. The Duotone Curve dialog box appears.

The default duotone curve is a straight diagonal line across the grid, which indicates that you are mapping the current grayscale value of every pixel to the same percentage value of the printing ink. At this setting, a 50-percent midtone pixel will be printed with a 50-percent dot of the ink, a 100-percent shadow with a 100-percent dot of the ink, and so on.

2 Adjust the duotone curve for each ink.

You can adjust the duotone curve by clicking a point on the graph and dragging, or by entering values for the different ink percentages.

The x-axis of the curve graph moves from highlights (at the bottom) to shadows (at the top). The density of the ink increases along the y-axis. You can specify up to 13 points on the curve. When you specify two values along the curve, Adobe Photoshop calculates the intermediate values. As you adjust the curve, the values are automatically entered in the percentage text boxes. See Adjusting Curves for additional information.

A value you type in a text box indicates the percentage of the ink color that will be used to print that percentage of the image. For example, if you enter 70 in the 100-percent text box, a 70-percent dot of that ink color will be used to print the 100-percent shadow areas of the image.

Use the Save button in the Duotone Curve dialog box to save curves created with this dialog box. Use the Load button to load these curves or curves created in the Curves dialog box (including curves created using the Arbitrary Map option). Refer to Chapter 11 of the *Adobe Photoshop User Guide* for examples of duotones using the default curves supplied with the program.

You can use the Info palette to display the ink percentages when you're working with duotone images. Set the readout mode to Actual Color to see the ink percentages that will be applied when the image is printed. These values reflect any changes you've entered in the Duotone Curve dialog box.

Related topics:

Converting to Duotone Mode

Specifying the Overprint Colors

Image Types

Duotone Overprint Colors

Overprints are two unscreened inks printed on top of each other. For example, when a cyan ink prints over a yellow ink, the resulting overprint is a green color. The order in which inks are printed, as well as variations in the ink and paper, can have a significant effect on the final results. See Chapter 11 of the *Adobe Photoshop User Guide* for more information on printing duotones.

You can indicate how you want the overprint colors to be displayed on-screen. If possible, run a test using a printed sample of the overprinted inks to adjust your screen display. Note that this adjustment affects only how the overprint colors appear on the screen; it does not affect how the final image is printed.

To adjust the display of overprint colors:

1 Choose Duotone from the Mode menu to display the Duotone Options dialog box.

2 Click the Overprint Colors button. The Overprint Colors dialog box appears.

The Overprint Colors dialog box displays the combinations that will result when the inks are printed.

3 Click the color swatch of the ink combination you want to adjust. The color picker appears.

4 Select the color you want in the color picker; then click OK.

5 Repeat steps 3 and 4 until the overprint inks appear as you want them; then click OK in the Overprint Colors dialog box.

Saving and loading duotone settings

Use the Save and Load buttons in the Duotone Options dialog box to save the set of duotone curves, ink settings, and overprint colors. You can then apply these settings to other grayscale images.

In addition, the Adobe Photoshop software includes several sample sets of duotone, tritone, and quadtone curves. These sets provide some of the more commonly used curves and colors, and can be used as a starting point for creating your own combinations.

Viewing the individual printing plates

Because duotones are single-channel images, your adjustments to individual printing inks are displayed as part of the final, composite image. In some cases, you might want to view the individual printing plates to see how the individual colors will separate when printed (as you can with CMYK images).

To view the individual colors of a duotone image:

1 After specifying your ink colors, choose Multichannel from the Mode menu.

The image is converted to a multichannel image, with each channel representing a printing ink. Channel 1 represents the first ink specified in the Duotone Options dialog box, channel 2 represents the second ink color, and so on.

Do not save the image under the same file name; this conversion is for viewing only. You will be reconverting the image to Duotone mode before saving it.

2 Select the channel you want to examine in the Channels palette.

3 Choose Undo Mode Change from the Edit menu to revert to Duotone mode.

NOTE: Using the Curves command in Multichannel mode to create duotone curves does not produce the desired results. If you want to adjust the distribution of ink and view its effect on the individual printing plates, make the adjustments in the Duotone Curves dialog box before converting to Multichannel mode.

Related topics:

Indexed Color Conversion

An RGB image can be converted to indexed color mode to edit the image's color table or to export the image to an application that supports only 8-bit color. This is useful, for example, for multimedia animation applications.

When you convert an RGB image to an indexed color image, a color table is built for the indexed color image. The color table stores the colors used in the document and holds the maximum number of colors that can be displayed at once. While an RGB image can contain millions of colors, an indexed color image can directly reference only 256 colors. If the RGB color is not present in the color table, the program matches the requested color to the closest color in the color table or simulates the requested color using the available colors.

To convert an RGB image to an indexed color image:

1 Choose Indexed Color from the Mode menu. The Indexed Color dialog box appears.

2 Select the resolution, palette, and dither method for the conversion. These options are described in the following sections.

Specifying the resolution

You can specify the bit resolution, or the number of bits of color information per pixel, for the indexed color image. The resolution you choose determines the number of colors that can be displayed at one time. For example, if you select 4 bits per pixel, 16 colors can be displayed at a time; if you select 8 bits per pixel, 256 colors can be displayed at one time. In addition, you can click Other to specify the exact number of colors to be displayed (up to 256). The Other option is useful for applications such as silkscreening in which only a specific number of inks are used.

Specifying a color table (palette) option

Five palette types are available for the indexed color image. Use the Color Table command in the Mode menu to view the results of each color table option:

☐ The Exact palette option is available only if 256 or fewer colors are used in the RGB image. When you select the Exact option, Adobe Photoshop uses the exact same colors for the color table that appear in the RGB image. Since all the colors in the image are present in the document's color table, there is no dithering.

☐ The System palette option uses the system's default 8-bit color table. This color table is based on a uniform sampling of RGB colors. This option is labeled Uniform if the resolution is set to lower than 8 bits per pixel. With this option, you specify a dithering option.

☐ The Adaptive palette option creates a color table by sampling colors from the more commonly used areas of the color spectrum that appears in the image. For example, if you have an RGB image that has only the colors green and blue, the resulting color table is made up of primarily green and blue colors. Because the colors in most images are concentrated in particular areas of the spectrum, this table can be very useful. With this option, you also specify a dithering option.

To more precisely control how the Adaptive color table is built, select a part of the image that contains the colors that you want to use in the table before you make the conversion. When you have an active selection in the image, Adobe Photoshop weighs the conversion toward the colors in the selection.

☐ The Custom palette option lets you create your own color table. When you select this option, the program displays the Color Table dialog box. You can then edit the color table and save it for later use, or use the Load button to load a previously created color table.

☐ The Previous palette option is only available once you have converted an image using the Custom or Adaptive option. Selecting the Previous palette option converts the image using the custom palette used in the previous conversion. This option makes it easy to convert a number of images using the same custom palette.

Specifying dithering options

Unless you're using the Exact color table option, the color table might not contain all the colors used in the image. To simulate colors not in the color table, you can choose to <u>dither</u> the colors. Dithering mixes the pixels of the available colors to simulate the missing colors. There are three dithering options:

☐ The None dithering option does not dither colors. Instead, the color closest to the missing color is used. This tends to result in sharp transitions between shades of color in the image.

☐ The Pattern dithering option (available only when you're using the System palette) adds random pixels in patterns to simulate the colors that are not in the color table.

☐ The Diffusion dithering option uses a less structured method than the Pattern option to dither colors.

Manipulating the color table

When you convert an RGB image to an indexed color image, or if you are working in an original indexed color image, you might want to change one or more colors in the table. You can also choose to structure a color table according to a predefined color table. Each indexed color image has its own color table, and the tables can be saved and reused with other indexed color images.

Related topics:

<u>Editing the Indexed Color Table</u>

<u>Image Types</u>

<u>About Resolution</u>

RGB Color Conversion

Choose RGB in the Mode menu to convert the image to RGB mode.

When converting a grayscale image to RGB, the color values for each <u>pixel</u> are assigned that pixel's previous gray value. For example, a pixel that had a gray value of 231 is converted to a pixel having a red value of 231, a green value of 231, and a blue value of 231.

Related topics:

<u>Image Types</u>

<u>Working with RGB, CMYK, and Lab Images</u>

LAB Color Conversion

You can convert RGB and indexed color images to Lab color by choosing Lab from the Mode menu. You might want to use Lab mode to adjust the lightness or <u>brightness</u> of the image, without changing the <u>hue</u> or <u>saturation</u> (for example, to create smoother blends). Once you have adjusted the image, you can convert it back to an RGB or CMYK image to perform other color corrections or to print the image using process colors. Converting between Lab and other image types does not alter the original color values.

When you convert an image to a Lab color image, the image is split into three <u>channels</u>: lightness, "a" (green to magenta), and "b" (blue to yellow).

Since Lab color is device-independent, it is the recommended image type for transferring images to other systems or for printing to a PostScript Level 2 printer.

Related topics:

<u>Image Types</u>

<u>Working with RGB, CMYK, and Lab Images</u>

CMYK Color Conversion

Images can be converted to CMYK by choosing CMYK from the Mode menu.

To print a color separation, you convert an RGB, indexed color, or Lab image to a CMYK image. (You do not have to convert a Lab image if you're printing to a PostScript Level 2 color printer because this type of printer interprets and prints Lab images.)

The conversion splits the RGB or Lab colors into the four colors commonly used for printing color separations: cyan, magenta, yellow, and black. Be sure to save a copy of your RGB or indexed color image under a different file name from that of the CMYK file in case you want to reconvert the image.

When you convert an RGB image to CMYK, Adobe Photoshop uses its color separation utilities to perform the conversion. In the first step of this process, Adobe Photoshop converts the RGB values to Lab values and builds a color table. It then uses these Lab values to determine the appropriate CMYK equivalents. During the conversion, the correct CMYK values for each Lab pixel are calculated by referencing the key values in the color table.

Color separation tables can be saved and loaded for use with other Adobe Photoshop documents. You might want to save different tables when you frequently print images using different printers, inks, or papers.

Related topics:

CMYK Separation Setup

Image Types

Working with RGB, CMYK, and Lab Images

Saving and Loading Color Separation Tables

Tips on Color Separation

Multichannel Conversion

You can convert any image composed of more than one <u>channel</u> to a Multichannel image by choosing Multichannel from the Mode menu. When you convert to a Multichannel image, the original channels, with names such as Red, Cyan, Lightness, and so on, are assigned numbers. The channels in a Multichannel image are grayscale channels.

In the case of a color image, the individual color channels are converted to grayscale information that reflects the color values of the pixels in each channel. If you delete a channel from an RGB, CMYK, or Lab image, the image is automatically converted to Multichannel mode.

Related topics:

<u>Image Types</u>

Color Table Command

Used to change one or more colors in the color table of an <u>indexed color</u> image.

There are two types of indexed color images: ones that have a limited number of colors (fewer than 256) and pseudo-color images (grayscale images that display variations in gray levels with color, rather than shades of gray). Pseudo-color images are often used in scientific and medical applications. The color table editing features discussed below are most useful with pseudo-color indexed color images. These features can also be used to produce special effects with indexed color images that have a limited number of colors.

NOTE: If you just want to change the colors in an image, choose Map or Adjust from the Image menu, and use the color correction commands in the submenus.

To edit colors in the color table:

1 Open the indexed color image.

2 Choose Color Table from the Mode menu. The Color Table dialog box appears.

3 Click or drag in the table to choose the color or range of colors you want to change. The Color Picker dialog box appears.

4 Use the controls in the color picker to select the color you want; then click OK.

If you are changing a range of colors, Adobe Photoshop creates a gradient in the color table between the starting and ending colors. The first color you choose in the color picker is the beginning color for the range. When you click OK, the color picker reappears so you can choose the last color in the range.

5 Click OK in the color picker to return to the Color Table dialog box, and continue modifying the colors.

6 When you have finished editing colors in the table, click OK.

The colors in the image that reference the colors you've edited are changed to the new colors.

Structuring the color table

The indexed color table can be structured according to one of five predefined color tables. The color table then displays a uniform transition of colors based on this predefined table. You choose a predefined color table from the Table drop-down list:

☐ The Custom table option is used whenever the table is not one of Adobe Photoshop's built-in color tables.

☐ The Black Body option displays a transition of colors based on the different colors a blackbody radiator emits as it is heated: from black to red, orange, yellow, and white.

☐ The Grayscale option displays a smooth transition from black to white in 256 levels of gray.

☐ The Spectrum option displays a smooth transition between the colors that result when white light passes through a prism: violet, blue, green, yellow, orange, and red.

☐ The System option displays the standard Windows 256-color System palette.

Saving and loading a color table

You use the Save and Load buttons in the Color Table dialog box to save your indexed color tables for use with other Adobe Photoshop documents. Once you load a color table into a document, the colors in the document are changed to reflect the color positions they reference in the new color table.

NOTE: You can also load saved color tables into the Colors palette.

Related topics:

Map Menu

The Map submenu under the Image menu contains commands for remapping the color values of the pixels in the image.

Invert	Creates a negative of an image.
Equalize	Redistributes the brightness values of the pixels in an image so that they more evenly represent the entire range of brightness levels.
Threshold	Converts grayscale or color images to high-contrast black-and-white images.
Posterize	Lets you specify the number of gray levels for an image.

Invert

The Invert command creates a negative of an image. You might use this command to turn a positive into a negative, or to create a positive image from a scanned negative.

When you invert an image, the brightness value of each pixel in the image is converted to the inverse value on the 256-step color values scale. For example, a pixel in a positive image with a value of 255 is changed to 0, and a pixel with a value of 5 is changed to 250.

To invert an image:

Choose Map from the Image menu and Invert from the submenu.

Equalize

The Equalize command redistributes the <u>brightness</u> values of the <u>pixels</u> in an image so that they more evenly represent the entire range of brightness levels. When you choose this command, Adobe Photoshop finds the brightest and darkest values in the image, and averages all the brightness values so that the darkest value represents black (or as close to it as possible) and the brightest value represents white. This usually increases the contrast and balance in an image, since it redistributes pixels from the middle brightness levels into the high and low brightness levels.

You might use this command when a scanned image appears darker than the original and you want to balance the values to produce a lighter image. Using the Equalize command in conjunction with the Histogram command allows you to see before and after brightness comparisons.

To equalize the brightness values of pixels:

1 Choose Map from the Image menu and Equalize from the submenu.

If you have an area of the image selected, the Equalize dialog box appears.

☐ Click Selected Area Only to equalize only the pixels in the selection.

☐ Click Entire Image Based on Area to equalize the pixels in the entire image based on the pixels in the selected area.

2 Click OK to equalize the image or the selection.

Related topics:

<u>Using the Histogram</u>

Threshold

Use the Threshold command to convert grayscale or color images to high-contrast black-and-white images. This command allows you to specify a certain level as a threshold. All <u>pixels</u> lighter than the threshold are converted to white. All pixels darker than the threshold are converted to black.

To use the Threshold command:

1 Choose Map from the Image menu and Threshold from the submenu.

The Threshold dialog box appears, displaying a <u>histogram</u> of the luminance levels of the pixels in the current selection.

2 Drag the slider below the histogram until the threshold level you want appears at the top of the dialog box. As you drag, the image changes to reflect the new threshold setting.

3 When you have finished making adjustments, click OK.

Related topics:

<u>Using the Levels Dialog Box</u>

Posterize

The Posterize command lets you specify the number of gray levels (or brightness values) for an image and then maps pixels to the level that is the closest match. This is useful for creating special effects, such as large, flat areas in a photograph. The effects of this command are most evident when you reduce the number of gray levels in a grayscale image; however, you can also use this command to produce some interesting effects in color images.

To specify the number of levels in an image:

1 Choose Map from the Image menu and Posterize from the submenu. The Posterize dialog box appears.

2 Enter the number of levels you want; then click OK.

Related topics:

Using the Levels Dialog Box

Adjust Menu

The Adjust submenu of the Image menu contains commands for performing color corrections.

Levels	Adjusts brightness, contrast, and gamma using a histogram and slider controls.
Curves	Adjusts brightness, contrast, and gamma using curves.
Brightness/Contrast	Adjusts brightness and contrast using slider controls.
Color Balance	Changes the mixture of colors in a color image.
Hue/Saturation	Adjusts the hue and saturation of color images.
Variations	Allows you to visually adjust the color balance, contrast, and saturation of an image or selection.

Levels

The Levels command allows you to adjust the <u>brightness</u> and <u>contrast</u> in an image. It also lets you adjust the <u>gamma</u> in the image. Adjusting the gamma lets you change the brightness values of the middle range of gray tones without dramatically changing the shadows (very dark <u>pixels</u>) and highlights (very light pixels).

The Levels dialog box also lets you define the white (highlight) and black (shadow) points in an image.

Adjusting contrast with the Levels dialog box:

1 Choose Adjust from the Image menu and Levels from the submenu. The Levels dialog box appears.

This dialog box displays a <u>histogram</u> of the image.

2 Choose the <u>channel</u> you want to adjust from the Channel drop-down list.

3 Adjust the contrast:

☐ Use the slider controls directly below the histogram (Input Levels) to increase the contrast in the image. The black triangle controls the shadows, the gray triangle controls the gamma, and the white triangle controls the highlights. You can also enter the values directly into the Input Levels text boxes.

☐ Use the slider controls at the bottom of the Levels dialog box (Output Levels) to reduce the contrast in the image.

Refer to the *Adobe Photoshop User Guide* and *Adobe Photoshop Tutorial* for more instruction on using the Levels dialog box.

Defining the black and white points

You can indicate the pixels in an image that you want to represent the darkest and brightest points (or the end points of the color value scale). Setting the black point and the white point redistributes the pixels in the image and ensures a good tonal balance.

To set the black and white points automatically:

Click the Auto button in the Levels dialog box.
The Auto button corrects the color automatically by defining the lightest and darkest pixels in each channel as white and black, and then adjusts the colors in between.

To set the white or black point manually:

1 Click the white or black eyedropper button.

2 Click the point in the image you want to define as black or white.

The pixel at that point becomes the upper or lower point in the color value scale. The other pixels in the image are redistributed to reflect the adjustment. Prior to setting the points, use the Info palette to see the before and after values so you can gauge how much clipping will take place.

To choose a black or white from the color picker, double-click the black or white eyedropper button and choose a color. You can, for example, define a white point that is not quite a pure white to maintain some tint in the highlights.

Setting a neutral tone

You can set a neutral gray value for an image using the Levels dialog box. This is a quick way to remove a color cast from an image. The overall gamma of the image is not changed.

To set a neutral gray:

1   Click the gray eyedropper button in the Levels dialog box.

2   Click the point in the image you want to define as neutral gray.

This shifts the hue and saturation of the pixel toward neutral gray while keeping the same luminosity.

To choose a neutral gray from the color picker, double-click the gray eyedropper button and choose a color.

Previewing color corrections

When you select the Preview option in the lower right corner of the dialog box, you turn off the color table animation; only the selected area is shown with the color correction.

Saving and reusing color corrections

You can save and reuse the color corrections you make to input and output levels, and to black and white points, using the Save and Load buttons in the Levels dialog box.

Related topics:

Setting the Auto Range Options

Using Curves for Color Correction

Adjusting Hue and Saturation

Reading Color and Brightness Information on the Image

Previewing Color Corrections

Tips on Color Correction

Auto Range Options

By default, the Auto feature clips the white and black values by 0.5 percent. This ensures that the program bases its white and black values on more than a single value in the image.

To change the amount that the white and black values are clipped:

1 Alt-click the Auto button. The Auto Range Options dialog box appears.

2 Enter the values you want in the dialog box; then click OK.

Related topics:

Using the Levels Dialog Box

Curves

Like the Levels dialog box, the Curves dialog box lets you adjust the brightness, contrast, and gamma of an image. However, instead of making the adjustments using just three variables (highlights, shadows, and gamma), you can adjust any point along the gray level scale.

To use the Curves dialog box:

1 Choose Adjust from the Image menu and Curves from the submenu. The Curves dialog box appears.

The x-axis of the graph represents the original brightness values of the pixels, from 0 to 255 (input levels); the y-axis represents the new brightness values (output levels). Each tick mark represents approximately 64 steps on the scale. The diagonal line that appears by default shows the current relationship; every pixel has the same input and output value.

The grayscale moves from black on the left (0) to white on the right (255). To reverse the direction of the grayscale and display the values in percentages, click the arrows in the bar under the graph.

2 Click a pixel in the image to find its brightness value on the graph.

A circle appears to mark the pixel's position on the graph, and the output and input values are displayed at the bottom of the dialog box.

3 Define the black and white points for the image using one of the following methods:

☐   Use the white and black eyedropper buttons to set the white and black points.
€   Drag the end points of the graph until the values are as you want them.
Note that when you click any point on the curve, a control point appears to mark your position. To remove a control point, drag it off the graph.

4 Define the midpoint pixels using the gray eyedropper, or manually adjust the midpoint pixels and then the quarter tones. Continue adjusting until the colors are as you want them; then click OK.

Refer to Chapter 12 of the *Adobe Photoshop User Guide* for examples of using curves.

Setting the black and white points automatically

Auto

You can use the Auto button in the Curves dialog box to adjust the tonal range automatically by setting black and white points. This button functions exactly like the Auto button in the Levels dialog box.

Using the Arbitrary Map option

The Arbitrary map option allows you to draw the curve precisely in the Curves dialog box.

Pencil

1 Click the pencil icon at the bottom of the Curves dialog box.

2 Adjust the gamma curve using the pencil pointer.

The pencil pointer appears automatically when you move into the graph. To constrain the curve to a straight line, hold down the Shift key and click to define the end points of the curve.

3 Click the Smooth button to smooth the curve you've drawn.

Previewing color corrections

When you select the Preview option in the lower right corner of the dialog box, you turn off the color

table animation; only the selected area is shown with the color correction.

Saving and reusing curves

Use the Save and Load buttons in the Curves dialog box to save curves and use them with other Adobe Photoshop documents.

Related topics:

[Setting the Auto Range Options](#)

[Using the Levels Dialog Box](#)

[Adjusting Hue and Saturation](#)

[Previewing Color Corrections](#)

[Reading Color and Brightness Information on the Image](#)

[Tips on Color Correction](#)

Brightness/Contrast

Lets you to adjust the <u>brightness</u> and <u>contrast</u> of an image.

To use the Brightness/Contrast dialog box:

1 Choose Adjust from the Image menu and Brightness/Contrast from the submenu. The Brightness/Contrast dialog box appears.

2 Drag the sliders to adjust the brightness and contrast.

Drag to the left to decrease the level; drag to the right to increase it. The number at the right of each slider value displays the brightness or contrast value. Values can range from +/ 100.

3 When you've finished making adjustments, click OK.

Previewing color corrections

When you select the Preview option in the lower right corner of the dialog box, you turn off the <u>color table animation</u>; only the selected area is shown with the color correction.

Related topics:

<u>Using the Levels Dialog Box</u>

<u>Using the Curves Dialog Box</u>

<u>Adjusting Hue and Saturation</u>

<u>Reading Color and Brightness Information on the Image</u>

<u>Previewing Color Corrections</u>

<u>Tips on Color Correction</u>

Color Balance Command

The Color Balance command allows you to change the mixture of colors in a color image. Use this command to delete unwanted colors from an image or to enhance a dull or muted color. You can focus the color balance changes on the shadows, midtones, or highlights.

To adjust the levels of a particular color in an image:

1 Choose Adjust from the Image menu and Color Balance from the submenu. The Color Balance dialog box appears.

2 Click Shadows, Midtones, or Highlights to select the part of the selection on which you want to focus the changes.

3 Drag a triangle toward a color if you want to make it more prominent in the image; drag away from the color if you want to reduce the level of that color.

The values at the top of the Color Balance dialog box show the color changes for the red, green, and blue <u>channels</u>, respectively. (For Lab images the values are for the a and b channels). Values can range from +/100.

Previewing color corrections

When you select the Preview option in the lower right corner of the dialog box, you turn off the <u>color table animation</u>; only the selected area is shown with the color correction.

Related topics:

<u>Adjusting Brightness, Contrast, and Gamma</u>

<u>Adjusting Hue and Saturation</u>

<u>Reading Color and Brightness Information on the Image</u>

<u>Previewing Color Corrections</u>

<u>Tips on Color Correction</u>

Hue/Saturation

The Hue/Saturation command lets you adjust the hue and saturation of color images.

Using this command, you can change the overall color of the image or of objects in the image. The Colorize option in the Hue/Saturation dialog box lets you adjust the hue and saturation to a fixed level.

To use the Hue/Saturation dialog box:

1 Choose Adjust from the Image menu and Hue/Saturation from the submenu. The Hue/Saturation dialog box appears.

Along the left side of the dialog box are six color swatches of the additive and subtractive colors in the order in which they appear on the color wheel: red, yellow, green, cyan, blue, and magenta. Lab images have four swatches: yellow, green, blue, and magenta.

The Sample swatch at the bottom of the dialog box shows the current foreground color. To see how the changes you make will affect a specific color in the image, use the eyedropper to sample the color.

2 Click the button next to the color to adjust it, or click Master to adjust all the colors at once.

The color swatches (including the Sample swatch) change as you make color adjustments.

3 Drag the Hue slider until the colors appear the way you want them. You can also type a value into the Hue text box.

When you change the hue, the effect is analogous to selecting a color from a color wheel. The values displayed in the text box reflect the number of degrees of rotation around the wheel from the color of the original pixel: a positive value indicates a clockwise rotation; a negative value indicates a counterclockwise rotation. Notice that when you select an individual color channel in the Hue/Saturation dialog box, the letters on either side of the Hue slider change to represent the adjacent colors on the color wheel.

4 Drag the Saturation triangle to the right to increase the saturation; drag to the left to decrease the saturation.

This shifts the color away from or toward the center of the color wheel. Saturation values can range from +/100.

Remember that the change is relative to the beginning color values of the selected pixels. By adjusting the saturation, you can create pastel tones from brightly saturated colors.

5 Drag the Lightness slider to the right to increase the lightness; drag to the left to decrease the lightness. Values can range from +/100.

Saving and loading Hue/Saturation settings

Use the Save and Load buttons in the Hue/Saturation dialog box to save your color correction settings and use them with other Adobe Photoshop documents.

Using the Hue/Saturation command for selective color correction

The Hue/Saturation dialog box provides a method for performing selective color correction. To remove cyan from green, for example, select the green radio button and shift the Hue slider away from cyan, toward yellow. (Note that green lies between cyan and yellow on the color wheel.) To shift a color toward or away from an opposite color on the color wheel, change the saturation. For example, to add magenta to green (note that magenta lies opposite green on the color wheel), decrease the saturation. To add black to any color, increase the lightness; to subtract black, decrease the lightness.

Using the Colorize option

The Colorize option in the Hue/Saturation dialog box allows you to tint an image or part of an image to

a specified solid shade. This process differs from the standard operation in which the hue and saturation changes are based on the existing values of the pixels.

When the Colorize option is active, red is treated as the 0 degree on the color wheel, and the rotation value you specify using the hue slider is measured from that point of origin. For example, if you drag the hue triangle until 90 degrees is displayed, the image takes on a purple cast, because this is the color located 90 degrees in the clockwise direction from red.

> NOTE: Because the Colorize option preserves the lightness value of each pixel, pure black and pure white are not colored, while the middle gray pixels are colored completely. If you want to color the black and white pixels, you must first adjust the lightness slider.

To use the Colorize option:

1 Choose Adjust from the Image menu and Hue/Saturation from the submenu. The Hue/Saturation dialog box appears.

2 Click Colorize. The image appears as red, the starting point for the hue adjustment.

3 Use the Hue slider to select the new color.

4 Use the Saturation and Lightness sliders to adjust the saturation and lightness of the pixels; then click OK.

Previewing color corrections

When you select the Preview option in the lower right corner of the dialog box, you turn off the color table animation; only the selected area is shown with the color correction.

Related topics:

Adjusting Brightness, Contrast, and Gamma

Reading Color and Brightness Information on the Image

Previewing Color Corrections

Tips on Color Correction

Variations

The Variations plug-in allows you to visually adjust the color balance, contrast, and saturation of an image or selection. You can use this command to focus the color correction on the dark areas, the middle tones, or the light areas of the image. You can also correct the saturation of the colors.

> NOTE: If the Variations command does not appear in the Adjust submenu, the Variations plug-in module has not been installed. See Adobe Photoshop Getting Started for information about installing plug-in modules.

To use Variations:

1 Choose Adjust from the Image menu and Variations from the submenu. The Variations dialog box appears.

The two thumbnails at the top of the dialog box show the original selection (Original) and the selection with its currently selected adjustments (Current Pick). When you first open the dialog box, these two images are the same. As you make adjustments, the Current Pick image changes to reflect your choices.

2 Select Shadows, Midtones, or Highlights to adjust the dark, middle, and light areas of the selection, respectively.

3 Deselect the Show Clipping option if you do not want to see a neon preview of the areas in the image that will be clipped -- that is, converted to pure white or pure black when the adjustment is applied. Clipping does not occur when you are adjusting midtones.

4 Use the Finer or Coarser slider to make the incremental changes smaller or larger, respectively. Moving the slider one tick mark to the right or left doubles the increment.

5 Click the thumbnails in the lower left rectangle to adjust the color balance of the image.

The thumbnails are arranged according to their positions on the color wheel. You can add or subtract green, yellow, cyan, red, blue, or magenta to the image using one of the following techniques:

€ To add a color to the image, click the appropriate color thumbnail.

€ To subtract a color, click its opposite, located in the opposite position on the color wheel.

Since you are adjusting color balance, each time you click a thumbnail, all of the thumbnails change. Repeatedly clicking a thumbnail incrementally adjusts the image. The center thumbnail always reflects the current choices.

6 To return to the original image, either click the Original thumbnail, or hold down the Alt key to change the Cancel button to Reset, and click Reset to close the dialog box.

7 Click the thumbnails in the lower right rectangle to adjust the contrast. You can make the image lighter or darker.

8 Select Saturation to change the degree of hue in the image. You can choose to decrease or increase the saturation. If the Show Clipping option is selected and the image shows clipping after the adjustment, you have exceeded the maximum saturation for the color.

9 To save the adjustments, click Save and name the settings file with the extension **.**PSV.

10 To load adjustments you have saved as a file, click Load, locate the settings file, and click OK. The settings appear in the Variations dialog box.

See Lesson 2 in the Adobe Photoshop Tutorial for more information about using the Variations command.

Related topics:

Adjusting Brightness, Contrast, and Gamma

Calculate Submenu

Contains commands for performing operations on the <u>channels</u> in an image.

<u>Add</u>

<u>Blend</u>

<u>Composite</u>

<u>Constant</u>

<u>Darker</u>

<u>Difference</u>

<u>Duplicate</u>

<u>Lighter</u>

<u>Multiply</u>

<u>Screen</u>

<u>Subtract</u>

Related topics:

<u>Using Channel Calculation Commands</u>

Add/Subtract Calculation

The Add and Subtract commands in the Calculate submenu add and subtract the brightness values of the corresponding pixels, and then divide the result by the Scale value and add the Offset value to this result.

The Scale factor may be any number between 1.000 and 2.000. For example, if you wanted to find the average of the pixels in two channels, you would add them, divide by 2, and enter no Offset value. The Offset value lets you lighten or darken the pixels in the destination channel by any brightness value between +/- 255. Note that if the result of the operation is a negative value, a pixel with a brightness value of 0 (a black pixel) is placed in the destination channel.

To use the Add or Subtract calculation:

1 Choose Add or Subtract from the Calculate submenu.

A dialog box appears.

2 For Source 1, select the document and channel you want to use from the drop-down lists. Enter a value for the weight.

3 For Source 2, select the document and channel you want to use from the drop-down lists.

4 For the Destination, choose the document in which you want to store the results of the calculation; then select the destination channel from the Channel list. Enter values for scale and offset.

5 Click OK to perform the calculation.

Related topics:

Using Channel Calculation Commands

Blend Calculation

The Blend command in the Calculate submenu is similar to the Add command; both commands add the <u>brightness</u> values of the corresponding pixels in two <u>channels</u>. In addition, the Blend command allows you to assign a weight to the brightness values of the pixels in the source channels.

The weight is a percentage. The higher the percentage you specify for the source, the more influential the brightness values of the pixels in the Source 1 channel will be in the result. The default source value is 50 percent.

To use the Blend calculation:

1 Choose Blend from the Calculate submenu.

The Blend dialog box appears.

2 For Source 1, select the document and channel you want to use from the drop-down lists. Enter a value for the weight.

3 For Source 2, select the document and channel you want to use from the drop-down lists.

4 For the Destination, choose the document in which you want to store the results of the calculation; then select the destination channel from the Channel list. By default, the results of a channel calculation are stored in a new channel in a new document.

5 Click OK to perform the calculation.

Related topics:

<u>Using Channel Calculation Commands</u>

Composite Calculation

The Composite command in the Calculate submenu allows you to create a composite image by applying a mask to the foreground <u>channel</u> and then placing the foreground and background in a destination channel. You can create a mask in a channel to exclude the parts of the foreground you do not want to have appear in the composite image. Then, when you use the Composite command and include the mask channel in the calculation, the foreground, without the masked portions, will appear in front of the background in the destination channel.

The Composite command is similar to the Blend command, in that it allows you to assign a weight to the pixels in the source channels. Instead of using a constant percentage value to weight the <u>brightness</u> values of the pixels in the two channels, however, you use the mask channel to control the calculations. You can use any channel as the mask channel.

Note that the varying brightness values in the mask channel determine whether the pixels in the foreground or the pixels in the background channel are more influential in the calculation. The lighter areas in the mask channel make the foreground pixels more influential in the equation; the darker areas in the mask channel have the opposite effect.

Related topics:

<u>Using Channel Calculation Commands</u>

Constant Calculation

The Constant command in the Calculate submenu allows you to assign a gray level to a <u>channel</u>. You specify a gray level from 0 to 255, and specify the channel that will contain the gray (the destination channel). Use this command to quickly fill an entire channel with a specific gray level.

Related topics:

<u>Using Channel Calculation Commands</u>

Duplicate Calculation

The Duplicate command in the Calculate submenu allows you to create a copy of a <u>channel</u> and place the copy into another channel. This command is useful for transferring a channel to another channel for editing, and for adding a channel from one document to another document to be used as a mask. The mask can then be loaded into the document, using the Load Selection command in the Select menu.

To copy a selection to a specified channel:

1 Select the part of the image you want to use.

2 Choose Duplicate from the Calculate submenu.

3 In the dialog box, choose the document from the source Document drop-down list.

4 Choose the Selection option from the source Channel drop-down list.

5 Choose the destination document and channel; then click OK.

To copy a channel into another channel to be used as a mask, choose the Selection option from the destination Channel drop-down list.

Click Invert to invert the pixels in the duplicate channel before they are placed in the destination channel.

Related topics:

<u>Using Channel Calculation Commands</u>

Lighter/Darker Calculation

You can compare the <u>brightness</u> values of the corresponding pixels in two <u>channels</u> and automatically place a copy of the lighter or darker pixels into a destination channel. The Lighter command in the Calculate submenu selects the lighter pixels; the Darker command selects the darker pixels. These commands are useful for creating special effects.

The method for implementing the Lighter and Darker commands is identical. You choose the source channels you want to compare and the destination channel for the result.

Related topics:

<u>Using Channel Calculation Commands</u>

Difference Calculation

The Difference command in the Calculate submenu subtracts the <u>brightness</u> value of the pixel in the Source 2 <u>channel</u> from the brightness value of the corresponding pixel in the Source 1 channel. A pixel with the resulting absolute brightness value (the absolute value means a negative value is treated as a positive value) is placed in the destination channel.

The Difference command is useful for identifying the differences between two image frames that show the same background. For example, you can use this command to compare two frames taken from a video frame grabber that show the same background but contain different foreground elements. The light areas in the destination channel will show the areas in the frames where changes occurred.

Related topics:

<u>Using Channel Calculation Commands</u>

Multiply Calculation

The effect of the Multiply command in the Calculate submenu is analogous to superimposing two positive transparencies on a light table. The Multiply command multiplies the <u>brightness</u> value of the pixels in the Source 1 <u>channel</u> by the brightness value of the corresponding pixels in the Source 2 channel; the result is divided by the maximum brightness value (255).

Related topics:

<u>Using Channel Calculation Commands</u>

Screen Calculation

The effect of the Screen command in the Calculate submenu is analogous to superimposing two film negatives of two source images, and printing the result onto photographic paper.

Related topics:

Using Channel Calculation Commands

Flip Command

The Flip command lets you flip a selection either horizontally or vertically.

To flip a selection:

1. Select the part of the image you want to flip.
2. Choose Flip from the Image menu and a direction from the submenu:

   ☐ The Horizontal option flips the selection horizontally, along the vertical axis.

   € The Vertical option flips the selection vertically, along the horizontal axis.

Related topics:

Using Special Effects on Selections

Rotate Command

The Rotate command lets you make gradual or dramatic adjustments to all or part of an image.

To rotate a selection:

1 Select the part of the image you want to rotate.

2 Choose Rotate from the Image menu and a command from the submenu:

€ The 180°, 90° CW (clockwise), and 90° CCW (counterclockwise) options turn the image to the specified angle.

€ The Arbitrary option specifies an angle for the rotation. When you choose this option, the Arbitrary Rotate dialog box appears so you can enter the angle. The range of acceptable values is +/- 359.99 degrees. You must also indicate a clockwise or counterclockwise direction for the arbitrary rotation. Click OK to apply the rotation.

€ The Free option allows you to rotate the selection to a new orientation. When you choose this option, four handles appear around the selection. Drag one of the handles to change the selection's position.

A preview of the rotation appears. The arrow pointer then appears as one of two new icons:

Pointer inside selection - clicking applies rotation

Pointer outside selection - clicking cancels rotation

The selection can be manipulated until the desired effect is achieved. Click inside the selection to apply the free rotation.

Rotating an entire image

It is best not to make any selection when you want to rotate an entire image (and the document size is the size of the actual image). If you select the entire image using the All command in the Select menu and apply an arbitrary or 90° rotation, the resulting image is cropped. If there is no selection, both the image and the document are rotated and there is no cropping. When necessary, Adobe Photoshop makes the document area larger to accommodate the rotated image.

Related topics:

Using Special Effects on Selections

Effects Menu

The Effects commands in the Image menu allow you to create special effects by stretching, skewing, and distorting the image, and creating a perspective effect. Once chosen, an Effects command remains active until you choose another command or deselect the image. You can make incremental adjustments until you achieve the desired effect.

Related topics:

Scale Command

Skew Command

Perspective Command

Distort Command

Scale Command

The Scale command lets you extend or shrink the length or width of a selection. You can also constrain the selection's height-to-width ratio to prevent distortion.

To scale a selection:

1 Choose Effects from the Image menu and Scale from the submenu. Four handles appear around the selection.

2 Drag a handle to alter the selection.

€ Each time you drag a handle and pause, Adobe Photoshop shows a preview of the effect allowing you to make incremental adjustments until you achieve the desired effect.

€ To maintain the selection's height-to-width ratio and prevent the image from becoming distorted, hold down the Shift key as you drag.

3 The arrow pointer appears as one of two new icons:

Pointer inside selection - clicking applies scaling

Pointer outside selection - clicking cancels scaling

4 Click anywhere inside the selection to apply the scaling or outside the selection to cancel the scaling.

NOTE: You can suppress the redrawing of the screen until you have finished applying a special effect by holding down the Alt key while you drag handles. This is useful, for example, when you want to reposition all four handles to distort an image into a particular shape. You can also press Control-period (.) to cancel a special effects operation.

Related topics:

Using Special Effects on Selections

Skew Command

The Skew command allows you to slant a selection vertically or horizontally along the edge of a selection. You can use the Skew command to slant a selection in one direction or to create a perspective effect.

To skew a selection:

1 Select the part of the image you want to skew.

2 Choose Effects from the Image menu and Skew from the submenu.

3 Drag a handle in the direction you want the selection to slant.

   € Each time you drag a handle and pause, Adobe Photoshop shows a preview of the effect, allowing you to make incremental adjustments until you achieve the desired effect.

   € If you skew an object, release the mouse button, and then drag another handle, the second handle moves independently. This lets you create a perspective effect. To retain the skewing effect, hold down the Shift key as you drag.

4 The arrow pointer appears as one of two new icons:

     Pointer inside selection - clicking applies skewing

     Pointer outside selection - clicking cancels skewing

5 Click anywhere inside the selection to apply the skewing or outside the selection to cancel the skewing.

   NOTE: You can suppress the redrawing of the screen until you have finished applying a special effect by holding down the Alt key while you drag handles. This is useful, for example, when you want to reposition all four handles to distort an image into a particular shape. You can also press Control-period (.) to cancel a special effects operation.

Related topics:

Using Special Effects on Selections

Perspective Command

The Perspective command allows you to create a three-dimensional effect by moving two handles of a selection in opposite directions at the same time.

To create a perspective effect:

1 Select the part of the image you want to have appear in perspective.

2 Choose Effects from the Image menu and Perspective from the submenu.

3 Drag a handle up or down, and inward or outward, depending on the effect you want to create.

    Each time you drag a handle and pause, Adobe Photoshop shows a preview of the effect, allowing you to make incremental adjustments until you achieve the desired effect.

4 The arrow pointer appears as one of two new icons:

  Pointer inside selection - clicking applies perspective effect

  Pointer outside selection - clicking cancels perspective effect

5 Click anywhere inside the selection to apply the effect or outside the selection to cancel the effect.

    NOTE: To create a perspective effect with a vanishing point at an angle other than 90 degrees, rotate the selection and apply the perspective effect; then rotate the selection back to its original orientation.

Related topics:

Using Special Effects on Selections

Distort Command

The Distort command allows you to extend or contract portions of a selection by dragging handles on the selection independently.

To distort a selection:

1 Select the part of the image you want to distort.

2 Choose Effects from the Image menu and Distort from the submenu.

3 Drag each handle to produce the effect you want.

Each time you drag a handle and pause, Adobe Photoshop shows a preview of the effect, allowing you to make incremental adjustments until you achieve the desired effect.

4 The arrow pointer appears as one of two new icons:

 Pointer inside selection - clicking applies distortion

 Pointer outside selection - clicking cancels distortion

5 Click anywhere inside the selection to apply the distortion or outside the selection to cancel the distortion.

NOTE: You can suppress the redrawing of the screen until you have finished applying a special effect by holding down the Alt key while you drag handles. This is useful, for example, when you want to reposition all four handles to distort an image into a particular shape. You can also press Control-period (.) to cancel a special effects operation.

Related topics:

Using Special Effects on Selections

Image Size Command

Allows you to resize an image while controlling the image resolution.

When you change the resolution of an image, you change the amount of information contained in the image. This does not affect the screen display of the image, which is normally 72 dpi, but it does affect the image when it's printed.

To change the size of an image:

1 Choose Image Size from the Image menu. The Image Size dialog box appears.

2 Choose the units of measurement you want from the drop-down lists. Note that the Columns option for Width uses the width and gutter sizes specified in the Unit Preferences dialog box.

3 Select the Constrain options:

€ The Proportion option changes the image dimensions without changing the height-to-width ratio. When you enter a new value for the height or width, the program automatically adjusts the other value to maintain the image proportions.

€ The File Size option changes the dimensions or resolution of the image without changing the file size. When you enter new dimensions or a new resolution, the program automatically adjusts the other parameter so that no information is added to or deleted from the image file. When this option is selected, Photoshop does not resample the image.

4 Enter the new values for width, height, and resolution.

Each time you change a value, Adobe Photoshop updates the other values to maintain the image's proportions, file size, or both (depending on the constraints you have selected). Keep track of the new file size shown above the text boxes to be sure you have enough disk space to hold the resized image.

5 Click OK when you have set the dimensions you want.

Determining the resolution automatically

To determine the recommended resolution for an image, you can use the Auto button in the Image Size dialog box. The suggested resolution is based on the screen ruling frequency used for printed output.

Related topics:

Using Auto Resolution

Changing Image Resolution

Changing Canvas Size

About Resolution

Auto Resolution Dialog Box

To determine the recommended resolution for an image, you can use the Auto button in the Image Size dialog box. The suggested resolution is based on the screen ruling frequency used for printed output.

To determine a resolution for an image:

1 Choose Image Size from the Image menu. The Image Size dialog box appears.

2 Click Auto. The Auto Resolution dialog box appears.

3 Enter the ruling for the output screen in the Screen text box. Note that this value is used only to calculate the image resolution.

> IMPORTANT: To specify the halftone screen ruling for printing, you must use the Halftone Screens dialog box, accessed through the Page Setup dialog box.

4 Select a quality option for the output:

€ Draft produces a resolution that is one times the screen frequency (no higher than 72 pixels per inch).

€ Good produces a resolution that is 1.5 times the screen frequency.

€ Best produces a resolution that is two times the screen frequency.

The recommended resolution is entered automatically in the Image Size dialog box, and the file size is updated.

Related topics:

Changing Image Resolution

Specifying Halftone Screen Attributes

Canvas Size Command

The Canvas Size command allows you to add work space, or extra canvas area, around the existing image without changing the dimensions of the image. You increase the canvas area by specifying the height and width you want the canvas to be.

You can use the Canvas Size command to <u>crop</u> an image; however, if you want to adjust the size and <u>resolution</u> of an image, you should use the Image Size command or the cropping tool. If you use the Canvas Size command to crop an image, you might inadvertently lose important image information that you cannot recover.

To use the Canvas Size command:

1 Choose Canvas Size from the Image menu. The Canvas Size dialog box appears.

2 Choose the units of measurement you want from the drop-down lists. Note that the Columns option for Width uses the width and gutter sizes specified in the Unit Preferences dialog box.

3 Enter the dimensions in the Height and Width boxes. The value above the text boxes changes to reflect the new file size.

4 Click a square in the Placement box to indicate where you want the image to be positioned in the new canvas area.

5 Click OK.

Related topics:

<u>Resizing Images</u>

<u>Cropping Tool</u>

<u>Changing Image Resolution</u>

Histogram

This command is used to display a histogram of the image or selection.

A histogram is a graphic representation of tonal distribution (the <u>brightness</u> and darkness levels) in an image. It plots the number of <u>pixels</u> at each level. This distribution can dramatically affect the appearance of an image. When a wide range of levels is used to describe an uninteresting area of the image (such as a dark background with shafts of white sunlight), only a narrow range of levels is available for the focus of interest (for example, a group of colorfully dressed children playing in the foreground).

To display a histogram:

1 Choose Histogram from the Image menu. The Histogram dialog box appears.

The x-axis of the histogram represents the color values from darkest (0) at the far left to brightest (255) at the far right; the y-axis represents the total number of pixels with that value. A histogram for a dark image shows most of the pixels at the left side of the graph. A histogram for a light image is more heavily weighted to the right side.

The numerical values at the lower left of the Histogram dialog box display statistical information about the color values of the pixels:

€ Mean is the average brightness value.

€ Standard deviation (Std Dev) represents how widely the values vary.

€ Median shows the middle value in the range of color values.

€ Pixels represents the total number of pixels in the image or selected area.

2 For RGB, CMYK, and indexed color images, choose an option from the <u>Channel</u> drop-down list. You can plot either the luminance of all the pixels (the Gray option) or the pixels in the individual channels.

When you choose Red, Green, or Blue, the bar under the histogram changes to the chosen color.

3 To obtain information about a specific point on the histogram, move the pointer over the graphic part of the histogram. To obtain information about a range of values, select the range.

The values at the lower right of the dialog box change to display the gray level (Level) of the point (from 0 to 255), the total number of pixels at that level (Count), and the percentage of pixels below that level (Percentile).

Related topics:

<u>Adjusting Brightness, Contrast, and Gamma</u>

<u>Reading Color Information on the Image</u>

Trap Command

Used to create <u>trap</u> for CMYK images.

To set trapping specifications:

1 Open the Trap dialog box by choosing Trap from the Image menu.

2 Choose a unit of measurement from the size units drop-down list.

3 Enter the misregistration amount in the Width box; then click OK. Consult your print shop to find out the amount of misregistration you can expect on press.

Related topics:

<u>Creating Color Trap</u>

<u>Tips on Color Separation</u>

Last Filter Command

Selects the filter that was last applied to an image or selection.

Related topics:

Using Filters to Modify Images

Filter Menu

Blur Filters

Blur filters provide a softening effect. These filters are useful for retouching images:

Blur/Blur More

Gaussian Blur

Motion Blur

Radial Blur

Blur and Blur More Filters

The Blur and Blur More filters eliminate <u>noise</u> in the parts of the image where significant color transitions occur. Blur filters smooth transitions by lightening the pixels next to the hard edges of defined lines and shaded areas. The Blur More filter produces an effect three or four times stronger than the Blur filter.

Related topics:

<u>Using Filters to Modify Images</u>

Gaussian Blur Filter

The Gaussian Blur filter quickly blurs a selection by an adjustable amount. Gaussian refers to the bell-shaped curve that is generated when mapping the color values of the affected pixels. This filter can produce a hazy effect.

To use the Gaussian Blur filter:

1 Choose Blur from the Filter menu and Gaussian Blur from the submenu. The Gaussian Blur dialog box appears.

2 Enter a value in Radius from 0.1 to 100.0 to determine the degree of blurring. The higher the value, the stronger the blurring effect.

Related topics:

Using Filters to Modify Images

Motion Blur Filter

The Motion Blur filter produces a blur effect in a particular direction and of a specific intensity. The effect of this filter is analogous to taking a picture of a moving object with a fixed exposure time.

To use the Motion Blur filter:

1 Choose Blur from the Filter menu and Motion Blur from the submenu. The Motion Blur dialog box appears.

2 Indicate the direction in which the object should appear to be moving:

€ Enter an Angle value from - 90 degrees to +90 degrees; or

€ Drag the line within the circle (0 degrees is located at 3 o'clock). Drag clockwise for a positive angle; drag counterclockwise for a negative angle.

3 Enter a value from 1 to 999 in the Distance box to determine the intensity of the blur.

Related topics:

Using Filters to Modify Images

Radial Blur Filter

The Radial Blur filter simulates the blur of a zooming or rotating camera to produce a soft blur.

To use the Radial Blur filter:

1 Choose Blur from the Filter menu and Radial Blur from the submenu. The Radial Blur dialog box appears.

2 Select a blur method:

€ The Spin option blurs along concentric circular lines, as if spinning a wheel.

€ The Zoom option blurs along radial lines, as if zooming in or out of the image.

3 Enter a value from - 999 to +999 in the Amount box.

If you select Spin mode, this value is the degree of rotation. If you select Zoom mode, a low value causes slight blurring, while a high value causes extreme blurring.

4 Select a Quality option for the blur:

€ Draft mode is the fastest but produces grainy results.

€ The Good and Best settings produce smoother results. These settings are indistinguishable except on a large selection.

5 Drag the dot in the Blur Center box to specify the origin of the blurring.

Related topics:

Using Filters to Modify Images

Distort Filters

The Distort filters produce a geometrical distortion of the image:

Displace

Pinch

Polar Coordinates

Ripple

Spherize

Twirl

Wave

Zigzag

Displace Filter

The Displace filter uses a second image (called a displacement map) to determine how to distort the selection. The filter reads a color value from the displacement map and uses the value to displace the selection. A value of 0 is maximum negative displacement, and a value or 255 is maximum positive displacement. A gray value of 128 produces no displacement.

The displacement map can be any Adobe Photoshop file except a bitmap. If the map has one channel, the image is displaced along a diagonal defined by the horizontal and vertical scale ratio. If the map has more than one channel, the first channel controls the horizontal displacement, and the second channel controls the vertical displacement. The Adobe Photoshop software includes a number of displacement maps that you can use to experiment with this filter.

To use the Displace filter:

1 Choose Distort from the Filter menu and Displace from the submenu. The Displace dialog box appears.

2 Enter the scale for the magnitude of the displacement.

When the horizontal and vertical scale are set to 100 percent, the maximum displacement is 128 pixels (because middle gray produces no displacement).

3 If the displacement map is not the same size as the selection, select how the map will fit the image:

€ The Stretch to Fit option resizes the map.

€ The Tile option fills the selection by repeating the map like a pattern.

4 Select an option to determine how areas of the image left undefined by the distortion are treated:

€ The Wrap Around option wraps the image to fill the undefined space, so that the area is filled with content from the opposite side of the image.

€ The Repeat Edge Pixels option extends the colors of the pixels along the edge of the image in the direction specified. This can create a banding effect if the edge pixels are different colors.

As an example of how this filter works, suppose you want to make an image that sags using a parabolic-shaped displacement map (the image appears as though it is printed on a cloth that is being held by its corners). To do this, start with a new grayscale image (for best performance, use small images). Set the foreground color to black and the background color to white, and make a linear gradient fill from left to right. Using the Curves dialog box, draw a single color curve that dips down from the upper left corner of the dialog box and back to the upper right corner. Save this image to disk; this is the shape of the displacement map you will use.

To apply the displacement map, open the image you want to displace and select the Displace filter. Set the horizontal scale to 0 percent, and the vertical scale to 50 percent, and select the Stretch to Fit option.

Click OK; then select the displacement map that you just saved to disk. The image is distorted into a parabolic shape.

Related topics:

Using Filters to Modify Images

Pinch Filter

The Pinch filter in the Distort submenu squeezes a selection. To shift a selection toward its center, enter a positive value in the Pinch dialog box. To shift a selection outward, enter a negative value. Values can range from +/- 100 percent.

If the selection is rectangular, the filter blends the selection into the background. If the selection is an arbitrary shape, use feathering to help it blend into the surrounding pixels. When feathering is applied, the magnitude of the distortion fades out at the edges of the selection.

Related topics:

Using Filters To Modify Images

Polar Coordinates Filter

The Polar Coordinates filter in the Distort submenu converts a selection from its rectangular to polar coordinates and vice versa. You specify the conversion method in the Polar Coordinates dialog box.

This filter can create a cylinder anamorphosis, a type of art popular in the 18th century in which the distorted image is difficult to recognize unless viewed in the reflection of a mirrored cylinder.

Related topics:

Using Filters to Modify Images

Ripple Filter

The Ripple filter produces an undulating pattern on a selection, like ripples on the surface of a pond.

To use the Ripple filter:

1 Choose Distort from the Filter menu and Ripple from the submenu. The Ripple dialog box appears.

2 Enter a value in Amount for the magnitude of the ripples. Values can range from 1 to 999.

3 Click Small, Medium, or Large to set the ripple frequency.

Use feathering to mute the edges of the ripple where the selection blends into the background.

Related topics:

Using Filters to Modify Images

Shear Filter

The Shear filter distorts an image along a curve you specify.

To use the Shear filter:

1 Choose Distort from the Filter menu and Shear from the submenu. The Shear dialog box appears.

2 Drag the band in the middle of the dialog box to form a curve that indicates how you want the image to be distorted. You can adjust any point along the curve.

3 Select an option to determine how areas of the image left undefined by the shear are treated:

   € The Wrap Around option wraps the image to fill the undefined space, so that the area is filled with content from the opposite side of the image.

   € The Repeat Edge Pixels option extends the colors of the pixels along the edge of the image in the direction specified. This can create a banding effect if the edge pixels are different colors.

Related topics:

Using Filters to Modify Images

Spherize Filter

The Spherize filter wraps a selection around a spherical shape and is useful for giving objects and text a three-dimensional effect. The image is distorted as it is stretched to fit the curve you have selected.

To use the Spherize filter:

1 Choose Distort from the Filter menu and Spherize from the submenu. The Spherize dialog box appears.

2 Enter a value in Amount to determine the strength of the filter.

Values can range from +/- 100. Negative values undo the effects of a previous Spherize filter.

3 Click Normal, Horizontal only, or Vertical only to set a direction for the filter.

If the selected area is rectangular, the effect applies only to a circular area inside the selection. If the selection is an arbitrary shape (like one made using the lasso or magic wand tool), you can use feathering to blend the selection into the background.

Related topics:

Using Filters to Modify Images

Twirl Filter

The Twirl filter in the Distort submenu rotates a selection more sharply in the center than at the edges. To use the filter, enter an Angle value in the Twirl Filter dialog box. Values can range from +/- 999.

Related topics:

Using Filters to Modify Images

Wave Filter

Like the Ripple filter, the Wave filter distorts an image somewhat randomly but gives you greater control over the results. The effects vary. For example, the filter can be used to create a marbling or abstract effect.

To use the Wave filter:

1 Choose Distort from the Filter menu and Wave from the submenu. The Wave dialog box appears.

2 Specify the number of wave generators, from 1 to 999.

3 Enter a value from 1 to 9999 to specify the minimum and maximum wavelength; this sets the distance from one wave crest to the next.

4 Enter a value from 1 to 9999 for the minimum and maximum amplitude; this sets the height of the wave.

5 Select Sine (rolling), Triangle, or Square to select the type of wave.

6 Enter a value for the horizontal and vertical scale, from - 9999 to   + 9999 percent.

The scale controls the magnitude of the distortion in the horizontal and vertical dimensions.

7 Select an option to determine how areas of the image left undefined by the wave are treated:

€ The Wrap Around option wraps the image to fill the undefined space, so that the area is filled with content from the opposite side of the image.

€ The Repeat Edge Pixels option extends the colors of the pixels along the edge of the image in the direction specified. This can create a banding effect if the edge pixels are different colors.

To replicate results on other selections, deselect the Random Start Phase option, set the wave generator to 1, and set the minimum and maximum wavelength and amplitude parameters to the same value.

Related topics:

Using Filters to Modify Images

Zigzag Filter

The Zigzag filter distorts a selection radially, depending on the radius of the pixels in your selection.

To use the Zigzag filter:

1　Choose Distort from the Filter menu and Zigzag from the submenu. The Zigzag dialog box appears.

2　Enter a value in Amount for the magnitude of the distortion. Values can range from +/- 999.

3　Enter a value in Ridges to set the number of direction reversals of the zigzag, from the center of the selection to its edge. Values can range from 1 to 999.

4　Select how to displace the pixels:

€　The Pond Ripples option displaces pixels to the upper left or lower right.

€　The Out From Center option displaces pixels toward or away from the center of the selection.

€　The Around Center option rotates pixels around the center.

Related topics:

Using Filters to Modify Images

Noise Filters

Noise in an image is represented by pixels with randomly distributed color levels. The Noise filters subtly blur a selection by adding pixels to make a selection blend into the surroundings pixels. You can also use the Noise filters to create unusual textures, such as those used as backgrounds behind title text.

Add Noise

Despeckle

Median

Add Noise Filter

The Add Noise filter applies random pixels to an image, simulating the effect of shooting pictures on high-speed film. The filter can be used with the painting tools to make painted areas less apparent. The painting tools apply paint that is free of <u>noise</u>. If you apply paint to an area that contains some noise, you might then want to select the area and apply the Add Noise filter to blend the painted area into the image.

To use the Add Noise filter:

1 Choose Noise from the Filter menu and Add Noise from the submenu. The Add Noise dialog box appears.

2 Enter a value in Amount to indicate the amount of noise you want to add. Values can range from 1 to 999. The value you specify is used as the standard deviation of the color values of the noise.

3 Select the distribution method for the noise:

€ The Uniform option distributes color values of noise by calculating random numbers between 0 and plus or minus the specified value.

€ The Gaussian option distributes color values of noise along a bell-shaped curve.

Related topics:

<u>Using Filters to Modify Images</u>

Despeckle Filter

The Despeckle filter in the Noise submenu detects the edges in an image (the areas where significant color changes occur) and blurs all of the selection except those edges.

Related topics:

Using Filters To Modify Images

Median Filter

The Median filter in the Noise submenu reduces noise in an image by searching the radius of a selection of pixels and replacing the center pixel with the median <u>brightness</u> value of those pixels. The effect is to blend the brightness of pixels within a selection. The filter discards pixels that are too different from adjacent pixels.

To use the Median filter, specify a radius from 1 to 16 in the Median Filter dialog box. This value determines how far around the current pixel the filter looks at brightness values.

Related topics:

<u>Using Filters to Modify Images</u>

Sharpen Filters

The Sharpen filters sharpen blurry images by increasing the contrast of adjacent pixels:

Sharpen/Sharpen More

Sharpen Edges

Unsharp Mask

Sharpen/Sharpen More Filters

The Sharpen and Sharpen More filters focus a selection and improve its clarity. The Sharpen More filter applies a stronger sharpening effect than the Sharpen filter.

Related topics:

Using Filters to Modify Images

Sharpen Edges Filter

The Sharpen Edges filter, like the Unsharp Mask filter, finds the areas in the image where significant color changes occur and sharpens them.

The Sharpen Edges filter provides more definition to blurry images by applying sharpening only when an edge is found. (Essentially, sharpening is applied at all the areas identified by the Find Edges filter.) Sharpen Edges preserves the overall smoothness of the image and changes only the edges. Use this filter to apply edge sharpening without having to specify the edge parameters.

Related topics:

Using Filters to Modify Images

Unsharp Mask Filter

The Unsharp Mask filter adjusts the contrast of edge detail, creating the illusion of more image sharpness. This filter can be useful for refocusing an image that has become blurry because of interpolation or scanning. This filter produces the same effect as the conventional method used to sharpen images on film. In this method, a blurred positive film is sandwiched with a sharp negative file, and the result is shot on high-contrast photographic paper. The filter produces a lighter and darker line on each side of an edge, giving the edge added emphasis.

To use the Unsharp Mask filter:

1 Choose Sharpen from the Filter menu and Unsharp Mask from the submenu. The Unsharp Mask dialog box appears.

2 Enter a value in Amount to specify the percentage of the filter's effect, from 1 to 500. The higher the percentage, the stronger the effect of the filter.

3 Enter a radius value in pixels.

The radius determines the depth of pixels that will be affected at the edge. The values can range from 0.1 to 100.0. If you specify a high value, more of the pixels surrounding the edge pixels are sharpened. If you specify a low value, only the edges are sharpened. For low-resolution files, use a lower radius; for example, use a radius of 1 pixel for a 72 dpi file. For high-resolution images, use a higher value. This prevents a keyline effect when the filter is applied.

4 Enter a value in Threshold to specify the level of <u>brightness</u> to be used for differentiation.

This option allows you to specify a tolerance range to prevent overall sharpening that might generate <u>noise</u> or cause other unexpected results in the image. The Threshold defines the required range of contrast between adjacent pixels before sharpening is applied to an edge. Values can range from 0 to 255. A lower value produces a more pronounced effect. To find the value that produces the desired effect in the entire image, make a selection (for example, select an area with flesh tones) and experiment with different values before applying the filter to the entire image.

Related topics:

<u>Using Filters to Modify Images</u>

Stylize Filters

The Stylize filters produce a painterly or impressionistic effect on a selection by displacing pixels, and by finding and heightening contrast in an image:

Color Halftone

Crystalize

Diffuse

Emboss

Extrude

Facet

Find Edges

Fragment

Mosaic

Pointillize

Solarize

Tiles

Trace Contour

Wind

Color Halftone Filter

The Color Halftone filter simulates the effect of using an enlarged halftone screen on each <u>channel</u> of the image. For each channel, the filter divides the image into rectangles and replaces each rectangle with a circle. The circle size is proportional to the brightness of the rectangle.

To use the Color Halftone filter:

1 Choose Stylize from the Filter menu and Color Halftone from the submenu. The Color Halftone dialog box appears.

2 Enter a value in pixels for the maximum radius of a halftone dot. Values can range from 4 to 127.

3 Enter a value for the <u>screen angle</u> for each channel.

The values indicate the angle of the dot from true horizontal. Grayscale images use only channel 1. In RGB images, channels 1, 2, and 3 correspond to the red, green, and blue channels. In CMYK images, the four channels correspond to the cyan, magenta, yellow, and black channels, respectively.

Related topics:

<u>Using Filters to Modify Images</u>

Crystallize, Facet, and Mosaic Filters

These three filters create sharp definition in a selection by clumping pixels of similar color values in cells. The cell size is the width of a cell in pixels.

The Crystallize filter in the Stylize submenu clumps pixels into a solid color in a polygon shape. Enter a cell size from 3 to 999 pixels in the Crystallize dialog box.

The Facet filter in the Stylize submenu clumps pixels into blocks of like-colored pixels. This filter analyzes an image, determines the major areas of solid or similar colors, and then emphasizes those areas. Use this filter to make a scanned image look hand-painted. Applying this filter several times makes a realistic image resemble an abstract painting.

The Mosaic filter in the Stylize submenu lets you clump pixels into square blocks. Enter a cell size from 2 to 64 pixels in the Mosaic dialog box. The pixels in a given block are the same color, and the colors of the blocks represent the colors in the selection.

Related topics:

Using Filters to Modify Images

Diffuse Filter

The Diffuse filter in the Stylize submenu shuffles pixels in a selection to make the selection look less focused. Choose a diffusion mode in the Diffuse dialog box:

€ The Normal option moves pixels at random, regardless of their color values.

€ The Darken Only option moves pixels by replacing light pixels with darker pixels.

€ The Lighten Only option moves pixels by replacing dark pixels with lighter pixels.

Related topics:

Using Filters to Modify Images

Emboss Filter

The Emboss filter makes a selection appear raised or stamped by suppressing the color within the selection and tracing its edges with black.

To use the Emboss filter:

1 Choose Stylize from the Filter menu and Emboss from the submenu. The Emboss dialog box appears.

2 Indicate the angle for embossing:

€ Enter a value of +/- 360 degrees in the Angle text box; or

€ Drag the line in the circle to emboss the surface.

To raise the surface, enter a positive value, or drag the line clockwise. To lower (stamp) the surface, enter a negative value, or drag the line counterclockwise.

3 Enter a value from 1 to 10 pixels for the height of the embossing.

4 Enter a percentage in Amount from 1 to 500.

Entering 1 percent produces the least amount of color within the selection, while 500 percent retains color values at the edges.

Related topics:

Using Filters to Modify Images

Extrude Filter

The Extrude filter makes a selection into a series of three-dimensional objects.

To use the Extrude filter:

1 Choose Stylize from the Filter menu and Extrude from the submenu. The Extrude dialog box appears.

2 Choose a type of three-dimensional object:

€ The Blocks option creates objects with a square front face and four side faces. If you choose this option and select Solid Front Faces, the front face of each block is filled with the average color of the block (otherwise, the front face is filled with the image).

€ The Pyramids options creates objects with four triangular sides that come to a point on top.

3 Enter a value in Size to determine the length of any side of the object's base. Values can range from 2 pixels to 255 pixels.

4 Enter a value in Depth to indicate how far the object appears to protrude from the screen. Values can range from 0 to 255. Larger values make the image look more three-dimensional.

€ Select the Random button if you want the depth of each solid to be arbitrary.

€ Select Level-based if you want the depth of each object to correspond to the overall brightness of the object (brighter objects appear to protrude more than dark objects).

5 Select Mask Incomplete Blocks if you want to hide any object that extends beyond the selection.

Related topics:

Using Filters to Modify Images

Find Edges and Trace Contour Filters

The Find Edges and Trace Contour filters in the Stylize submenu outline the edges of an image with dark lines (the outlined edges appear on a white background). Use the Invert command if you want to see the edges of a color image outlined with colored lines, or the edges of a grayscale image outlined with white lines.

The Find Edges filter identifies the areas of the image that have significant transitions and emphasizes the edges automatically. The Trace Contour filter finds areas of major brightness transitions and draws thin lines around them (for each color <u>channel</u>). These filters are useful for creating a border around an image.

To use the Trace Contour filter:

1 Choose Stylize from the Filter menu and Trace Contour from the submenu. The Trace Contour dialog box appears.

2 Enter a value in Level to specify a threshold for evaluating color values.

This level refers to the tonal level of a color value. Values can range from 0 to 255. You can experiment to see what values bring out the best detail in the image by using the Info palette to identify a color value that you want to trace; then enter the value in this text box.

3 Select an Edge option for outlining the areas in the selection:

€ The Lower option outlines where the color values of pixels fall below the specified level.

€ The Upper option outlines where the color values of pixels are above the specified level.

Related topics:

<u>Using Filters to Modify Images</u>

Fragment Filter

The Fragment filter in the Stylize submenu creates four copies of the pixels in the selection, averages them, and offsets them from each other.

Related topics:

Using Filters to Modify Images

Lens Flare Filter

The Lens Flare filter simulates the refraction caused by shining a bright light into the camera lens.

To use the Lens Flare filter:

1 Choose Stylize from the Filter menu and Lens Flare from the submenu. The Lens Flare dialog box appears.

2 Enter a value (or use the slider) to indicate the percentage of Brightness. Values can range from 10 to 300 percent.

3 Click anywhere inside the image thumbnail to specify a location for the center of the flare.

4 Select either the zoom or a normal lens from Lens Type.

Related topics:

Using Filters to Modify Images

Pointillize Filter

The Pointillize filter in the Stylize submenu breaks up the color in an image into randomly placed dots, like a pointillist painting, and uses the background color as a canvas area between the dots. To use the filter, enter a cell width size from 3 to 999 pixels in the Pointillize dialog box.

Related topics:

Using Filters to Modify Images

Solarize Filter

The Solarize filter in the Stylize submenu creates a blend between a negative and positive image. This effect is analogous to briefly exposing a print to light during the developing phase.

Related topics:

Using Filters to Modify Images

Tiles Filter

The Tiles filter breaks up an image into a series of tiles.

To use the Tiles filter:

1 Choose Stylize from the Filter menu and Tiles from the submenu. The Tiles dialog box appears.

2 Enter the minimum number of tiles you want in any direction for the Number of Tiles value.

3 Enter the maximum distance you want a tile to be offset from its original position for the Maximum Offset value.

4 Select how you want to fill the area between the tiles.

You can fill this area with the background color, with the foreground color, with a reversed-out version of the image, or with an unaltered version of the image. The unaltered option places the tiled version of the image on top of the original. Portions of the original image are visible beneath the tiled edges.

Related topics:

Using Filters to Modify Images

Wind Filter

The Wind filter creates tiny horizontal lines in the image to simulate a wind effect.

To use the Wind filter:

1 Choose Stylize from the Filter menu and Wind from the submenu. The Wind dialog box appears.

2 Select a method:

€ The Wind option produces a wind effect.

€ The Blast option produces a more dramatic wind effect.

€ The Stagger option offsets the wind lines in the image.

3   Click Left or Right to indicate a direction for the wind.

Related topics:

Using Filters to Modify Images

Video Filters

The Video submenu contains the NTSC Colors and De-Interlace filters.

The NTSC Colors filter restricts the gamut of colors to those acceptable for television production. This filter prevents oversaturated colors from bleeding across television scan lines.

The De-interlace filter removes either the odd or even interlaced lines in a video image to ensure a smooth image. You can choose to replace the discarded lines by duplication or interpolation. This filter is useful for smoothing moving images captured on video.

Related topics:

Using Filters to Modify Images

Other Filters

Filters in the Other submenu let you create your own filters, use filters to modify masks, offset a selection within an image, or make quick color adjustments:

Custom

High Pass

Maximum

Minimum

Offset

Custom Filter

The Custom filter lets you change the <u>brightness</u> values of each pixel in the image according to a predefined mathematical operation known as a convolution. You can save the custom filters you create and use them with other Adobe Photoshop documents.

To create a Custom filter:

1 Choose Other from the Filter menu and Custom from the submenu. The Custom dialog box appears.

2 Click the center text box. This represents the pixel being evaluated. Enter the value by which you want to multiply that pixel's brightness value. Values can range from +/- 999.

3 Click a text box representing an adjacent pixel to which you want to assign a weighted value. Enter the value by which you want the pixel in that position multiplied.

For example, if you want the brightness value of the pixel to the immediate right of the current pixel multiplied by 2, enter 2 in the text box to the immediate right of the center text box.

4 Repeat steps 3 and 4 for all of the pixels you want to include in the operation. You don't have to enter values in all the text boxes.

5 In the Scale text box, enter the value by which to divide the sum of the brightness values of the pixels included in the calculation.

6 In the Offset text box, enter the value to be added to the result of the scale calculation.

7 Click OK. The custom filter is applied to each pixel in the image, one at a time.

Use the Save and Load buttons to save and reuse custom filters.

Related topics:

<u>Using Filters to Modify Images</u>

High Pass Filter

The High Pass filter in the Other submenu removes shading in a selection by retaining the areas where sharp color transitions occur and suppressing the rest of the image. It emphasizes very bright areas and <u>highlights</u>. This filter produces the opposite effect of the Gaussian Blur filter because it removes low-frequency detail in an image.

It is helpful to apply the High Pass filter to a continuous tone image before using the Threshold command or converting the image to Bitmapped mode. The filter is useful for extracting line art and large black-and-white areas from scanned images.

In the High Pass dialog box, specify the radius of pixels around the image edges that you want the filter to retain. Values can range from 0.1 pixels to 100.00 pixels. A high value retains more of the pixels adjacent to the edge pixels; a low value retains only the edges themselves.

Related topics:

<u>Using Filters to Modify Images</u>

Maximum and Minimum Filters

Both the Minimum and Maximum filters in the Other submenu are useful for modifying masks. The Minimum filter has the effect of applying a spread, spreading out black areas and shrinking white areas. The Maximum filter has the effect of applying a choke, spreading out white areas and choking in black areas.

Like the Median filter, the Maximum and Minimum filters let you examine pixels in a selection and adjust their <u>brightness</u>. Operating on one pixel at a time, these filters examine the brightness values of adjacent pixels and replace the brightness value of the current pixel with the maximum or minimum brightness value of the surrounding pixels.

In the filter's dialog box, specify a radius from 1 to 10 pixels to determine how far around the current pixel the filter looks for brightness values.

Related topics:

<u>Using Filters to Modify Images</u>

Offset Filter

The Offset filter moves the selection a specified amount, leaving a hole at the selection's original location. Depending on the options you select, the empty area is replaced with the current background color or with another part of the image. If the selection appears near the edge of an image, the selected area is undefined and you can choose how to fill it.

To use the Offset filter:

1 Choose Other from the Filter menu and Offset from the submenu. The Offset dialog box appears.

2 Specify the direction to move the pixels:

   ☐ Enter a value between +/- 30000 in the Horizontal text box to move the pixels right or left.

   ☐ Enter a value between +/- 30000 in the Vertical text box to move pixels down or up.

3 Select an option to determine how areas of the image left undefined by the offset are treated:

   ☐ The Set to Background option fills the selected area with the current background color.

   ☐ The Wrap Around option wraps the image to fill the undefined space, so that the area is filled with content from the opposite side of the image.

   ☐ The Repeat Edge Pixels option extends the colors of the pixels along the edge of the image in the direction specified. This can create a banding effect if the edge pixels are different colors.

Related topics:

Using Filters to Modify Images

Select All

The All command in the Select menu is used to select the entire image. Use the All command when you want to cut, copy, fill, or edit an entire image.

Related topics:

Methods of Selecting

Extending and Reducing Selections

Select None

The None command is used to deselect all the currently selected areas in the image.   You can also deselect by clicking outside a selected area on the image with any selection tool (except the magic wand tool).

Related topics:

Methods of Selecting

Extending and Reducing Selections

Inverse

The Inverse command is used to select the part of the image that is not currently selected.

Sometimes it is more convenient to select large parts of an image by first selecting the parts you don't want to modify, and then automatically selecting the remaining portions of the image with the Inverse command.

To make an inverse selection:

1 Make your initial selection using any selection tool.

2 Choose Inverse from the Select menu.

The unselected portion of the image becomes selected, leaving the original selection deselected. Choose the command again to return to the original selection.

Related topics:

Methods of Selecting

Extending and Reducing Selections

Float/Defloat command

Used to toggle between floating and nonfloating status for the current selection.

Related topics:

Methods of Selecting

Cutting, Copying, and Pasting Selections

Moving Selections or Selection Borders

Grow Command

The Grow command allows you to expand a selection to include adjacent parts of the image that are similar in color to the current selection. This command uses the tolerance specified in the Magic Wand Options dialog box to define the color range of pixels to be included in the expanded selection.

To extend a color-based selection:

Choose Grow from the Select menu to include pixels adjacent to the selection that fall within the specified tolerance range.

Choose the Grow command repeatedly to increase the selection in increments.

NOTE: You cannot use the Grow command on bitmapped images.

Related topics:

Methods of Selecting

Extending and Reducing Selections

Magic Wand Tool

Similar Command

The Similar command allows you to expand a selection to include all parts of the image that are similar in color to the current selection. This command uses the tolerance   specified in the Magic Wand Options dialog box to define the color range of pixels to be included in the expanded selection.

To extend a color-based selection:

Choose Similar from the Select menu to include pixels throughout the image that fall within the specified range.

Choose the Similar command repeatedly to increase the selection in increments.

NOTE: You cannot use the Similar command on bitmapped images.

Related topics:

Methods of Selecting

Extending and Reducing Selections

Magic Wand Tool

Border command

The Border command is used to select an area of specified width along a selection border. When the entire image is selected, the Border command selects an area of a specified width along the border of the entire image.

To select an area around a selection border:

1 Choose Border from the Select menu. The Border dialog box appears.

2 Enter the width in <u>pixels</u> for the border area; then click OK.

The original selection border is surrounded by two new borders. The area between the two selection borders is selected.

Related topics:

<u>Methods of Selecting</u>

<u>Extending and Reducing Selections</u>

Feather Command

The Feather command lets you blur the edges of a <u>floating selection</u> by building a transition boundary between the selection and the surrounding <u>pixels</u>, gradually blending the edges of the selection. This smoothing can cause some loss of detail at the edge of the selection.

To define a <u>feather edge</u> for a floating selection, choose Feather from the Select menu and enter a value for Radius in the Feather Selection dialog box.   This value specifies how far inside and outside the selection border the feather edge extends. For example, a Feather Radius value of 5 creates a feather edge with a 10-pixel width. A feather radius can range in width from 1 to 64 pixels.

Defringe

The Defringe command is used to decrease the "fringe" around moved or <u>floating selections</u>.

When you move or paste an <u>anti-aliased</u> selection, some of the pixels surrounding the selection border are included with the selection. For example, if you select a white object on a blue background and move the selection, some of the blue background is moved with the object.

The Defringe command replaces the color of any fringe pixels with the colors of nearby pixels that contain pure colors (pure-colors pixel do not contain any background color).

To decrease a fringe:

1 Move or paste the selection, or use the Float command in the Select menu to make the selection containing the fringe into a floating selection.

2 Choose Defringe from the Select menu. The Defringe dialog box appears.

3 Enter a value in the dialog box for the distance used to find replacement pixels; then click OK.

In most cases, a distance of 1or 2 pixels is sufficient to locate pixels that effectively remove a fringe.

Related topics:

<u>Methods of Selecting</u>

<u>Cutting, Copying, and Pasting a Selection</u>

<u>Moving a Selection</u>

Hide/Show Edges

To temporarily hide a selection border, use the Hide Edges command in the Select menu.

The Hide Edges command affects the current selection only. Any changes you specify, such as fills or color adjustments, are still applied to the current selection, but the border remains hidden. The selection border reappears when you make another selection, and new selection borders appear around any additional selections.

To redisplay the selection border around the current selection, choose Show Edges from the Select menu.

Related topics:

Methods of Selecting

Cutting, Copying, and Pasting a Selection

Moving a Selection or Selection Border

Load Selection Command

Used to load a selection that has been saved in a separate <u>channel</u>.

To place a saved selection back into an image:

1 Choose Show Channels from the Window menu to display the Channels palette.

2 If the selection is being used as a mask, select the channel or channels you want to edit.

3 Choose Load Selection from the Select menu. Selections that have been saved in channels appear in a submenu.

Related topics:

<u>Using Channels to Create Masks</u>

Save Selection Command

Used to save a selection in a <u>channel</u>. Saved selections can be used to create a mask.

To save a selection as a mask:

1 Select the area or areas of the image that you want to isolate.

2 Choose Save Selection from the Select menu. Any previously saved channels appear in a submenu along with the option New.

3 Choose New to save the selection in its own channel, or select an existing channel to replace the selection in that channel.

The channel is assigned a number that appears in the Channels palette. To see the saved selection, select the channel in the Channels palette.

☐ You can modify the mask using any painting or editing tools.

☐ To load the selection back into the image, use the Load Selection command.

Related topics:

<u>Using Channels to Create Masks</u>

<u>Load Selection Command</u>

New Window Command

Opens a new window with the same contents as the active window. Use the New Window command to display different views or parts of a document. When you open a new window, the document name is appended with a revision number in the title bar.

Related topics:

Opening and Arranging Windows

Cascade Command

Arranges multiple document windows so they overlap.   Click on a window to make it the active
window.

Related topics:

Opening and Arranging Windows

Tile Command

Arranges all open documents in windows that do not overlap on the screen. This is helpful if you want to simultaneously display a document in different views or the artwork at various magnification levels.

Related topics:

Opening and Arranging Windows

Arrange Icons Command

Arranges document icons in the Adobe Photoshop window.

Close All Command

Closes all open document windows.

Related topics:

Opening and Arranging Windows

Zoom In Command

Magnifies the view of an image by a factor of 2.

The document's title bar displays the magnification factor at all times; for example, 2:1 for a magnification by a factor of 2; and 1:2 for a reduction by a factor of 2. You can magnify and reduce up to 16 times the original view of the document.

Keep in mind that the 1:1 view of a document displays an image based on the screen resolution and the image resolution; not on the actual document dimensions. Because images are displayed at the screen resolution, documents with a high image resolution appear larger on-screen than documents with a low resolution. When you use the Zoom commands, you are not actually changing the size of a document, only your view of the image.

Related topics:

Zoom Tool

About Resolution

Scrolling Through an Image

Zoom Out Command

Reduces the view of an image by a factor of 2.

The document's title bar displays the magnification factor at all times; for example, 2:1 for a magnification by a factor of 2; and 1:2 for a reduction by a factor of 2. You can magnify and reduce up to 16 times the original view of the document.

Keep in mind that the 1:1 view of a document displays an image based on the screen resolution and the image resolution; not on the actual document dimensions. Because images are displayed at the screen resolution, documents with a high image resolution appear larger on-screen than documents with a low resolution. When you use the Zoom commands, you are not actually changing the size of a document, only your view of the image.

Related topics:

Zoom Tool

About Resolution

Scrolling Through an Image

Show/Hide Rulers Command

Displays or hides the rulers along the top and left sides of the active window.

When rulers are displayed and you move the cursor into the active window, markers appear on the rulers to indicate the cursor's current position.

To display the rulers:

Choose Show Rulers from the Window menu. To hide the rulers, choose Hide Rulers.

To change the ruler's zero origins:

1   Position the cursor in the upper left corner of the window, directly under the close box.

2   Hold down the mouse button and drag on the image. A set of cross hairs appears, marking the new origin on the rulers.

Changing the ruler origins allows you to measure from a specific point on the image.

NOTE: To reset the ruler origin to its default value, double-click the upper left corner of the rulers.

To change the ruler's units of measurement:

1   Choose Preferences from the File menu and Units from the submenu. The Unit Preferences dialog box appears.

2   Choose the units you want to use from the Ruler Units drop-down list.

3   Choose a point and pica size. Leave the setting at PostScript if you are printing to a PostScript device.

4   Indicate a column width. Column widths are used in some layout programs to specify the display of an image across columns. The setting in this option is used by the Image Size and Canvas Size commands.

Related topics:

Resizing Images

Changing Canvas Size

Show/Hide Info Command

The Show Info command in the Window menu displays the Info palette. This palette gives you information about the position of the pointer and the color values of <u>pixels</u> at any time during your work session. In effect, this palette is an on-screen <u>densitometer</u>.

Depending on the tool you are using, you can also use the Info palette to measure size, distance, and angle of rotation.

Related topics:

<u>Using the Info Palette</u>

Brush Options

You can define a number of options, such as size and spacing, for new brushes that you create and for each brush displayed in the Brushes palette.   For custom brushes, only the spacing can be set.

To set brush options:

1. Open the Brush Options dialog box using one of the following methods:

   ☐ Click the brush shape you want to use and choose Brush Options from the Brushes palette Control menu.

   ☐ Double-click a brush shape.

   ☐ Choose New Brush from the palette menu.

   The preview box in the lower right shows the current brush stroke. The preview box in the lower left shows the current brush angle and roundness. These boxes change to reflect the new brush as you edit the brush options.

2. Choose the options for the brush:

   € The Diameter option controls the size of the brush. Type a number or use the slider to enter a value in <u>pixels</u>.

   € The Spacing option specifies the distance between the brush marks in a stroke. To change the spacing, type a number or use the slider to enter a value that is a percentage of the brush diameter. You can turn off the spacing option by clicking the check box. When spacing is off, the brush is sensitive to the speed with which you drag the mouse.

   € The Hardness option is a measure of the hard center of the brush. Type a a number or use the slider to enter a value that is a percentage of the brush diameter.

   € The Angle option sets the angle of a noncircular brush's major axis from horizontal. Type a value in degrees or drag the axis in the preview box to set a new angle.

   € The Roundness option indicates whether the brush is a circle, an ellipse, or a straight line. A value of 100 percent indicates a circular brush. Type a number or drag the dots in the left preview box to enter a value that is a percentage of a circle.

Related topics:

<u>Creating Custom Brushes</u>

<u>Using the Brushes Palette</u>

Channel/Quick Mask Options

You can name the channels you create, and specify a color, protection option, and <u>opacity</u> for the channel. You can't change the name or characteristics of the channels Adobe Photoshop automatically creates for images, such as the Red, Green, and Blue channels for an RGB image.

To set options for a channel:

1 Click the channel name in the Channels palette and choose Channel Options from the palette menu (or double-click the channel name).

 The Channel Options dialog box appears.

2 Type a name for the channel in the Name box.

3 Select what color indicates when the channel is used as a selection mask:

☐ The Masked Areas option colors all of the image except the selection. All colored areas are protected from change.

☐ The Selected Areas option colors only the selection. Changes affect only the colored areas.

4 Click the Color swatch to display the color picker; then choose a mask color.

5 Enter an Opacity value. Values can range from 0 to 100 percent. Use this setting to reveal more or less of the underlying image; the opacity of the mask is not affected.

The mask color and opacity characteristics of the channel appear when more than one channel is visible.

Related topics:

<u>Using the Channels Palette</u>

<u>Splitting and Merging Channels</u>

<u>Using Channel Calculation Commands</u>

<u>Using Channels to Create Masks</u>

<u>Working in Quick Mask Mode</u>

Merge Channels

You can combine different <u>channels</u> to form a single image. The images you want to merge must be the same size (in pixels) and must be open. In addition, the image type you are merging channels into cannot contain more than the number of split channels you have open. For example, you can't merge the split channels from an RGB image into a CMYK image, because a CMYK image requires four channels and an RGB image contains only three channels.

To merge channels:

1 Split the channels of the document or documents you want to merge.

2 Click one of the channel documents you want to merge to make it the active document.

3 Choose Merge Channels from the Channels palette menu. The Merge Channels dialog box appears.

4 Choose the image type you want to create from the Mode drop-down list.

   Image types that aren't available are dimmed. The number of channels appropriate for the selected image type appears in the Channels text box.

5 If necessary, enter a number in the Channels text box.

   If you enter a number that is incompatible with the selected image type, the Multichannel image type is automatically selected. This creates a grayscale image, and all color information is lost.

6 Click OK. A dialog box appears for specifying channels.

7 For each channel, select an active channel document from the drop-down list.

   If you change your mind and want to select a different image type, click the Mode button to return to the Merge Channels dialog box.

8 When you have finished selecting the channels, click OK. If you are merging into a Multichannel image, click Next and repeat the selection process for each channel in the image.

   Adobe Photoshop merges the selected channels into a new image of the specified type and closes the documents containing the channels that were merged. The new image appears in an untitled document window.

Related topics:

<u>Splitting and Merging Channels</u>

<u>Using the Channels Palette</u>

Specify Channels Dialog Box

For each channel, select an active channel document from the drop-down list.

If you change your mind and want to select a different image type, click the Mode button to return to the Merge Channels dialog box.

When you have finished selecting the channels, click OK. If you are merging into a Multichannel image, click Next and repeat the selection process for each channel in the image.

Adobe Photoshop merges the selected channels into a new image of the specified type and closes the documents containing the channels that were merged. The new image appears in an untitled document window.

Related topics:

Merge Channels Options

Using the Channels Palette

Using Channel Calculation Commands

Load Dialog Box

This dialog box appears when loading or appending a file containing a Photoshop setting or palette. Each setting or palette has a file extension and a unique file name.

To load a Photoshop setting or palette:

1 If the file you want to open is on a different drive, select the appropriate drive from the Drives box.

2 In the Directories box, choose the directory you want to open.

A list of files is displayed beneath the File Name box. This list includes all files in the open directory that coincide with the file extension shown in the List Files of Format Type box.

3 To open files with a different file extension, select the proper extension from the drop-down list in the Save File As Format Type box.

4 Select the file you want from the list of files.

5 Click the OK button.

Save As Dialog Box

This dialog box appears when you are saving a Photoshop setting or palette as a file. Each setting or palette must be saved using the proper file extension and a unique file name.

To save a Photoshop setting or palette as a file:

1   Select the drive onto which you want to save the file.

2   In the Directories box, choose the directory in which you want to save the file.

3   Type a name for the file in the File Name box.

Photoshop provides the default file extension in the Save File As Format Type box. To use a different extension, select one from the drop-down list or type one in the File Name box.

4   Click the OK button.

Save Path Dialog Box

You can save and later load paths that you draw with the pen tool. You must save a pen tool path before you turn it into a selection border.

NOTE: To retain the exact pen tool path you have created, you must save the path before defining it as a selection border. Although you can use the Make Path command to redefine a selection border as a pen tool path, this command will change the placement of anchor points from the original path.

To save pen tool paths:

1 Draw the path you want to save.

2 Choose Save Path from the Paths palette menu. A dialog box appears.

3 Enter a name for the path.

The path is saved with the image, in the same file format as the image. Saved paths are listed in the Paths palette. If you edit a saved path, the changes are saved automatically.

Related topics:

Paths Palette

Clipping Path

You can use paths drawn with the pen tool and saved with the document as clipping paths that can be used as masks in other applications.

The PostScript interpreter creates curved segments by linking a series of straight line segments. The flatness setting for a clipping path determines how closely the straight line segments approximate the curve. The lower the flatness value, the greater the number of straight lines used to draw the curve and the more accurate the curve. In most cases, you do not need to change the flatness value. If you draw a very long curved path, however, you may need to increase the flatness setting so the path can be printed from the target application.

You can also indicate how you want a clipping path to be filled in the other application. When a clipping path is filled, the color is not applied along the clipping path but is applied to all points within the path. All the subpaths of the current path are treated equally; if the subpaths are disconnected, their inside points are taken together to determine what points get colored. If any subpaths are open, they are implicitly closed before color is applied.

Two options in the Clipping Path dialog box allow you to specify which fill rule to use for the clipping path. In general, use the Even-Odd Rule if you're saving a compound path as a clipping path. For simple paths, use the Non-Zero Winding Rule to make printing the path easier from a PostScript printer.

To save a path as a clipping path:

1 Choose Clipping Path from the Paths palette menu. The Clipping Path dialog box appears.

2 Choose the path from the Path drop-down list in the dialog box.

3 If necessary, enter a value for Flatness.

Values can range from 0.2 to 100; however, for high-resolution printing, you should not use a flatness value greater than 8. When the flatness value is blank, the image is printed using the printer's default setting.

4 Select a fill rule:

☐ The Even-Odd Rule option begins the count at zero and adds one every time the path crosses the ray in any direction. After counting all the crossings, the point is considered inside the path if the result is odd, and outside the path if the result is even.

☐ The Non-Zero Winding Rule option begins the count of points at zero and adds one every time the path crosses the ray from left to right and subtracts one every time the path crosses from right to left. After counting all the crossings, a result of zero indicates the point is outside the path; any other result indicates the point is within the path.

NOTE: If you encounter unexpected results when printing a document that includes a clipping path filled with the Non-Zero Winding Rule option, you can change the orientation of the subpath. Select the subpath, and choose Reverse Subpath from the Paths palette menu; then save the document again.

Related topics:

Using the Pen Tool

Editing Pen Tool Paths

Make Path

Used to redefine a selection border as a pen tool path.

Any selection made with an Adobe Photoshop selection tool can be redefined as a pen tool path. This is useful when you want to use the pen tool to make adjustments to a selection border. You can then redefine the path as a selection border or save the path with the document for later use.

To define a selection border as a path:

1 Choose Make Path from the Paths palette. A dialog box appears.

2 Enter a Tolerance value and click OK.

Values can range from .5 to 10 pixels. The tolerance you set determines how sensitive the Make Path command is to slight changes in the path shape. The higher the tolerance value, the fewer the number of anchor points used to draw the path, and the smoother the path.

3 Select the arrow pointer tool and click the path.

The path's anchor points appear. The path can then be adjusted as needed.

Related topics:

Editing Pen Tool Paths

Using the Paths Palette

Saving and Loading Pen Tool Paths

Make Selection

The Make Selection command is used to define a pen tool path as a selection border. You can define any path as a selection border. A path that overlaps a selected area can be added to, subtracted from, or combined with the selection.

To define a path as a selection border:

1 Select the path you want to define as a selection. To combine a path with a selection, make the selection using any selection tool.

2 Choose Make Selection from the Paths palette menu. A dialog box appears.

3 Select rendering options:

☐ The Feather Radius option defines how far inside and outside the selection border the <u>feather edge</u> extends.

☐ The <u>Anti-aliased</u> option creates a finer transition between the pixels in the selection and the surrounding pixels by partially filling the edge pixels of the selection.

4 Choose an option to define the selection border:

☐ The New Selection option selects only the area defined by the path.

☐ The Add to Selection option adds the area defined by the path to the original selection.

☐ The Subtract From Selection option removes the area defined by the path from the selected area.

☐ The Intersect With Selection option selects the area common to both the path and the selected area. If the path and the selection do not overlap, nothing is selected.

Related topics:

<u>Paths Palette</u>

<u>Methods of Selecting</u>

<u>Extending and Reducing Selection Borders</u>

Pen Tool Options

In the Pen Tool Options dialog box, select the Rubber Band option if you want to preview curves before setting the next anchor point.

Related topics:

Using the Pen Tool

Editing Pen Tool Paths

Rectangular Marquee Tool

Lets you select rectangular areas by dragging a marquee, or selection border, on the image. To use this tool, click the tool in the toolbox; then drag over the area you want to select. The dimensions of the resulting marquee are displayed in the Info palette.

> NOTE: By default, the marquee starts from a corner or edge. To start the marquee from the center of the selection, hold down the Alt key while you drag. Hold down the Shift key as you drag to constrain the marquee to a square.

Rectangular marquee options

Double-click the tool icon to set options for the size and precision of the marquee. You can also soften the edges of a selection by using the Feather option.

The effect of softening the edges is apparent only when you modify a selection, such as by cutting, moving, pasting, or filling it. For example, if you paint on a soft-edged selection, the color of the paint blends with the color of the edge pixels. If you adjust the contrast of a soft-edged selection, the contrast change fades out toward the edge of the selected area.

Size options:

☐ The Constrained Aspect Ratio option sets a height-to-width ratio for the marquee. For example, to draw a marquee that is twice as wide as it is high, enter 2 for the width and 1 for the height. You can use decimal values for the width and height.

☐ The Fixed Size option lets you specify set values for the marquee's height and width. Values are specified in pixels. The number of pixels needed to create 1 inch depends on the resolution of the image. For a file that has 72 pixels per inch, you need 72 pixels to make 1 inch. For a file that is 200 pixels per inch, you need a value of 200 to make 1 inch.

☐ The Single Row and Single Column options allow you to define the marquee as a 1-pixel- wide row or column. Click near the row or column you want to select; then drag the pointer to locate the exact row or column.

To soften the edges of the selection:

☐ Use the Feather option to define a feather edge before you make the selection. Specify how far inside and outside the selection border the feather edge extends. For example, a Feather Radius value of 5 creates a feather edge with a 10-pixel width. A feather radius can range in width from 1 to 64 pixels.

Related topics:

Info Palette

Methods of Selecting

Cutting, Copying, and Pasting a Selection

Tips on Using Tools

Elliptical Marquee Tool

Lets you select elliptical areas by dragging a marquee, or selection border, on the image. To use this tool, click the tool in the toolbox; then drag over the area you want to select. The dimensions of the resulting marquee are displayed in the Info palette.

> NOTE: By default, the marquee starts from a corner or edge. To start the marquee from the center of the selection, hold down the Alt key while you drag. Hold down the Shift key as you drag to constrain the marquee to a square.

Elliptical marquee options

Double-click the tool icon to set options for the size and precision of the marquee. You can also soften the edges of a selection by using the Feather option.

The effect of softening the edges is apparent only when you modify a selection, such as by cutting, moving, pasting, or filling it. For example, if you paint on a soft-edged selection, the color of the paint blends with the color of the edge pixels. If you adjust the contrast of a soft-edged selection, the contrast change fades out toward the edge of the selected area.

Size options:

☐ The Constrained Aspect Ratio option sets a height-to-width ratio for the marquee. For example, to draw a marquee that is twice as wide as it is high, enter 2 for the width and 1 for the height. You can use decimal values for the width and height.

☐ The Fixed Size option lets you specify set values for the marquee's height and width. Values are specified in pixels. The number of pixels needed to create 1 inch depends on the resolution of the image. For a file that has 72 pixels per inch, you need 72 pixels to make 1 inch. For a file that is 200 pixels per inch, you need a value of 200 to make 1 inch.

To soften the edges of the selection:

☐ Use the Feather Radius option to define a feather edge before you make the selection. Specify how far inside and outside the selection border the feather edge extends. For example, a Feather Radius value of 5 creates a feather edge with a 10-pixel width. A feather radius can range in width from 1 to 64 pixels.

Related topics:

Info Palette

Methods of Selecting

Cutting, Copying, and Pasting a Selection

Tips on Using Tools

Lasso Tool

Lets you draw a freehand outline around an area in the image. To use the lasso, click the tool in the toolbox and drag around the area you want to select.

Lasso marquee options

Double-click the tool icon to set options for the lasso. You can soften the edges of a lasso selection by using the Feather and anti-aliasing options.

The effect of softening the edges is apparent only when you modify a selection, such as by cutting, moving, pasting, or filling it. For example, if you paint on a soft-edged selection, the color of the paint blends with the color of the edge pixels. If you adjust the contrast of a soft-edged selection, the contrast change fades out toward the edge of the selected area.

To soften the edges of the selection:

☐ Use the Feather Radius option to define a feather edge before you make the selection. Specify how far inside and outside the selection border the feather edge extends. For example, a Feather Radius value of 5 creates a feather edge with a 10-pixel width. A feather radius can range in width from 1 to 64 pixels.

☐ Use the Anti-aliased option when you want to make a subtle transition between the edges of a selection and the surrounding pixels. Anti-aliasing partially fills edge pixels so that they are semitransparent.

Related topics:

Methods of Selecting

Cutting, Copying, and Pasting a Selection

Tips on Using Tools

Magic Wand Tool

The magic wand tool allows you to select portions of images based on the color similarities of adjacent underline pixels. This tool can be useful for selecting part of an image (for example, a red flower) without having to trace the outline with the lasso tool. When you use the magic wand tool, Adobe Photoshop determines whether the adjacent pixels are within the color range, or tolerance, specified in the Magic Wand Options dialog box. All pixels within the range are selected.

Magic wand options

Double-click the tool icon to set options:

☐ The tolerance can range from 0 to 255. Enter a low tolerance value to select colors very similar in color value to the pixel you click. Enter a higher tolerance to select a broader range of colors.

☐ Use the Anti-aliased option when you want to make a subtle transition between the edges of a selection and the surrounding pixels. Anti-aliasing partially fills edge pixels so that they are semitransparent.

Related topics:

Methods of Selecting

General Preferences Command

Cutting, Copying, and Pasting a Selection

Tips on Using Tools

Cropping Tool

Lets you select part of an image and discard the rest. The cropping tool includes options that allow you to define the height-to-width ratio for the cropping marquee and define the resolution of the cropped image. In addition, you can rotate and adjust the size of the cropping marquee before you crop the image.

To use the cropping tool:

1 Click the cropping tool in the toolbox.

2 Select the part of the image you want to use.

When you release the mouse button, the selected area appears with four handles. You can drag these handles to redefine the area to be cropped. A preview of the cropped area appears.

3 Move the pointer inside the selected area.

The pointer turns into a scissors.

4 Click the mouse button. To cancel the cropping operation once it has started, press the Esc key.

Defining the size and resolution of the cropped area

You use the cropping tool options to define the size and resolution of the rectangular area you're cropping.

To specify the size and resolution of the cropped area:

1 Double-click the cropping tool in the toolbox. The Cropping Tool Options dialog box appears.

2 Choose the units of measurement you want from the drop-down lists. Note that the Columns option for Width uses the width and gutter sizes specified in the Units Preferences dialog box.

3 Enter values for height, width, and resolution; then click OK.

If you specify a size but not a resolution, Adobe Photoshop changes the image resolution to compensate for the size change. For example, suppose you have a 1-inch by 1-inch image with an image resolution of 100 pixels per inch. You specify a size of 2 inches by 2 inches and do not specify a resolution. The cropped area becomes a 2-inch by 2-inch image with a reduced resolution of 50 pixels per inch.

If you specify a resolution but not a size, Adobe Photoshop changes the size to compensate for the change in resolution.

4 Select the area to be cropped; then click inside the selection.

Adjusting and rotating the cropping tool marquee

In some cases, you might want to adjust the cropping tool marquee or rotate a selection before you crop the image.

To resize and move the cropping tool marquee:

1 Click the cropping tool in the toolbox, and select the area to be cropped.

2 Position the cropping tool on one of the handles on the marquee. The pointer changes to the arrowhead.

3 Drag until the marquee is the size you want.

To move the marquee to another position on the image:

Hold down the Control key as you drag the handle.

To rotate the cropped selection:

Hold down the Alt key and drag the handle in a clockwise or counterclockwise direction.

NOTE: You cannot rotate the cropping tool marquee in a bitmapped image.

Related topics:

Crop Command

Adjusting Image Resolution

Resizing Images

Tips on Using Tools

Type Tool $\boxed{\text{T}}$

Allows you to enter bitmapped type in an image.

Normally, large bitmapped characters appear jagged on the screen; however, if you use the Adobe Type Manager™ (ATM™) program, or you are using TrueType fonts, characters appear almost as smooth and as well-defined as outline type.

Bitmapped type is rendered at the resolution of the image. For example, if the resolution of the image is 100 pixels per inch, the resolution of the type will also be 100 pixels per inch. You cannot edit bitmapped type in Adobe Photoshop after you have placed it on the image.

To enter type in an image:

1. Click the type tool in the toolbox.

2. Click where you want the type to appear on the image. The Type Tool dialog box appears.

3. Choose a font and type a size for the text.

4. Choose a unit of measurement from the size units drop-down list.

5. Enter values for the <u>leading</u> and spacing, and choose a style for the text.

6. Enter the text in the dialog box.

   The type automatically wraps in the dialog box, but appears on a single line in the image unless you press Return. You can enter up to 255 characters. To scroll the type, click the text box and drag up or down.

7. Click OK.

   Type appears in the image as a <u>floating selection</u>.

   NOTE: While the type is selected, you can use the options in the Brushes palette to adjust opacity or choose a mode for blending the type into the image. You can also move the type by dragging it, or delete some or all of the characters. However, once you deselect the type, it becomes part of the image; you can then   change the type only by editing the <u>pixels</u> that make up the characters.

Specifying leading

You control the line spacing, called leading, using the Leading option in the Type dialog box. Leading is measured from baseline to baseline of the lines of text. The leading parameter uses the same unit of measurement you specify for the font size (either points or pixels); by default, the leading built into the font is used. Values can range from 1 to 1000.

Specifying letter spacing

You can control the spacing between letters, called kerning, using the Spacing option in the Type dialog box. The Spacing parameter uses the same unit of measurement that is specified for the font size (either points or pixels). Enter positive values to increase the spacing; enter negative values to decrease the spacing. Spacing increments can be as small as tenths of a point or pixel (from 99.9 to 999.9).

Selecting style options for type

You can apply Style options to type so that it appears underlined, in italics, shadowed, outlined, and bold.

The anti-aliased option

Text, like all images is Photoshop is composed of pixels and its resolution is measured in pixels per

inch (ppi).The <u>Anti-aliased</u> option in the Type dialog box lets you minimize the pixel contrast at the edges of the text. When you check this option, the edges of the text appear smooth and blend into the background. You'll probably want to use anti-aliased type in your images, unless you are working with type in small point sizes.

Related topics:

<u>Positioning Type in an Image</u>

<u>Using the Brushes Palette</u>

<u>Selecting a Painting or Editing Mode</u>

Hand Tool

Used to scroll through an image that is too big to fit in the active window.

To use the hand tool:

1   Click the hand tool in the toolbox.

2   Click on a location in the image and drag to position the image as desired.

   NOTE: To fit the artwork into the active window, double-click the hand tool.

Related topics:

Magnifying and Reducing the Image View

Zoom Tool

Used to magnify and reduce the view of a document.

The document's title bar displays the magnification factor at all times; for example, 2:1 for a magnification by a factor of 2; and 1:2 for a reduction by a factor of 2. You can magnify and reduce up to 16 times the original view of the document.

Keep in mind that the 1:1 view of a document displays an image based on the screen resolution and the image resolution; not on the actual document dimensions. Because images are displayed at the screen resolution, documents with a high image resolution appear larger on-screen than documents with a low resolution. When you use the zoom tool, you are not actually changing the size of a document, only your view of the image.

To use the zoom tool:

1 Click the zoom tool in the toolbox.

2 Position the pointer on the image and click to zoom in; Alt-click to zoom out.

Each click magnifies or reduces by a factor of 2. If only part of the image can be displayed, it is centered around the point you click. When you reach the maximum magnification or reduction factor, the center of the zoom tool appears empty.

To magnify part of an image using a selection marquee:

1 Click the zoom tool in the toolbox.

2 Hold down the mouse button, and drag to select the part of the image you want to magnify.

This part of the image is displayed at the maximum magnification possible, up to a factor of 16. The magnification factor used is determined by the size of the area you select.

SHORTCUTS: To restore the 1:1 view of a document, double-click the zoom tool in the toolbox. To activate the zoom-in tool while using another tool, press Control-spacebar. To activate the zoom-out tool while using another tool, press   Alt-spacebar. When you're working in a very large file, double-click the hand tool to make the image fit in the window.

Related topics:

Using the Zoom Commands

About Resolution

Scrolling Through an Image

Tips on Using Tools

Paint Bucket Tool

The paint bucket tool uses the foreground color to fill adjacent <u>pixels</u> that are similar in color value to the pixel you click. The paint bucket tool options allow you to specify how similar the colors of pixels must be to be filled, to fill the selection with a pattern, and to create smooth edges for the filled selection.

To use the paint bucket tool:

1 Click the paint bucket tool in the toolbox.

2 Click the part of the image whose color you want to change.

All adjacent pixels within the <u>tolerance</u> specified in the Paint Bucket Options dialog box are filled with the foreground color.

To change the paint bucket options:

1 Double-click the paint bucket tool in the toolbox. The Paint Bucket Options dialog box appears.

2 Select the options for the fill:

☐ The Tolerance option defines how similar a pixel must be to be filled. Values can range from 0 to 255. A low tolerance fills pixels that have color values very similar to the pixel you click. A high tolerance fills pixels within a broader range of colors.

☐ The <u>Anti-aliased</u> option smooths the edges of the filled selection.

☐ The Contents options fill the selection with the foreground color or with a pattern.

Related topics:

<u>Filling a Selection</u>

<u>Selecting a Painting or Editing Mode</u>

<u>Tips on Using Tools</u>

Gradient Tool

Creates gradient (blend) fills that display a gradual transition from the foreground color to the background color.

A gradient fill can be applied either as a radial or linear fill. A linear fill blends from one point to another in a straight line. A radial fill blends from a center point outward in all directions.

To create a linear or radial fill with the gradient tool:

1. Select the part of the image you want to fill. If you have not selected a specific part of the image, the gradient tool applies the fill to the entire image.

2. Double-click the gradient tool in the toolbox.

   The Gradient Tool Options dialog box appears.

3. Click either Linear or Radial; then specify the other options you want and click OK. Options are described below.

4. Position the gradient pointer where you want the blend to start, and drag to define the blend.

   ▢ For a linear fill, drag a line indicating the starting point and direction for the blend. To constrain the line to a 45-degree angle, hold down the Shift key as you drag.

   ▢ For a radial fill, drag to indicate the center point and radius for the blend.

5. Release the mouse button where you want the blend to end.

   ▢ If the line you drag falls completely within the selected area, the solid background and foreground colors fill in the selection on either side of the blend.

   ▢ If the line you drag extends outside the selected area, only the part of the blend that occurs within the selection appears.

Gradient tool options

Options for the gradient fill include linear or radial, midpoint skew, an RGB/CMYK or HSB transition of colors, opacity, color modes, and offset value for a radial fill. If you don't select options for the gradient tool, Adobe Photoshop uses the default settings for the blend: a linear, RGB/CMYK fill with 100% opacity and a 50% midpoint skew.

To specify the opacity of the blend:

With the gradient tool selected, choose Show Brushes from the Window menu and drag the slider to adjust the opacity. To make the blend more transparent, use a low percentage value. A setting of 100% makes the blend nearly opaque.

To specify the midpoint of the blend:

In the Gradient Tool Options dialog box, set the midpoint (or skew) of the blend, which is the point at which the color is an even mix of the foreground and background colors. For example, enter a value of 25% to make the midpoint appear near the beginning of the fill (one-quarter of the way across the fill).

Specifying a radial offset value

The offset value defines the point at which the radial fill displays the foreground color without any gradations of color. In the Gradient Tool Options dialog box, enter this value as a percentage of the total distance from the starting point to the end point of the line you drag when you create the blend. For example, a radial offset value of 50 makes the foreground color appear as a solid color without gradations for 50 percent of the distance from the starting point to the ending point of the fill.

Selecting a Color Space option

Both linear and radial fills use the Color Space options in the Gradient Tool Options dialog box to define the color transitions.

Select one of the three Color Space options to define how the fill makes the transition from the foreground color to the background color:

€ The Normal option makes the transition using the intermediate gray levels between the two colors.

€ The Clockwise Spectrum option makes the transition using the intermediate hues that lie between the two colors, when moving clockwise around the color wheel.

€ The Counterclockwise Spectrum option makes the transition using the intermediate hues that lie between the two colors as you move counter clockwise around the color wheel.

Specifying a Color Mode option

The color mode determines how the blend affects the underlying pixels in the selection. With the gradient tool selected, choose Show Brushes from the Window menu and use the Mode drop-down list to select one of several modes for the fill.

Related topics:

Choosing Colors

Specifying Painting Tool Options

Selecting a Painting or Editing Mode

Tips on Using Tools

Line Tool

Creates straight, <u>anti-aliased</u>, or soft-edged lines on an image. To paint a line, click the line tool and drag.   Hold down the Shift key as you drag to constrain the angle of the line to 45-degree increments.

Line Tool Options

Double-click the icon to access the Line Tool Options dialog box.

To set the line width:

☐ In the Line Tool Options dialog box, type the line width in <u>pixels</u> .

To specify the attributes for arrowheads with the line tool:

1. Specify where you want arrowheads to appear:

   € Select At Start to create lines with arrowheads at the starting points.

   € Select At End to create lines with arrowheads at the ending points.

   € Select both options to create lines with arrowheads on both ends.

2. Enter a value from 1 to 1500 pixels for the arrowhead width.

3. Enter a value from 1 to 1500 for the arrowhead length.

4. Enter a value from +/- 50 percent for the concavity of the arrowhead.

   The concavity value defines the amount of curvature on the widest part of the arrowhead where the arrowhead meets the line.

   NOTE: You can also use the line tool to measure distances in the document. To do this, define a line width of 0 in the Line Tool Options dialog box, and choose Show Info from the Window menu. The Info palette displays the x and y coordinates of the line tool starting point, the change in x and the change in y, the distance, and the angle.

Related topics:

<u>Selecting a Painting or Editing Mode</u>

<u>Tips on Using Tools</u>

Eyedropper Tool

The eyedropper tool is used to:

€ Sample color from an image to designate a new background or foreground color.

€ Display the color values for any pixel in an image.

€ Perform several color correction moves, such as setting the white and black points.

> NOTE: To access the eyedropper tool while you're using any painting tool, hold down the Alt key. The pointer turns into the eyedropper pointer.

To select the current foreground or background color from an image:

1. Click the eyedropper tool in the toolbox.

2. To select the foreground color from the image, click the color you want; to select the background color, hold down the Alt key as you click.

The new colors appear within the color picker icon in the toolbox. You can sample from the current image or open another image to choose the color.

To display color information about a pixel on the image:

1. Select the eyedropper tool.

2. Position the tip of the eyedropper on the pixel whose color levels you want to display:

€ The color values of the pixel are displayed in the Info palette.

€ Click on a point in the image to display the color values of the pixel in the Colors palette.

€ If the background color selection box is selected in the Colors palette, Alt-click the eyedropper to display information about the foreground color.

> NOTE: To use this feature, you must have the Point Sample option chosen in the Sample Size drop-down list in the Eydropper Options dialog box.

To change the sample size of the eyedropper:

1. Double-click the eyedropper tool.   The Eyedropper Tool Options dialog box appears.

2. Select the option you want from the Sample Size drop-down list:

☐ The Point Sample option reads the precise value of the pixel you click. This is the default sample size.

€ The 3 by 3 Average option reads the average value of a 3 by 3 pixel area.

€ The 5 by 5 Average option reads the average value of a 5 by   5 pixel area.

Related topics:

Using the Colors Palette

Using the Color Picker

Reading Color Information on the Image

Adjusting Brightness, Contrast, and Gamma

Eraser Tool

Used to erase <u>pixels</u> and change them to the same color as the background color.

Eraser Options

☐ Hold down the Alt key to work in magic eraser mode. This lets you restore part of an image to the last saved version.

Magic eraser

☐ Double-click the eraser icon to erase the entire image.

Related topics:

<u>Tips on Using Tools</u>

Pencil Tool

Creates hard-edged freehand lines.

Pencil Tool Options

Double-click the tool icon to open the Pencil Options dialog box.

Auto Erase

The Auto Erase option for this tool lets you paint the background color over areas containing the foreground color.

To use Auto Erase, open the pencil tool's dialog box and select Auto Erase. Drag through the foreground-colored area you want to erase. The area is painted with the background color. If the area you drag through doesn't contain the foreground color, the area is painted with the foreground color.

Specifying the paint fade-out rate

You can specify the rate at which the pencil strokes fade out to simulate actual brush strokes. The fade-out rate determines how many pixels are colored with each stroke before the paint fades out completely.

To specify a fade-out rate, enter a value from 0 to 9999 in the Distance text box. The higher the fade-out value, the longer the paint flows before it fades out. Click a button to indicate if the paint should fade from the foreground color to transparent, or from the foreground color to the background color.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Color if you want increasing pressure to paint with the foreground color. Light pressure paints with the background color. Medium pressure paints with an intermediate color.

€ Select Opacity if you want increasing pressure to result in more opaque paint.

Related topics:

Setting Tool Options in the Brushes Palette

Selecting a Painting or Editing Mode

Tips on Using Tools

Airbrush Tool

Used to lay down a diffused spray of the foreground color on an image.

Airbrush Options

Double-click the tool icon to open the Airbrush Options dialog box.

Specifying the paint fade-out rate

You can specify the rate at which the airbrush strokes fade out to simulate actual brush strokes. The fade-out rate determines how many pixels are colored with each stroke before the paint fades out completely.

To specify a fade-out rate, enter a value from 0 to 9999 in the Distance text box. The higher the fade-out value, the longer the paint flows before it fades out. Click a button to indicate if the paint should fade from the foreground color to transparent, or from the foreground color to the background color.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Color if you want increasing pressure to paint with the foreground color. Light pressure paints with the background color. Medium pressure paints with an intermediate color.

€ Select Pressure if you want increasing pressure to result in a more forceful airbrush.

Related topics:

Setting Tool Options the Brushes Palette

Selecting a Painting or Editing Mode

Tips on Using Tools

Paintbrush Tool

Used to paint soft-edged strokes using the foreground color.

Paintbrush Options

Double-click the tool icon to open the Paintbrush Options dialog box.

Specifying the paint fade-out rate

You can specify the rate at which the paintbrush strokes fade out to simulate actual brush strokes. The fade-out rate determines how many <u>pixels</u> are colored with each stroke before the paint fades out completely.

To specify a fade-out rate, enter a value from 0 to 9999 in the Distance text box. The higher the fade-out value, the longer the paint flows before it fades out. Click a button to indicate if the paint should fade from the foreground color to transparent, or from the foreground color to the background color.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Color if you want increasing pressure to paint with the foreground color. Light pressure paints with the background color. Medium pressure paints with an intermediate color.

€ Select Opacity if you want increasing pressure to result in more opaque paint.

Related topics:

<u>Setting Tool Options in the Brushes Palette</u>

<u>Selecting a Painting or Editing Mode</u>

<u>Creating Custom Brushes</u>

<u>Tips on Using Tools</u>

Rubber Stamp Tool

Lets you paint a copy, or a modified copy of an image or color, into the same image or into another image. By default, the rubber stamp tool samples an image and paints an exact duplicate of that image. Other rubber stamp options let you paint with patterns, filters, or with an impressionistic copy of the image. You can also restore painted areas to their last-saved states.

To use the rubber stamp tool:

1 Double-click the rubber stamp tool in the toolbox. The Rubber Stamp Options dialog box appears.

2 Select an option from the Option menu; then click OK. The options are discussed in the following sections.

3 If you are using one of the Clone options, position the pointer where you want to take a sample and Alt-click. If you are using one of the other options, you don't have to sample the image.

4 Drag to paint with the sampled image.

The Clone options

The Clone options take a sample of the entire image, which you can then apply, or paint, over another image. Each stroke of the tool paints on more of the sampled image, starting at the point from which you took the sample.

The aligned Clone option applies a sampled image continuously, regardless of how many times you stop and resume painting. This option is useful if you want to use different sized brushes to paint an image. You can also use the aligned Clone option for painting two halves of an image on either side of another image.

The non-aligned Clone option applies a sampled image from the initial sampling point each time you stop and resume painting. Because the rubber stamp tool samples the entire image, this option is useful for applying multiple copies of part of an image.

Refer to the *Adobe Photoshop User Guide* for illustrated examples of clone options.

Pattern options

The Pattern options let you select a pattern and then use the rubber stamp tool to paint using that pattern. The aligned Pattern option repeats the pattern as contiguous, uniform tiles, even when you stop and resume painting several times. The non-aligned Pattern option centers the pattern around the rubber stamp pointer each time you stop and resume painting.

To use the Pattern options with the rubber stamp tool:

1 Use the rectangular marquee tool to define the pattern you want to use.

2 Choose Define Pattern from the Edit menu.

3 Double-click the rubber stamp tool in the toolbox. The Rubber Stamp Options dialog box appears.

4 Select a pattern option and then click OK.

5 Drag to paint with the pattern.

From Snapshot option

The From Snapshot option paints the contents of the image buffer onto the image. By default, each image has an empty buffer associated with it. At any time, you can store the current selection in the buffer using the Take Snapshot command in the Edit menu. For example, you can use a painting tool or a filter to alter all or part of an image and then choose Take Snapshot to save the change. If you undo the change and choose the From Snapshot option for the rubber stamp tool, you can apply the change selectively to areas of the image.

From Saved option

The From Saved option for the rubber stamp tool lets you restore an area of an image to its previously saved state. This option performs the same function as the eraser tool's magic eraser mode, except that it lets you specify a brush shape to create soft edges around the area you are reverting. The From Saved option also supports the transparency and painting modes set in the Brushes palette.

When you use the From Saved option, Adobe Photoshop reads in the last-saved version of the image from disk and restores the portions of the image you drag the rubber stamp tool through. When you begin using this option, it may take a few moments for the tool to start working while the image is read in from disk.

Impressionist option

The Impressionist option for the rubber stamp tool lets you create textured designs based on the last-saved version of a document. When you use the Impressionist option, the program reads in the pixels from the last-saved version of the area you drag through and smears the pixels together to create an impressionistic effect. As with the From Saved option, this rubber stamp tool option may take a few moments to start working while the image is read in from disk.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Opacity if you want increasing pressure to result in more opaque paint.

Related topics:

Setting Tool Options in the Brushes Palette

Selecting a Painting or Editing Mode

Tips on Using Tools

Smudge Tool

Simulates the effect of dragging a finger through wet paint.

The tool picks up color from where the stroke begins and pushes it in the direction in which you drag. By varying the pressure on the Brushes palette, you can change the force of the smudge.

Smudge options

To smudge using the foreground color at the beginning of each stroke, double-click the smudge tool and select the Finger Painting option in the Smudge Tool dialog box.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Pressure if you want the smudging effect to be controlled by tablet pressure.

Related topics:

Setting Tool Options in the Brushes Palette

Tips on Using Tools

Blur/Sharpen Tools

Lets you blur hard edges or areas in an image to reduce detail or sharpen soft edges to increase clarity or focus.

Blur Mode

Applying the blur tool decreases the contrast between <u>pixels</u> and produces a smoother image.

Sharpen Mode

Applying the sharpen tool increases the contrast between pixels and sharpens the image.

To switch between blur and sharpen modes, Alt-click the tool in the toolbox, or double-click the tool and select a mode from the Tool drop-down list in the Blur/Sharpen Options dialog box. To increase the pressure of the blur/sharpen tool, use the slider in the Brushes palette.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Pressure if you want the blurring or sharpening effect to be controlled by tablet pressure.

Related topics:

<u>Setting Tool Options in the Brushes Palette</u>

<u>Tips on Using Tools</u>

Dodge/Burn Tool

   Dodge

The dodge tool is used to lighten part of an image.

   Burn

The burn tool is used tp darken part of an image.

When you're working with the dodge/burn tool, you're modifying only the lightness of the image.

To switch between dodge and burn modes, Alt-click the tool in the toolbox, or double-click the tool and select a mode from the Tool drop-down list in the Dodge/Burn Options dialog box.

Specifying stylus pressure options

With the appropriate software driver installed, Photoshop supports pressure-sensitive digitizing tablets such as the Wacom and Calcomp. To set the stylus pressure, click the options you want:

€ Select Size if you want increasing pressure to result in a bigger brush stroke.

€ Select Pressure if you want the lightening or darkening effect to be controlled by tablet pressure.

Related topics:

Setting Tool Options in the Brushes Palette

Tips on Using Tools

Pen Tool

The pen tool on the Paths palette lets you draw smooth-edged paths with precision. Use the pen tool to create very straight lines or smooth, flowing curves. Lines and shapes drawn with the pen tool can be saved as paths or defined as selection borders.

You create a path by clicking to set anchor points; you adjust the shape of the path by dragging the anchor points or the direction lines associated with each anchor point. A path segment is the part of the path between two anchor points. A subpath is a sequence of connected segments.

To draw straight lines with the pen tool:

1 Choose Show Paths from the Window menu. The Paths palette appears.

2 Select the pen tool.

3 Move the pointer to where you want the straight line to begin, and click.

   A solid square appears. This is an anchor point; it remains selected until you define the next point.

4 Click where you want the first segment of the straight-line path to end.

      NOTE: Click, don't drag. If you drag, you'll start a curve instead of a line.

   The second anchor point is now selected, and the first anchor point changes to a hollow square, indicating it is no longer selected. A line appears between the two points.

   If you want to preview the line before setting the second anchor point, double-click the pen tool to display the Pen Tool Options dialog box. Select the Rubber Band option.

   To constrain a line to the nearest 45-degree axis, hold down the Shift key while you click to add anchor points.

5 Continue clicking to set anchor points for additional straight segments.

   Use the Backspace key to erase part or all of a path. Press Backspace once to erase the last anchor point. Press Backspace twice to erase the path you're drawing. Press Backspace three times to erase all the unsaved paths.

6 If you want to close the path, click the first anchor point.

A small loop appears next to the pointer when you place it on the first anchor point, indicating that the next click will close the path.

To draw a curved path with the pen tool:

1 Choose Show Paths from the Window menu. The Paths palette appears.

2 Select the pen tool.

3 Position the pointer where you want the curve to begin, and drag in the direction you want the first half of the curve to be drawn.

   The pointer changes to an arrowhead when you press the mouse button. As you drag, a direction line appears. The direction points at either end of this line move in opposition to each other, around the stationary anchor point. The length and slope of the direction line determine the length and slope of the curve.

4 For a smooth curve, position the pointer where you want the curve to end, press the mouse button, and drag in the opposite direction from the first anchor point. For a wavy curve, drag in the same direction as you dragged from the first anchor point.

   If you want to preview the curve before setting the next anchor point, double-click the pen tool to display the Pen Tool Options dialog box. Select the Rubber Band option.

To constrain the position of an anchor point to 45 degrees, hold down the Shift key while you place new anchor points (the anchor point is placed at a multiple of 45 degrees from the previous anchor point).

5　Drag until the curved segment is the way you want it.

You can also constrain the direction line to a 45-degree angle by holding down the Shift key as you drag.

6　Continue adding anchor points and dragging to create additional curved segments.

Use the Backspace key to erase part or all of a path. Press Backspace once to erase the last anchor point. Press Backspace twice to erase the path you're drawing. Press Backspace three times to erase all the unsaved paths.
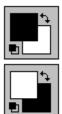
7　If you want to close the path, click the first anchor point.

Related topics:

Using Anchor Points to Edit Pen Tool Paths

Saving and Loading Pen Tool Paths

Using the Paths Palette

Color Picker

The color picker allows you to select the foreground or background color from a color spectrum, or to numerically define color components to create a color. To display the color picker, click the foreground or background color selection box in the toolbox, or click the color selection box in the Colors palette.

Foreground color selection

Background color selection

Use the foreground color selection box to change the foreground color. This is the color you use when you paint with many of the tools (for example, the paint bucket, line, pencil, airbrush, and paintbrush tools).

Use the background color selection box to change the background color. This is the color that appears when you use the eraser or the gradient tool, or when you move a selection.

Invert colors icon

Use the invert colors icon to switch the foreground and background colors in the color selection boxes.

Default colors icon

Use the default colors icon to return to the black foreground and white background colors.

Choosing Colors

You can choose colors from either the Adobe Photoshop or Windows color picker. Select either option in the General Preferences dialog box. To open this dialog box, choose Preferences from the File menu, and then choose General from the submenu.

☐ The Adobe Photoshop color picker lets you select colors based on the RGB, HSB, CMYK, and Lab color models.   It also lets you choose from several custom color systems.

☐ The Windows color picker allows you to choose colors based on the RGB and HSL models.

Related topics:

Using the Adobe Photoshop Color Picker

Using the Windows Color Picker

Choosing Custom Colors with the Color Picker

Recognizing Non-Printable Colors

Using the Colors Palette

Using the Eyedropper Tool to Select Colors

Color Models

Quick Mask Mode & Standard Mode Controls

Icons for controlling the working mode in Adobe Photoshop appear below the tool icons in the toolbox.

☐ Click the icon on the left to work in Standard Mode (Quick Mask off). Use the Standard mode to make selections and perform standard editing and painting tasks.

Standard mode

☐ Click the icon on the right to work in Quick Mask mode. Use Quick Mask mode to create and edit a temporary mask.

Quick Mask mode

You create and use a mask when you want to isolate part of an image and apply color changes, filters, or other effects to just that section. You can also use a mask to isolate an area that you want to protect from change.

You can use any selection tool to create a mask, and you can use the painting and editing tools to modify a mask after it's created.

Adobe Photoshop provides two ways to make masks:

☐ Use Quick Mask mode to create and view a single mask for an image. Temporary masks are useful when you don't want to save the mask for later use.

☐ Use channels (sometimes called <u>alpha channels</u>) to create multiple masks for an image and to save selection borders as masks that will become selections.

Related topics:

<u>Working in Quick Mask Mode</u>

<u>Using Channels to Create Masks</u>

Window Mode Controls

The window controls at the bottom of the toolbox control the window display.

☐ Click the left window control to display an image in a normal-sized window, with a menu bar at the top and scroll bars on the sides. This is the default mode.

☐ Click the center window control to display the image in a full screen with a menu bar but without scroll bars.

☐ Click the right window control to display the image in a full screen but without a menu bar or scroll bars. Press the Tab key if you also want to hide any open palettes. (Press Tab again to show the palettes.) Note that in this setting, you must scroll using the hand tool. In full-screen mode you can access command menus through a control menu at upper left of the toolbox.

Related topics:

Magnifying and Reducing the Image View

Previewing Page Size and Layout

Colors Palette

The Colors palette is accessed by invoking the Show Colors command in the Window menu. The Colors palette lets you select the foreground and background colors from the Gray, RGB, HSB, CMYK, or Lab color model. The palette also includes a scratch pad area for mixing colors to create the colors you want.

In the upper left corner of the palette window is a Control menu containing the following commands, used to select the desired working color model and to load or save color palettes:

Gray	This model lets you to choose a color from 0 to 100 percent gray.
RGB	This model lets you choose a color with red, green, or blue values ranging from 0 to 255.
HSB	This model lets you choose a color with a <u>hue</u> from 0 to 360 degrees, and <u>saturation</u> and <u>brightness</u> values from 0 to 100 percent. The angle for hue is defined as an angle relative to the pure red color on the <u>color wheel</u>.
CMYK	This model lets you choose a color with cyan, magenta, yellow, and black values ranging from 0 to 100 percent.
Lab	This model lets you choose a color with <u>luminosity</u> values from 0 to 100. The **a** (green to magenta component) and **b** (blue to yellow component) can have values from -120 to +120.
Load Colors	Brings up a dialog box for replacing the contents of the Colors palette with a stored palette.
Append Colors	Brings up a dialog box for adding the colors stored in a saved file to the current Colors palette.
Save Colors	Brings up a dialog box for saving the current Colors palette in a file.
Close	Closes the palette window.

To display color information about a pixel in the Colors palette:

1 Select the eyedropper tool in the toolbox.

2 Click the pixel whose color values you want to display.

The pixel you click becomes the new foreground color or background color (depending on which color selection box is outlined in the Colors palette). The pixel values appear in the Colors palette and in the Info palette.

To select a foreground or background color from the Colors palette:

1. Click the foreground or background color selection box to indicate the color you want to change.

2. Choose the color model you want to use from the Colors palette menu.

3. Click a color swatch or drag the sliders to specify the new background or foreground color.

The colors you click or set with the sliders appear in the foreground and background color selection boxes in the Colors palette and in the toolbox.

NOTE: If an exclamation point inside a triangle appears next to the color selection box, you have chosen a color that cannot be printed because it does not have an equivalent in the CMYK model.

Mixing a foreground or background color using the scratch pad

The scratch pad area on the left side of the Colors palette allows you to mix colors and select them

for the foreground or background color. You can use all of the painting tools, including the blend and rubber stamp tools, to paint on the scratch pad. You can also use the zoom and hand tools to change your view within the scratch pad area.

To mix a foreground or background color:

1 Click one of the painting tools in the toolbox. Use any brush shape you want.

2 Select a color from the color swatches, use the sliders, or sample a color from the image to specify a beginning color (the color appears in the foreground color selection box).

3 Paint the color inside the scratch pad area. Continue to select colors and paint until you have the colors you want.

   To mix colors, apply two different overlapping colors (be sure to set the opacity on the Brushes palette to less than 100%). You can also paint two colors on the scratch pad and use the smudge tool to mix them. Use the eraser tool to erase in the scratch pad.

4 Click the foreground or background color selection box to indicate the color you want to change.

5 Select the eyedropper; then click the color in the scratch pad.

Adding colors to the Colors palette

The Colors palette contains blank swatches for new colors, but new colors can also be placed in any color swatch.

1 Use the eyedropper tool or the color picker to select the color you want to add.

   The color appears in the color selection box.

2 Move the pointer over an empty space in the bottom row of the palette (it turns into the paint bucket tool) and click to add the color.

   NOTE: Hold down the Alt key and click on a swatch to replace it with the current foreground color. Hold down the Control key and click on a swatch to delete the swatch.

Saving, loading, and appending Colors palettes

The Colors palette can hold as many colors as you want. However, to make the palette more manageable and to group related or special colors, you can create your own Colors palettes. The Save Colors command saves the current palette in a file (*.ACO extension). The Load Colors command replaces the contents of the Colors palette with the stored palette. The Append Colors command adds the colors stored in a saved palette to the current Colors palette. Load the PALETTE.ACO file to return to the default Colors palette.

When you exit Adobe Photoshop, the current Colors palette is saved in the Preferences file.

Related topics:

Color Models

Using the Color Picker

Using the Eyedropper Tool

Recognizing Non-printable Colors

Reading Color Information on the Image

Brushes Palette

The Brushes palette opens with the Show Brushes command in the Window menu.   It is used to select or define tool brush shapes, set brush options, and specify parameters for the painting and editing tools.

In the upper left corner of the palette window is a Control menu containing the following commands:

New Brush   Creates and sets options for a new brush.

Delete Brush   Deletes a selected brush from the palette.

Brush Options   Sets options for a selected brush.

Define Brush   Defines current image selection as a custom brush shape.

Load Brush   Loads a saved Brushes palette

Append Brush   Adds a set of brushes to the current palette.

Save Brush   Saves the current palette.

Close   Closes the palette window.

The Brushes palette displays round and linear brush shapes in different sizes. Brushes that are too large to fit in a square on the palette are shown as numbers inside a circle (indicating their diameter in pixels).

Specifying brush shape, paint opacity, and tool pressure

Brush shapes for the painting and editing tools are specified in the Brushes palette. Photoshop retains the brush settings for each tool. This lets you select a different brush for each painting and editing tool.

To choose a brush shape for a particular tool:

1 Click the tool you want to use in the toolbox.

2 Choose Show Brushes from the Window menu. The Brushes palette appears; the active brush for the current tool is enclosed by a box.

3 Click the brush shape you want to use.

To set the opacity for the pencil, paintbrush, and rubber stamp tools:

Drag the slider in the Brushes palette. Opacity can range from 1 to 100 percent. To use transparent paint, specify a low percentage value. To use more opaque paint, specify a high value.

To adjust the pressure/exposure for the airbrush, smudge, blur/sharpen, and dodge/burn tools:

Drag the slider in the Brushes palette. Pressure and exposure can range from 1 to 100 percent. To create a strong effect, specify a high percentage value. To create a weaker effect, specify a low value.

Creating new brushes

You can create new brushes to add to the Brushes palette by selecting the New Brush command from the palette menu.   A brush options dialog box appears in which you can set parameters for the new brush. You can create Custom Brushes by defining selected portions of an image as the brush shape.

Setting brush options

You can define a number of options, such as size and spacing, for new brushes and for each brush displayed in the Brushes palette, by choosing the Brush Options command from the palette menu (or double-click a brush shape).

Saving, loading, and appending brushes

The Brushes palette can hold as many brushes as you want, but to make the palette more manageable and to group related or special brushes, you might want to create your own sets of brushes. To save and load brush sets, use the Save Brushes and Load Brushes commands in the palette menu.   The Append Brushes command adds the brushes stored in a file to the current palette. Load the default file that comes with Adobe Photoshop to return to the default set of brushes. Brushes files are named using the *.abr file extension.

When you exit Adobe Photoshop, the current Brushes palette is saved in the Preferences file.

Selecting a painting or editing mode

You can choose which pixels are affected by a painting or editing tool by choosing an option from the Mode drop-down list, located above the brush shapes in the Brushes palette.

Related topics:

Selecting a Painting or Editing Mode

Tips on Using Palettes

Channels Palette

The Channels palette is accessed by invoking the Show Channels command in the Window menu. Photoshop uses channels (sometimes called alpha channels) to store information about color elements and masks used in the image. You can select and work in individual channels, or in any combination of the channels in the image.

In the upper left corner of the palette window is a drop-down menu containing the following commands:

New Channel   Adds a new channel to the image.

Delete Channel   Deletes the selected channel from an image.

Channel Options   Opens the Channel Options dialog box.

Split Channels   Splits the channels that make up the image into separate documents.

Merge Channels   Merges separate channels into a new document.

Close   Closes the palette window.

A document can have up to 16 channels. By default, bitmapped, grayscale, duotone, and indexed color images have one channel; RGB and Lab mode images contain three channels; CMYK images contain four channels.

RGB, CMYK, and Lab images have a composite channel, which is listed first in the Channels palette. The individual channels appear below the composite channel. Use the scroll bars or resize the palette to see additional channels.

You can add and delete channels, and specify a name, color, mask protection option, and opacity for each channel. In addition, you can split the various channels that make up an image into separate documents, and then merge the channels into a new document to create composite images and produce special effects.

You can also perform operations on two or more channels. You can add two channels together, subtract one channel from another, and compare the brightness values of the pixels in two channels.

Using the Channels palette

In front of each channel name are two columns. An eye icon in the far left column indicates that the channel is visible. A pencil icon in the second column indicates that the channel is being edited (all painting and editing actions affect that channel).

To display a single channel:

In the Channels palette click the channel name.

☐ A grayscale version of the image appears in the current window. Since each channel is normally printed as a halftone grayscale image, you'll probably want to view each channel as a grayscale.

☐ When you're working in RGB, CYMK, and Lab images, you can view the individual channels in color (in Lab images only the "a" and "b" channels appear in color). If more than one channel is visible, the channels always appear in color.

To edit a channel or make it visible:

☐ To make the channel visible, click in the far left column before the channel name. An eye icon appears.

☐ To edit in the channel, click the second column. A pencil icon appears.

☐ To make the channel both visible and available for editing, click a channel name.

Using the preceding options, you can designate any combination of visible and editing channels.

To see individual channels in color:

1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.

2 Click the Color Channels in Color option.

Adding and deleting channels

You can add channels to your document for use as temporary storage or scratch areas.

To create a new channel:

1 Choose Show Channels to display the Channels palette.

2 Choose New Channel from the palette's menu.

A new, empty channel appears. The channel is assigned a number based on the total number of channels in the image. New channels are 8-bit grayscale channels.

These channels are identical to the ones created using the Save Selection command in the Select menu. The difference between the two commands is that the Save Selection command automatically creates a mask from a selection; the New Channel command creates an empty channel with a white background.

To copy the contents of any channel back into an image, use the Load Selection command in the Select menu.

To delete a channel:

1 Click the channel you want to delete in the Channels palette.

2 Choose Delete Channel from the palette's menu.

When you delete a channel, all information in that channel is discarded. If you delete an automatically created channel in an RGB, CMYK, or Lab image, the image is converted to a Multichannel image with numbered channels.

Saving selections in channels

When you want to save a selection as a mask that you can reuse, or use multiple masks for a single image, you create a channel for the mask. A channel you create is a separate 8-bit grayscale image within a document that is used in isolating, modifying, and storing masks.

When you save a document in Photoshop format, any channels you create are saved automatically with the document (unless you delete them). Channels substantially increase the disk space required for an image. If you have a shortage of disk space, you may want to delete any channels you've added before saving your image, or save them to a separate file using the Duplicate command.

Related topics:

Setting Channel Options

Splitting and Merging Channels

Using Channel Calculation Commands

Using Channels to Create Masks

Working in Quick Mask Mode

Tips on Using Palettes

Paths Palette

The Paths palette is accessed by invoking the Show Paths command in the Window menu.

In the upper left corner of the palette window is a Control menu containing the following commands:

Save Path	Saves the current path.
Delete Path	Deletes the selected path.
Make Path	Converts the current selection into a path.
Make Selection	Converts the current path into a selection.
Fill Path	Fills the current path with the foreground color.
Stroke Path	Strokes the current path with the foreground color.
Clipping Path	Saves a path for use as a mask in other applications.
Reverse Subpath	Reverses the effect of the non-zero winding rule for clipping paths.
Close	Closes the palette window.

Paths that have been saved using the Save Path command are listed in the space below the pen tool icons.

Saving, loading, and deleting pen tool paths

You can save and later load paths that you draw with the pen tool. You must save a pen tool path before you turn it into a selection border.

> NOTE: To retain the exact pen tool path you have created, you must save the path before defining it as a selection border. Although you can use the Make Path command to redefine a selection border as a pen tool path, this command will change the placement of <u>anchor points</u> from the original path.

To save pen tool paths:

1 Draw the path you want to save.

2 Choose Save Path from the Paths palette menu. A dialog box appears.

3 Enter a name for the path.

The path is saved with the image, in the same file format as the image. Saved paths are listed in the Paths palette. If you edit a saved path, the changes are saved automatically.

To load pen tool paths:

Select the path name from the list in the Paths palette.

Any paths saved with an image appear in the Paths palette when you open a document.

You can use saved paths in other Adobe Photoshop documents and in Adobe Illustrator 4.0 by copying them to the Clipboard and then pasting them into the new document.

Related topics:

<u>Using the Pen Tool</u>

<u>Filling and Stroking Pen Tool Paths</u>

<u>Saving Pen Tool Paths as Clipping Paths</u>

<u>Defining a Selection Border as a Pen Tool Path</u>

Tips on Using Tools

Most tools are affected by the settings in the Brushes palette when you're painting or editing an image. Some tools also have specific options associated with them. Double-click a tool to see its options.

The Status Bar, located along the bottom of the Adobe Photoshop window, displays brief instructions and keystroke options for the currently selected tool.

Using the tool pointers

When you click a tool in the toolbox and position the cursor on the image, the cursor changes into the icon of the tool you selected. Each cursor has a different hot spot, the point where a selection or action such as painting begins. When you want to edit or apply paint with precision, you may want to change the cursor into a cross hair. The cross-hair cursor gives you greater accuracy because you can focus the hot spot of the cross hairs (the intersection of the cross hairs) on the area you want to paint or edit.

To use the cross-hair cursor while using another tool:

Press the Caps Lock key. Release the Caps Lock key to resume using the tool's normal cursor.

Using the painting tools

The painting tools in the toolbox let you to add paint to a selected image or area. The painting tools include the line tool, the pencil tool, the airbrush tool, paintbrush tool, and the rubber stamp tool. The paint bucket and gradient fill tools also add paint to an image.

The painting tools paint with the foreground color shown in the top color selection box in the toolbox. To change the foreground color while painting, hold down the Alt key. This temporarily turns the painting tool into the eyedropper tool. Click a color with the eyedropper to make it the new foreground color.

The background color, shown in the lower color selection box, is used for making gradient fills and for filling in areas of an image deleted using the eraser tool. To switch the foreground and background colors, click the invert colors icon. To return to the default black foreground and white background colors, click the default colors icon.

Using the editing tools

The editing tools include the eraser tool, the cropping tool, the smudge tool, the blur/ sharpen tool, and the dodge/burn tool. The eraser tool changes pixels to the background color as you drag through them. The cropping tool lets you select a rectangular area in the image and discard the rest. The smudge tool simulates the effect of dragging a finger through wet paint. The blur/sharpen tool blurs an image by diffusing the colors of pixels you drag through, or sharpens an image by increasing the contrast between the pixels you drag through and the adjacent pixels. The dodge/burn tool lets you lighten or darken specific areas of an image.

Tool shortcuts

The following techniques can help you save time when working with the painting and editing tools:

€ Double-click any tool in the toolbox to display its options.

€ Hold down the Alt key and click the blur/ sharpen or dodge/burn tool to switch between the two modes of each tool.

€ To draw a straight line with the painting tools or edit straight paths with the editing tools, select the tool and click a starting point. Hold down the Shift key and click an end point. The tool is applied in a straight line between the two points.

€ Hold down the Shift key as you paint with the line tool to constrain the angle of the line to 45-degree increments. To make the lines perfectly horizontal or vertical, click the line tool and drag as you hold down the Shift key.

€ Hold down a numeric key before you begin painting to set the transparency for any tool. The number 1 sets the <u>opacity</u> at 10 percent, the number 5 sets it at 50 percent, and zero sets it at 100 percent.

€ Leave the palettes you use with the painting and editing tools (Brushes and Colors palettes) on the screen while you work. Drag a palette to put it in a convenient position, or click the minimize box to collapse the palette. Note that the palette menus are still available when a palette is collapsed.

Related topics:

<u>Tools and Palettes</u>

<u>Status Bar</u>

Info Palette

The Show Info command in the Window menu displays the Info palette. This palette gives you information about the position of the pointer and the color values of <u>pixels</u> at any time during your work session. In effect, this palette is an on-screen <u>densitometer</u>.

Depending on the tool you are using, you can also use the Info palette to measure size, distance, and angle of rotation.

⊞

☐ When most of the tools are in use, the Info palette displays the x and y coordinates of the pointer's position in the document (using the current ruler units).
The Info palette also displays the following information:

⚠

☐ A small exclamation point next to a CMYK value indicates that the color is out of the CMYK <u>gamut</u>; it cannot be accurately printed.

⬓

☐ When the rectangular or elliptical marquee tool is in use, the Info palette displays the height (H) and width (W) of the marquee as you drag. This information is displayed as long as there is a selection in the image.

◸

☐ When you're using the Rotate command, the Info palette displays the angle of rotation.

☐ When the line tool or gradient tool is in use, or when you are dragging a selection, the Info palette displays the x and y coordinates of your starting position, the angle (A), the distance (D), the change in X (DX) and the change in Y (DY) as you drag, and the height (H) and width (W) of the selected area. To use the line tool as a measuring tape, simply define a line width of 0 in the Line Tool Options dialog box.

☐ When the cropping tool is in use, the Info palette displays the height (H), width (W), and angle of rotation of the cropping marquee.

☐ When you're using the Scale command, the Info palette displays the height (H) and width (W) of the scaled selection, and the percent change in height and width as you drag.

☐ When you're using a color adjustment dialog boxes (such as Levels or Curves), the Info palette displays the before and after color values of the pixels.

Related topics:

<u>Info Palette Options</u>

<u>Previewing Color Corrections</u>

<u>Previewing Page Size and Layout</u>

<u>Tips on Using Palettes</u>

Info Palette Options

The Info palette displays values for up to two color modes. You can choose to remove the position information, display a single mode, or change the two modes displayed on the Info palette.

To change the Info palette options:

1 Choose Options in the palette's Control menu. The Info Options dialog box appears.

2 Select the number of color readouts you want to display. Deselect either Show Color Readout option to display only one color mode.

3 Choose the mode you want to display from the drop-down lists for each readout.

The mode determines the numerical representation for the pixels that appears in the Info palette. The Actual Color mode displays the values in the current color mode of the document window. For example, if you are viewing the composite channel of an RGB image and have Actual Color chosen, the colors are defined using red, green, and blue values. If, however, you are viewing an added channel with Actual Color chosen, the Info palette appears in grayscale values.

Choosing any other command from the Mode menu in the Info Options dialog box displays the values in the chosen mode.

4 Select the position options you want:

☐ Deselect the Show Mouse Coordinates option to turn off the display of the mouse position.

☐ Choose from the Ruler Units drop-down list to change the units of measurement.

NOTE: You can also display the Info palette options for measurement units and modes by clicking the cross hair or eyedropper icon.

Related topics:

Using the Info Palette

Color Modes in Photoshop

Tips on Using Palettes

The following techniques can help you save time when you are working with palettes:

☐ In addition to the Show commands, you can display palettes using the pre-assigned function keys.

☐ Leave the palettes open on the desktop. Many of the options that you use with Adobe Photoshop tools and when working with masks and <u>channels</u> are located on the palettes.

☐ Drag the palettes to a convenient place on your desktop. If the Restore Windows option is selected in the General Preferences dialog box, the palettes will appear in the same locations the next time you open Adobe Photoshop.

☐ To display the palette's commands, click the Control menu box in the upper left corner of the palette window. The commands appear in a drop-down list.

☐ To increase your work space, click the minimize/maximize box at the far right of the title bar to collapse the palette. Submenus are still available when a palette is collapsed. Click the zoom box again to display the entire palette.

☐ To hide individual palettes, choose the appropriate Hide command from the Window menu, or click the palette's close box.

☐ Press Tab to hide or display all open palettes, including the toolbox.

Related topics:

<u>Tools and Palettes</u>

Importing Images

Adobe Photoshop allows you to open documents in many file formats, including Photoshop 2.5, Amiga IFF, BMP, EPS, GIF, JPEG, MacPaint, PCX, PhotoCD,   PIXAR, PixelPaint, Raw, Scitex™ CT, Targa, TIFF, and files scanned using the TWAIN interface. You can also open and decompress EPS files saved using the EPS JPEG compression module.

Import choices appear in the Open and   in the Open As dialog box Format Type drop-down lists or in the Acquire submenu under the File menu. Photoshop 2.5, JPEG, Raw, Scitex CT, and TIFF are built-in file formats. The other formats and the TWAIN interface are plug-in modules. If these modules do not appear in your menus, install them following the instructions in Adobe Photoshop Getting Started.

Images can be brought into the Adobe Photoshop program by scanning a photograph, a slide, or an image; by capturing images from video; or by importing electronic artwork created with a drawing program. You can import an image document in one format and export it in another, depending on your needs. As a result, you can easily transfer Adobe Photoshop documents to other applications and computer platforms.

Adobe Photoshop also allows you to paste PostScript artwork copied to the Clipboard from applications such as Adobe Illustrator. The copied artwork is rasterized as it is pasted; it is converted from the mathematically defined lines and curves of the vector images drawn in Adobe Illustrator to the points (or pixels) displayed on a grid in Adobe Photoshop.

Related topics:

File Formats

Using Plug-in Modules to Import and Export Images

Scanning Images

Opening and Placing Adobe Illustrator Images

Exporting Images

The Adobe Photoshop program allows you to save documents in many file formats, including Photoshop 2.5, Amiga IFF, Amiga HAM, BMP, EPS, GIF, JPEG, MacPaint, PCX, PIXAR, PixelPaint, Raw, Scitex CT, Targa, and TIFF. In addition, Adobe Photoshop includes export modules for saving EPS files using JPEG, and for exporting paths to Adobe Illustrator.

Export choices appear in either the drop-down list in the Save As dialog box or in the Export menu. Photoshop 2.5, JPEG, Raw, Scitex™ CT, and TIFF are built-in file formats. The other formats are plug-in modules. If these modules do not appear in your menus, be sure you have installed them following the instructions in Adobe Photoshop Getting Started.

Related topics:

File Formats

Using the Save As Command

Using the Export Command

Importing Images

Using Plug-in Modules to Import and Export Images

Scanning Images

The Adobe Photoshop program, in conjunction with certain brands of scanners, allows you to control the process through which a photograph or a slide is converted into a digitized image. To scan images, you use the Acquire command in the File menu.

Adobe Photoshop software directly interfaces with any scanner that has an Adobe Photoshop-compatible plug-in module. Plug-in modules that are properly installed appear in the Acquire submenu.

If the scanner you are using does not have an Adobe Photoshop-compatible scanner driver, you can use the manufacturer's software to scan your images, and then save them as TIFF or BMP files and import them into Adobe Photoshop using the Open or Open As command in the File menu.

When you're scanning an image, you make several choices that affect the quality and usefulness of the resulting file. Before you scan an image, be sure to determine the correct resolution, decide on the optimal dynamic range, and develop a procedure for eliminating unwanted color casts.

Optimizing the dynamic range of the scan

When scanning an image, keep in mind that the human eye can detect a wider tonal range than can be printed. If your scanner lets you define the black and white points, set the points to produce the best tonal range before scanning the file, to capture the widest dynamic range. After opening the file in Adobe Photoshop, use the color correction tools to set the white and black points for the digitized image.

Eliminating unwanted color casts

If your original image has an unwanted color cast, or your scanner introduces an unwanted cast to your image, you might want to perform a simple test before scanning your image. To check for color casts, create a Photoshop file that contains an 11-step gray wedge and print the file. You can then sample the grays using the Info palette to see if they have any hue or color tint.

In the Image Menu, use the Adjust Levels command to create a setting or the Curves command to create a curve that eliminates the color cast. Then, when you scan the image, use the curve to eliminate the color cast before you make other color corrections.

NOTE: It is critical that your monitor be calibrated before you perform this test.

Related topics:

Determining the Scan Resolution

Adjusting Image Resolution

Adjusting Brightness, Contrast, and Gamma

Compensating for Color Casts

About Resolution

Importing Images

Exporting Images

Using Plug-in Modules to Import and Export Images

Determining the Scan Resolution

The correct resolution for a scan is determined by the capability of your output device. For example, if the image will be used only as a screen display, the resolution need not be any greater than the resolution of the screen, typically 72 to 120 pixels per inch (ppi).

If the image resolution is too low, the PostScript™ language may use the color value of a single pixel to create several halftone dots. This results in pixelization, or very coarse-looking output.

If the resolution is too high, the file contains more information than the printer needs. The file size directly affects how long it takes Photoshop to process an image. The size of a file is proportional to its image resolution. For example, the file size for an image with a resolution of 200 ppi is four times greater than an image of identical dimensions and a resolution of 100 ppi.

The scanning resolution you use for printed output depends on the quality of output that you need as well as on the resolution of your printer and the size of the original document compared to the scanned image.

As a general rule, to produce a high-quality image, the image resolution should be twice the lines-per-inch (lpi) value of the halftone screen used to print the image. For example, to print a high-quality image using a 133-lpi screen, you would need an image resolution of approximately 266 ppi. If you are unsure about the appropriate resolution for a resized image, you can have Adobe Photoshop calculate a recommended resolution.

NOTE: If your image resolution is more than 2.5 times the screen ruling, you will get an alert message. This means that the image resolution is higher than the printer can accommodate and is unnecessarily increasing the file size and print time. Use the Image Size command in the Image menu to lower the resolution, and save a copy of the high-resolution file if necessary.

The size of the final image compared to the original image is also a consideration in setting scan resolution. If you are making the image larger, you need additional data to produce a final image with the correct image resolution. If the final image will be smaller than the original, you need less data.

Scanning using the file size setting

The best way to ensure that you have all the data you need for your Photoshop image is to determine what the file size must be to contain the pixel information you need. To find this file size, you can create a dummy file in Photoshop.

To calculate the file size before scanning an image:

1 Open Photoshop and choose New from the File menu. The New dialog box appears.

2 Choose the correct unit of measurement from the drop-down lists.

3 Enter the width and height for your final printed image.

4 Enter a resolution. This value should be twice the screen frequency of the screen you will use to print.

5 Make sure that the RGB Color mode is selected.

The New dialog box displays the file size above the dimensions.

To produce the scan, enter the resulting file size in your scanner settings (it does not matter what resolution or image dimensions appear in the scanner settings).

Once you have scanned the image and imported it into Photoshop, use the Image Size command in the Image menu to enter the correct width and height for the image. Be sure that both the Proportion and File Size constraint options are selected in the Image Size dialog box.

Scanning using the resolution setting

If you cannot use file size as the determining factor in setting your scan resolution, you can calculate a scan resolution using the original and final image dimensions, and the screen frequency.

To estimate scan resolution:

1 Multiply the longest dimension of the final image size by the <u>screen frequency</u>; then multiply this value by the ratio of screen ruling (typically 2:1).

For example, suppose you are scanning a image that is 2 inches wide by 3 inches high and you want to produce a final image that is 4 inches wide by 5 inches high. You are using a screen frequency of 150.

Multiply 5 (the longest output dimension) by 150 (the screen frequency) to get 750 pixels. Then multiply 750 by 2 (the ratio to screen ruling). This equals a total of 1500 pixels needed.

2 Divide the total number of pixels needed by the longest dimension of the original image.

In this example, the longest dimension of the original image is 3 inches. Dividing 1500 by 3 equals a scan resolution of 500 dots per inch (dpi).

Different color separation procedures might require different pixel-to-line-screen ratios. It's a good idea to check with your service bureau or printer to finalize your requirement before you scan the image.

Related topics:

<u>Adjusting Image Resolution</u>

<u>Using the Image Size Command</u>

<u>About Resolution</u>

Using Plug-in Modules to Import and Export Images

Adobe Photoshop plug-in modules are software programs developed by third-party vendors in conjunction with Adobe Systems to extend the standard Adobe Photoshop program. The Adobe Photoshop software includes several plug-in modules. You can also purchase plug-in modules that are distributed on floppy disks. The instructions for using the module are shipped with the disk.

Import modules (also known as acquire modules) allow you to control a scanner or video frame capture system, or import documents in a variety of formats. Export modules let you save an Adobe Photoshop document in a file format not supported by the standard Adobe Photoshop program, or export images to devices such as printers that are unavailable through the Control Panel.

For detailed instructions on using plug-in modules with Adobe Photoshop, refer to the appropriate documentation included with the module's software disk. The Adobe Photoshop package also includes a booklet listing some vendors of third-party plug-in modules.

Installing plug-in modules

To use a plug-in module, you must copy it into the PLUGINS subdirectory. See Adobe Photoshop Getting Started for information on installing plug-in modules. Once installed, the modules appear in the Acquire or Export menu, or as file formats in the Open, Open As, Save, and Save As dialog boxes.

Related topics:

Acquiring an Import Module

Using an Export Module

Opening and Placing Adobe Illustrator Images

The Open command lets you open an Adobe Illustrator file as a new Adobe Photoshop document. The Place command places an Adobe Illustrator file in an existing Photoshop document.

When you open or place an Adobe Illustrator image, Adobe Photoshop rasterizes the image. Rasterizing converts the mathematically defined lines and curves of the vector image drawn in Adobe Illustrator to the points (or pixels) displayed on a grid in Adobe Photoshop.

To open an Adobe Illustrator image as an Adobe Photoshop document:

1 Choose Open from the File menu, and select the Adobe Illustrator file you want to open (Illustrator files have the *.ai file extension). The EPS Rasterizer dialog box appears.

2 Indicate the file dimensions, resolution, and mode. To keep the same file size, select the Constrain Proportions option.

3 Select the Anti-aliased option to improve the quality of the image being rasterized as it is opened.

To place an image from Adobe Illustrator in an Adobe Photoshop document:

1 To improve the quality of the image as it is rasterized, select the Anti-alias PostScript option in the General Preferences dialog box.

2 Open the Adobe Photoshop document in which you want to place the image.

3 Choose Place from the File menu, and select the file you want to place.

The image appears as a floating selection inside a box in the center of the Adobe Photoshop document. The image maintains the aspect ratio of the Adobe Illustrator file.

Drag a handle to resize the box. Hold down the Control key as you drag to change the aspect ratio. Hold down the Shift key and drag to keep the same aspect ratio. Click anywhere on the border of the box to move the entire image.

Once you have placed the image, move the pointer inside the box (the pointer turns into a gavel) and click to confirm the placement. Move the pointer outside the box (the pointer turns into the No symbol) and click to cancel the placement.

NOTE: The Place command does not import pattern files, stroked text, or any artwork that has been placed into the Adobe Illustrator file. If you want to open the Illustrator file as a new Adobe Photoshop document, use the Open command instead of the Place command.

Related topics:

Importing Images

Exporting Paths to Adobe Illustrator

The Paths to Illustrator module lets you export pen tool paths as Adobe Illustrator documents. This feature makes it easier to work with combined Photoshop and Illustrator artwork, or to use Photoshop features on Illustrator artwork. For example, you might want to export a pen tool path and stroke it to use as a trap with a Photoshop <u>clipping path</u> that you are printing in Illustrator. Or you might want to bring Illustrator text or objects into Photoshop, apply Photoshop features such as filters, and then export the objects as paths back into Illustrator. You can also use this feature to align Illustrator text or objects with Photoshop paths.

To use this module:

1 Create the path in Adobe Photoshop.

2 Choose Export from the File menu and Paths to Illustrator from the submenu.

   This saves the path in a document you can use in Illustrator.

3 Open the path in Illustrator as a new Illustrator document.

   You can now manipulate the path or use the path to align Illustrator objects. Note that the <u>crop marks</u> in Illustrator reflect the dimensions of the Photoshop document. The position of the path within the Photoshop document is maintained, provided you don't change the crop marks or move the path.

Related topics:

<u>Using the Paths Palette</u>

<u>Using Export Modules</u>

<u>Opening and Placing Adobe Illustrator™ Images</u>

Making Color Conversions

You can convert an image to any color image type that Photoshop supports: Indexed Color, RGB, Lab, CMYK, and Multichannel.

Because different color spaces comprise different colors, converting an image between modes may permanently change the color values in the image. For this reason, you should always save an image before converting it.

With the exception of converting a color image to an indexed color image, the procedures for converting an image to color are similar: simply choose the new image type from the Mode menu. You may then be prompted to enter dialog box options.

Converting grayscale to color

When you convert a grayscale image to a color image, the color values for each pixel are assigned that pixel's previous gray value. For example, if you are converting to RGB mode, a pixel that had a gray value of 231 is converted to a pixel having a red value of 231, a green value of 231, and a blue value of 231. You can also convert a grayscale image to a CMYK image (for creating process-color quadtones without converting to Duotone mode) or to a Lab color image.

Converting to Indexed Color

At times, you might want to convert an RGB image to an indexed color image to edit an image's color table or to export an image to an application that supports only 8-bit color. This is useful, for example, for multimedia animation applications.

Related topics:

Converting to an Indexed Color Image

Converting to RGB

Converting to CMYK

Converting to Lab

Converting to Multichannel

Creating Duotones

Image Types

Working with RGB, CMYK, and Lab Images

Selection Methods

The Adobe Photoshop program provides several tools for selecting parts of images: the marquee tools, the lasso tool, the magic wand tool, and the pen tool on the Paths palette. These tools allow you to make selections in a variety of ways and with a range of precision. Once you select a portion of an image, you can modify it without affecting the rest of the image. For example, if you drag the eraser through a selection and continue dragging through a part of the image that isn't selected, the unselected portion of the image doesn't change. You can flip, rotate, and move selections as well as adjust their color characteristics.

Selection commands

☐ Use the All command in the Select menu to select the entire image.

☐ Use the None command to deselect all the currently selected areas in the image.

☐ Use the Inverse command to select the part of the image that is not currently selected.

Selection tools

Marquee tools

☐ The rectangular and elliptical marquee tools let you select rectangular and elliptical areas by dragging a marquee, or selection border, on the image.

Lasso

☐ The lasso tool lets you draw a freehand selection around an area in the image.

Magic Wand

☐ The magic wand tool allows you to select portions of images based on the color similarities of adjacent pixels.

Pen Tool

☐ The pen tool on the Paths palette lets you draw smooth-edged paths with precision.

Related topics:

Rectangular Marquee Tool

Elliptical Marquee Tool

Lasso Tool

Magic Wand Tool

Pen Tool

Moving a Selection Border

Extending and Reducing Selections

Cutting, Copying, and Pasting Selections

A selection on an image can be cut, copied, or pasted.   When you select part of an image using a selection tool, that selection is nonfloating.

Floating vs. nonfloating selections

The selection becomes a floating selection when it is moved or pasted into an image. The pixels in the floating selection do not replace the pixels in the underlying image until you deselect the floating selection. If you cut or delete a floating selection, only the pixels in the floating selection are affected; the underlying image does not change.

You can change a non-floating selection to a floating selection, or defloat a selection by choosing Float or Defloat from the Select menu.   You can also use this command to find out the status of the current selection. If Float appears in the menu, the selection is nonfloating. If Defloat appears, the selection is floating.

Deleting selections

Choose Clear from the Edit menu or press Backspace. A floating selection is deleted and the underlying image remains intact. A nonfloating selection disappears and is replaced by the current background color.

Cutting selections

When you use the Cut command in the Edit menu, Adobe Photoshop removes the current selection from the image and places it on the Clipboard. A floating selection is deleted and the underlying image remains intact. A nonfloating selection disappears and is replaced by the current background color.

Copying selections

The Copy command in the Edit menu creates a copy of the current selection and places it on the Clipboard. You can paste the copy elsewhere in the image or into other Adobe Photoshop documents.

Pasting selections

You use the Paste command in the Edit menu to paste a selection into another part of an image or into another document. When you choose the Paste command, the last selection you cut or copied appears in the center of the active window, and becomes the current selection. If there is already a selection in the image, the pasted selection appears on top of it. Pasted selections are floating.

Photoshop offers a range of pasting options that control how the pasted selection appears in the image.   Use the Paste Into command, the Paste Behind command, and the Composite Controls command in the Edit menu for varying the way a selection is pasted into the image.

To copy a selection between applications:

A cut or copied selection remains on the Clipboard until you copy or cut another selection. When you quit Adobe Photoshop, or switch to another application, the contents of the Clipboard are converted to bitmap format. This conversion allows you to paste the Clipboard's contents into a document created in another application. To save time, you can disable placing bitmaps on the Clipboard if you don't intend to paste the Clipboard contents. The automatic conversion does not affect the pasting of selections between Adobe Photoshop documents.

Duplicating selections as you move them

You move a selection around an image by clicking and dragging it. You can use the Alt key to make a copy of a selection as you drag it.

To make a duplicate of a selection:

1 Click a selection tool.

2 Hold down the Alt key, and drag the duplicate to the position you want.

To create multiple duplicates of a selection using the arrow keys:

1 Hold down the Alt key.

2 Press the arrow key pointing in the direction you want to project the duplicates from the selection.

Each time you press the arrow key, a duplicate of the selection is created and is offset by 1 pixel from the last duplicate.

Related topics:

Methods of Selecting

Pasting Into Another Selection

Pasting Behind Another Selection

Using Composite Controls

Defringe Command

Setting Clipboard Preferences

Moving a Selection or Selection Border

You click and drag a selection to move it around in an image. When the Info palette is open on your desktop, you can track the exact distance you are moving a selection.

As you drag, an outline of the selection remains visible. Once you release the mouse button, the selection covers up the part of the image beneath it. If the selection is nonfloating, the area left behind by the selection is filled with the current background color.

If the selection is floating, dragging does not affect the pixels where the selection was originally located. Use the composite controls to specify the effect on the underlying image when you paste the floating selection.

To move a selection:

1 Click a selection tool; or, if you have another tool selected, hold down the Control key. The pointer changes to an arrowhead when you move it inside the selection.

2 Drag the selection to the position you want.

To constrain the movement to a 45-degree angle, hold down the Shift key as you drag. To move the selection in 1-pixel increments, use the arrow keys on the keyboard. The selection moves in the direction of the arrow.

NOTE: If multiple areas are selected, all the selected areas move as you drag.

Moving and Hiding Selection Borders

In addition to extending and reducing selection borders, you can move selection borders without affecting the image, and hide selection borders from view.

After a selection is defined, you can move the selection border around the image without moving the pixels inside the selection border. This feature allows you to reposition a selection border on another part of the image.

To move a selection border:

1 Click a selection tool in the toolbox; then position the cursor inside the selection border. The cursor changes to an arrowhead.

2 Hold down the Control and Alt keys, and drag the selection border to the position you want.

To move the selection border in 1-pixel increments, hold down the Control and Alt keys, and use the arrow keys on the keyboard.

To hide a selection border:

If you find the flashing black-and-white selection border distracting, or if the border obscures changes that affect the edges of selections, use the Hide Edges command in the Select menu to hide the selection border temporarily. Any changes you specify, such as fills or color adjustments, are still applied to the current selection, but the border remains hidden.

The Hide Edges command affects the current selection only. The selection border reappears when you make another selection, and new selection borders appear around any additional selections.

To redisplay the selection border around the current selection, choose Show Edges from the Select menu.

Duplicating a selection as you move it

You can also move a selection around an image by clicking and dragging it. You can use the Alt key to make a copy of a selection as you drag it.

To make a duplicate of a selection:

1 Click a selection tool.

2 Hold down the Alt key, and drag the duplicate to the position you want.

   To create multiple duplicates of a selection using the arrow keys:

1 Hold down the Alt key.

2 Press the arrow key pointing in the direction you want to project the duplicates from the selection.

   Each time you press the arrow key, a duplicate of the selection is created and is offset by 1 pixel from the last duplicate.

Related topics:

Methods of Selecting

Cutting, Copying, and Pasting Selections

Using Composite Controls

Extending and Reducing Selection Borders

Floating/Defloating a Selection

Defringing a Selection

Applying Special Effects to Selections

Extending and Reducing Selections

Adobe Photoshop provides many ways for you to extend and reduce selections. You can extend a selection based on color similarity, or you can extend and reduce selections by adjusting the selection borders. You can also select more than one area of an image at a time, select the entire image, or select all the unselected parts of an image.

To add to a selection or make additional selections:

1 Make your first selection; then click any selection tool.

2 Hold down the Shift key and select the area you want to add to the selection, or select an additional area.

To subtract from a selection:

1 Make a selection; then click any selection tool.

2 Hold down the Control key, and select the area you want to subtract from the selection.

NOTE: You can use the type tool as a selection tool to subtract from a <u>floating selection</u>. When you hold down the Control key and select the type tool, the lasso pointer appears as you move over the floating selection. The area you select with the type tool is removed from the floating selection and becomes part of the image. Using any other selection tool deletes the contents of the selection.

Selecting the intersection of selections

You can use any selection tool to select the intersection of two or more overlapping selection borders.

To select the intersection of two or more selection borders:

1 Click a selection tool.

2 Hold down the Control and Shift keys, and drag to define the area of intersection.

The intersecting area of the selection borders is selected.

Extending a selection based on color

The Grow and Similar commands allow you to expand a selection to include parts of the image that are similar in color to the current selection. These commands use the <u>tolerance</u> specified in the Magic Wand Options dialog box to define the color range of pixels to be included in the expanded selection.

To extend a color-based selection:

☐ Choose Grow from the Select menu to include pixels adjacent to the selection that fall within the specified tolerance range.

☐ Choose Similar from the Select menu to include pixels throughout the image, not just the ones next to the selection, that fall within the specified range.

Choose either command repeatedly to increase the selection in increments.

NOTE: You cannot use the Grow or Similar commands on bitmapped images.

Selecting an area surrounding a selection border

You can define a selection border and then select an area of a specified width outlining the border, using the Border command. Note that the Border command works only on a selection. When the entire image is selected, the option is dimmed.

To select an area around a selection border:

1 Choose Border from the Select menu. The Border dialog box appears.

2 Enter the width in pixels for the border area; then click OK.

The original selection border is surrounded by two new borders. The area between the two selection borders is selected.

Selecting an entire image

When you want to cut, copy, fill, or edit an entire image, use the All command in the Select menu. When you select All, the selection border surrounds the entire image.

Deselecting a selection

You can deselect all the currently selected areas by using the None command in the Select menu or by clicking outside a selected area on the image with any selection tool (except the magic wand tool).

Selecting the unselected parts of an image

Sometimes it is more convenient to select large parts of an image by first selecting the parts you don't want to modify, and then automatically selecting the remaining portions of the image.

To select the part of the image that is not currently selected, choose Inverse from the Select menu. The remaining, unselected portion of the image is selected. The originally selected part of the image is deselected. Choose the command again to return to the original selection.

Related topics:

Methods of Selecting

Editing Pen Tool Paths

When you draw a simple curve, the first half of the direction line completes the definition of the curve. The second half of the direction line establishes the slope and direction of the next segment of the path. The anchor points you use when drawing a curve are smooth points (both direction points at the end of the direction line move in unison when you drag). When you want to modify the two halves of a direction line independently, you change the anchor point to a corner point (the direction points move independently). Use a corner point to change the direction of a curve, or switch between a curve and a straight line in the middle of a path.

To change a smooth point to a corner point:

    Corner tool

☐ Select the corner tool from the Paths palette, and click the point you want to change.

The pointer changes to the corner pointer when you position it over an anchor point. Clicking the smooth anchor point turns it into a corner point with no direction lines.

€ Drag the corner point to make direction lines appear. To change the direction of the curve, click the corner tool in the Paths palette; then click a a direction point and drag.

€ Each time you click the corner tool on an anchor point, the point toggles between a smooth point and a corner point.

To move an anchor or direction point:

    Arrow pointer tool

Choose the arrow pointer tool from the Paths palette and drag.

To add or delete an anchor point:

Choose the pen plus or pen minus tool from the Paths palette, and click the path where you want to add or delete an anchor point.

    Adds anchor point

    Deletes anchor point

When you move the pointer onto the path, a small plus or minus sign appears next to the pointer to indicate whether you are adding an anchor point (no anchor point is under the pointer) or deleting an anchor point (the pointer is positioned on an anchor point).

    NOTE: You can also hold down the Alt and Ctrl keys while the arrow pointer is selected to add or delete anchor points.

To select a path or portions of a path:

    Pointer tool

☐ Select the arrow pointer tool in the Paths palette and click the path.

Hold down the Shift key and click path segments to add them to the selection. If you click anywhere off the path while holding down the Shift key, a marquee appears, which allows you to select multiple portions of the path. Hold down the Alt key and click to select a subpath.

    NOTE: You can also hold down the Control key while the pen tool is selected to display the arrow tool.

To duplicate a path:

☐ Hold down the Alt key and drag.

There is only one path visible at a time. Once a path is saved, all additions, deletions, and editing changes made in the current window are saved under that path name. You don't need to save paths as you edit them.

To start a new path:

Deselect the current path (by clicking the check mark next to the path name) in the Paths palette. The path disappears and you are ready to begin drawing a new path.

Related topics:

Using the Pen Tool

Using the Paths Palette

Saving and Loading Pen Tool Paths

Filling and Stroking Pen Tool Paths

The Fill Path command allows you to fill a path with the current foreground color or a pattern. The Stroke Path command allows you to paint along a path border. If any <u>subpaths</u> are selected, only the subpaths are filled or stroked.

To fill a path:

1 Select the path you want to fill from the list in the Paths palette.

2 Choose Fill Path from the Paths palette Control menu. A dialog box appears.

3 Select the Fill options:

☐ Select Foreground Color or Pattern for the fill contents.

☐ Specify the blend for the fill. To make the fill more transparent, use a low percentage. A setting of 100 percent makes the fill nearly opaque.

☐ Select a painting mode for the fill.

☐ Select <u>Anti-aliased</u> to partially fill the pixels at the edges of the path.

To stroke a path:

1 Select the path you want to stroke from the list in the Paths palette.

2 Choose Stroke Path from the Paths palette menu. A dialog box appears.

3 Choose a tool from the drop-down list; then click OK.

The tool applies its effects along the border of the path using the current brush settings for that tool. To change the settings, use the Brushes palette options.

Related topics:

<u>Using the Pen Tool</u>

<u>Editing Pen Tool Paths</u>

<u>Selecting a Painting or Editing Mode</u>

Manipulating Selections Using Special Effects

Photoshop lets you manipulate selections to create special effects and accurately position parts of an image. You can flip and rotate a selection, and apply effects such as skew and perspective. To manipulate selections, you use the commands in the Image menu.

To calculate the color values of pixels that are added or deleted during manipulations, Adobe Photoshop uses the interpolation method selected in the General Preferences dialog box. The interpolation method has a direct effect on the speed and quality of the manipulation. The default, Bicubic interpolation, is the slowest method, but it yields the best results.

Unless noted, all the manipulations start from a point of origin that you specify. Adobe Photoshop applies the chosen manipulation or special effect to the current selection. If nothing is selected, the effect is applied to the entire image.

Previewing and applying special effects

When you scale, skew, distort, apply perspective, or rotate an image (using the Free option), Adobe Photoshop displays a preview of the effect.

To apply the effect, move the pointer inside the selection (the pointer turns into a gavel) and click.

If you don't want to apply the effect, move the pointer anywhere outside the selection (the pointer turns into the No symbol) and click.

Related topics:

Flipping Selections

Rotating Selections

Scaling Selections

Skewing Selections

Distorting Selections

Creating Perspective

Posterizing Selections

Inverting and Equalizing Selections

Using Filters

Using Filters to Modify Images

The filters that are built into Adobe Photoshop let you apply special effects such as blurring, sharpening, and geometric distortions to your images. With filters, you can give a selection an impressionistic or mosaic effect, or add and reduce noise (pixels with randomly distributed color values) in a image. You can even create your own special effects with the Custom filter, and then save and reuse these unique filters on other images.

Adobe Photoshop also supports plug-in filters. A set of plug-in filters are included with the Adobe Photoshop software. See Adobe Photoshop Getting Started for information on installing these filters. Once installed, plug-in filters are accessed through the Filter menu and work the same as built-in filters.

For a brief description of each plug-in filter, choose About Plug-in from the Help menu; then choose the filter from the submenu. Click the description box to close it.

Using Filters

To use a filter, choose the appropriate submenu command from the Filter menu. The last filter chosen appears at the top of the menu.

NOTE: You can't use filters on bitmapped or indexed color images.

To apply a filter:

1 Select the part of the image you want to apply the filter to. If you have not made a selection, the filter is applied to the entire image.

2 Choose a filter from the submenus in the Filter menu. In some cases, a dialog box appears.

3 If necessary, enter values in the dialog box and click OK.

When the filter takes a while to apply, Adobe Photoshop displays a progress box in the info bar at the bottom of the Photoshop window so you can gauge the time remaining until the filter is applied.

Examples of the filters, organized according the Filter submenus, are found in the *Adobe Photoshop User Guide*. For additional examples of filter effects, see Lesson 2 and Lesson 3 in the Adobe Photoshop Tutorial, and Beyond the Basics.

Filter shortcuts

The following techniques can help you save time when working with filters:

☐ To cancel a filter as it is being applied, press and hold Esc.

☐ To undo a filter, press Control-Z.

☐ To reapply the same filter and its values, press Control-F.

☐ To display the dialog box for the last filter you applied, press Control-Alt-F.

Related topics:

Filter Menu

Previewing Page Size and Layout

To preview how the image will appear on the printed page, you display the page preview box.

To preview a page:

1 Position the pointer on the page preview box in the lower left corner of the document window, where the document size is displayed.

2 Hold down the mouse button. The page preview box appears.

The dimensions of the page shown in the page preview box correspond to the page size selected in the Page Setup dialog box. Options selected in the Page Setup dialog box, including registration marks, calibration bars, labels, and captions, appear as gray boxes.

You can also display size preview information, which tells you the dimensions, resolution, and number of channels in the image.

To display size preview information:

1 Position the pointer on the page preview box.

2 Hold down the Alt key and the mouse button. The size preview box appears.

The size preview box displays the height and width of the image, both in pixels and in the units of measurement currently selected for the rulers.

Related topics:

Page Setup Command

Resizing an Image

Printing an Image

Opening and Arranging Windows

You can open multiple windows of the same document or different documents and arrange them as you want.   Multiple windows of the same document can be opened to view different areas of the document simultaneously or see it in different views and magnification levels.

€ To open a new window for the active document, choose New Window from the Window menu.

€ To arrange all open windows so they overlap, choose Cascade from the Window menu.

€ To arrange all open windows side-by-side, choose Tile from the Window menu.

Related topics:

Screen Display Options

Adjusting Image Resolution

Changing an image's resolution is called resampling. When you change the resolution of an image, you change the amount of information contained in the image. This does not affect the screen display of the image, which is normally 72 dpi, but does affect the image when it is printed. If you are unsure about the appropriate resolution for a resized image, you can have Adobe Photoshop suggest a resolution.

When altering the resolution, keep in mind that the size of a file is proportional to the square of its resolution. Increasing an image's resolution without decreasing its dimensions proportionately, or increasing an image's dimensions without decreasing its resolution proportionately, results in a larger file size. For example, the file for an image with a resolution of 200 pixels per inch is four times the size of the file for the same image with the same dimensions and a resolution of 100 pixels per inch. It's best to keep your files as small as possible, since larger files take up more disk space and require longer processing time.

When you resample down (or decrease the resolution), the program deletes information from the image to achieve the desired resolution. When you resample up (or increase the resolution), Adobe Photoshop creates new pixel information based on the existing color values.

IMPORTANT: Increasing the image resolution does not usually produce a higher quality image, because Adobe Photoshop must create new pixels to achieve the higher resolution. The added pixels may make the image appear blurry or out of focus.

Resampling down and then resampling up to the original resolution causes a deterioration in the quality of the image. This is because once an image is resampled down, the original color information is lost as pixels are deleted. During the resampling up process, Adobe Photoshop attempts to reconstruct the original file based on the current color information. However, the new image is only an approximation and will not be as sharp as the original.

If you need to change the resolution after an image has been scanned, you can use the Image Size command in the Image menu.

Selecting an interpolation method

When you increase or decrease the file size of an image (by resampling, rotating an image at an arbitrary angle, or using special effects such as skew and perspective), new color values are created for the added pixels. Adobe Photoshop determines the color of added or deleted pixels using the process of interpolation.

To select an interpolation method:

1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.

2 Select the option you want from the Interpolation menu:

☐ The Bicubic option offers the most precise form of interpolation; however, it is significantly slower than Bilinear interpolation.

☐ The Nearest Neighbor option is the fastest method, but it is also the least precise. This lack of precision is evident in the jagged appearance of modified selections, especially when you are distorting or resizing an image, or performing multiple manipulations on a selection.

☐ The Bilinear option produces medium quality, somewhere between the other two options.

Related topics:

Resolution Concepts

Image Size Command

Scanning an Image

Printing an Image

Selecting a Painting or Editing Mode

You can control which pixels are affected by a painting or editing tool by choosing an option from the Mode drop-down list in the Brushes palette. Dialog boxes for the Fill and Stroke commands also let you select a painting mode. In addition, modes are selected through the Composite Controls dialog box when specifying how a <u>floating selection</u> is composited (or blended) with an underlying image.

There are several modes to choose from:

☐ **Normal mode** - each pixel you paint or edit is affected. This is the default.

☐ **Darken mode** - only pixels lighter than the foreground color are affected by a tool.

☐ **Lighten mode** - only pixels darker than the foreground color are affected by a tool.

☐ **Hue mode** - all the pixels you paint change to the foreground color, but their <u>saturation</u> and <u>luminosity</u> values do not change.

☐ **Saturation mode** - only the saturation values of the pixels you paint change.

☐ **Color mode** - all the pixels you paint change to the foreground color. Both the hue and saturation change, but the luminosity is not affected. This preserves the gray levels in the image. This mode is useful for coloring monochrome images and for tinting color images.

☐ **Luminosity mode** - affects only the lightness component; the color values of the pixels do not change. In effect, this mode is the inverse of Color mode.

☐ **Multiply mode** - painting over an area multiplies the color values and darkens the image. The effect is similar to drawing over the image with multiple magic markers.

☐ **Screen mode** - painting in Screen mode bleaches the colors in the image and tints them toward the foreground color. This mode is the inverse of Multiply mode.

☐ **Dissolve mode** - the painting color randomly replaces the original color based on the <u>density</u> of the paint at any pixel location. This mode works best when you're using the paintbrush or airbrush tool and are painting with a large brush.

☐ **Midtones, Shadows, and Highlights** - these modes are available with the dodge/burn tool and limit the changes to specific portions of the image. Choose Midtones to change only the middle range of colors, choose Shadows to alter the dark portions of the image, or choose Highlights to modify only the light pixels.

Related topics:

<u>Using the Brushes Palette</u>

<u>Using Composite Controls</u>

<u>Fill Command</u>

<u>Stroke Command</u>

Creating Custom Brushes

You can use part of an image to create a custom brush shape. To define brushes with soft edges, select brush shapes composed of pixels with gray values other than the extremes of 0 (black) and 255 (white). For examples of artwork using custom brush shapes, see *Beyond the Basics* included in the Adobe Photoshop package.

To create a custom brush shape:

1 Click the rectangular marquee tool in the toolbox.

2 Drag the marquee to enclose the part of the image you want to use as a custom brush. The brush shape can be up to 1000 pixels by 1000 pixels in size. To be most effective, the shape should appear on a solid white background.

3 Choose Define Brush from the Brushes palette menu. The custom brush appears in the Brushes palette.

4 Choose Brush Options from the Brushes palette menu to set the Spacing option for the custom brush:

Enter a value that is a percentage of the brush diameter.

Related topics:

Using the Brushes Palette

Setting Brush Options

Filling and Stroking Selections

Selections can be filled using keystrokes, the paint bucket tool, the gradient tool, and the Fill command. The paint bucket tool and Fill command fill a selection with the current foreground color or a pattern. The gradient tool creates gradient fills that show a transition from the foreground color to the background color. The current settings in the Brushes palette control the <u>opacity</u> and painting mode used for the paint bucket and gradient tools.

You can stroke the border around a selection with the Stroke command in the Edit menu. The Stroke dialog box lets you specify line width, paint opacity, and painting mode.

For filling and stroking, the default foreground color is black, and the default background color is white.

To fill a selection using keystrokes:

☐ Press Shift-Backspace to fill a selection with the foreground color.

☐ Press Shift-Delete to fill a nonfloating selection with the background color. You cannot use this shortcut with <u>floating selections</u> since they are deleted when you press Delete.

Related topics:

<u>Fill Command</u>

<u>Stroke Command</u>

<u>Paint Bucket Tool</u>

<u>Creating Gradient Fills</u>

<u>Choosing Colors</u>

Using the Adobe Photoshop Color Picker

The Photoshop color picker allows you to select the foreground or background color from a color spectrum, or to numerically define color components to create a color.   In addition, the Adobe Photoshop color picker lets you select colors based on the CMYK color model and choose from several custom color systems.

To display the color picker, click the foreground or background color selection box in the toolbox, or click the outlined color selection box in the Colors palette.

> NOTE: To use the Adobe Photoshop color picker, you must have the Photoshop option selected in the Color Picker menu in the General Preferences dialog box. To open this dialog box, choose Preferences from the File menu and General from the submenu.

Specifying a color using the color field and color slider

With the HSB and RGB color models, you can select a color using the color field and the color slider in the Color Picker dialog box. The color slider displays the range of color levels available for the selected color component (for example, R,G, or B). The color field displays the range for the remaining two componentsone on the horizontal axis and one on the vertical axis.

For example, if you click the <u>saturation</u> component (R) using the RGB color model, the color slider displays the range of color for red (0 is at the bottom of the slider and 255 is at the top). The color field displays the values for blue along its horizontal axis and the values for green along its vertical axis. To adjust the color, you can drag the white triangles along the slider, or you can click inside the color field. When you click in the color field, a circular marker indicates the color's position in the field.

As you adjust the color using the color field and color slider, the numerical values for each color component change to reflect your adjustments. The color rectangle to the right of the color slider displays the new color in the top section of the rectangle. The original color appears in the bottom of the rectangle.

Specifying a color using numerical values

You can select a color in any of the four color models by specifying numerical values for each color component. You specify the values as follows:

€ In the CMYK color model, specify each component value as a percentage of cyan, magenta, yellow, or black.

€ In the RGB color model (the model your monitor uses), specify component values from 0 to 255, where 0 is black and 255 is the pure color.

€ In the HSB color model, specify <u>saturation</u> and <u>brightness</u> as a percentage; specify <u>hue</u> as an angle that corresponds to a location on the <u>color wheel</u>.

€ In the Lab model you can enter <u>luminosity</u> values (L) from 0 to 100, and "a" axis (green to magenta) and "b" axis (blue to yellow) values from -128 to +127.

Related topics:

<u>Using the Windows Color Picker</u>

<u>Choosing Custom Colors from the Color Picker</u>

<u>Recognizing Non-printable Colors</u>

<u>Choosing Colors with the Eyedropper Tool</u>

<u>Color Modes in Photoshop</u>

Using the Windows Color Picker

You can use the Windows color picker to change the foreground or background color. The Windows color picker lets you select colors from an array of basic colors or define up to 16 custom colors based on the HSB or the RGB color models. Unlike the Adobe Photoshop color picker, however, the Windows color picker does not alert you to nonprintable colors.

To use the Windows color picker:

1 Choose Preferences from the File menu and then choose General from the submenu. The General Preferences dialog box appears.

2 Choose Windows from the Color Picker menu and click OK.

3 Click the foreground or background color selection box in the toolbox. The Windows Color Picker dialog box appears.

4 In the Basic Colors palette, click the color you want.

To choose a custom color with the Windows color picker:

5 To specify a custom color, click the Define Custom Colors button to bring up the Custom Color Selector. This dialog box functions in a similar way to the Adobe Photoshop color picker. Specify a color by using the color field and color slider, or by entering numerical values for each color component.

6 The new color is displayed on the left side of the Color/Solid box. The right side of this box displays the solid color closest to the color you have specified (you can choose the displayed solid color by double-clicking the right side of the box).

7 When you are satisfied with the color, choose the Add to Custom Colors button to add it to the Custom Colors palette.

To choose a custom color from the Windows color picker, click on the color you want.

Related topics:

Using the Adobe Photoshop Color Picker

Recognizing Non-printable Colors

Choosing Colors with the Eyedropper Tool

Color Models

Choosing Custom Colors

The Adobe Photoshop color picker lets you choose custom colors from the PANTONE Matching System®, the TRUMATCH Swatching System™, the FOCOLTONE® Colour System, the TOYO 88 ColorFinder™ 1050 System, and the ANPA-COLOR™ system.

It is recommended that you view a printed swatch before selecting any custom color, to ensure that the final printed output contains the color you want.

When you specify custom colors in RGB or CMYK mode, Photoshop converts the custom color into its RGB and CMYK equivalents.

To select a custom color:

1 Open the Adobe Photoshop color picker and click the Custom button.

   The Custom Colors dialog box appears. The dialog box displays the color closest to the color currently selected in the Photoshop color picker.

2 Select the type of ink you want to use from the Book drop-down list.

3 Locate the color you want by typing the ink number in the Find # text box, or by dragging the triangles along the scroll bar.

4 Click the color patch in the list; then click OK.

5 To return to the color picker, click the Picker button. The Adobe Photoshop color picker appears with the current color equivalent selected.

Selecting PANTONE colors

Adobe Photoshop supports more than 736 PANTONE colors for printing inks. Pantone has specified CMYK equivalents for its colors. To select a PANTONE color, first determine the ink color you want, using either a *PANTONE Color Formula Guide 747XR* or an ink chart obtained from your printer. PANTONE books are available from printers and graphic arts supply houses.

You can select from PANTONE Coated, PANTONE Uncoated, PANTONE Process, and PANTONE ProSim custom colors.

Selecting TRUMATCH colors

The TRUMATCH color swatching system provides predictable CMYK color matching with over 2000 achievable, computer-generated colors. TRUMATCH colors cover the visible spectrum of the CMYK gamut in even steps. The TRUMATCH COLORFINDER displays up to 40 tints and shades of each hue, each originally created in four-color process and each reproducible in four colors on electronic imagesetters. In addition, four-color grays using different hues are included.

Selecting FOCOLTONE colors

The FOCOLTONE COLOUR SYSTEM in Adobe Photoshop provides 763 CMYK colors. FOCOLTONE colors help avoid prepress trapping and register problems by showing the overprints that make up the colors. All of the colors convert to spot colors with a single mix of CMYK inks.

Related topics:

Using the Photoshop Color Picker

Printing Spot Colors in RGB and CMYK Modes

Printing Spot Colors in RGB and CMYK Modes

When you specify custom colors in RGB or CMYK mode, Photoshop converts the custom color into its RGB and CMYK equivalents.   Since Photoshop is designed to print using the four CMYK process colors, you cannot print spot color plates using the custom colors themselves. Instead, the custom colors are converted to their CMYK equivalents for printing.

To print a spot color in RGB and CMYK modes:

1. Select all the areas that you want print as a spot color.

2. Choose Save Selection from the Select menu to isolate each spot color in an <u>alpha channel</u>.

   This creates a negative plate. To print film positives, invert the image in the channel.

3. Select the channel in the Channels palette, and then choose Print from the File menu.

4. Follow this procedure for each spot color you want to print.

   Return to the composite RGB or CMYK channel, load each spot channel individually, and delete the contents of the mask. This creates the knockouts for the spot colors.

   This procedure for producing color separations can be used only when you're printing directly from Adobe Photoshop. You can't print the entire set of CMYK and spot separations (stored in individual channels) if you have placed the document in a page layout or illustration application.

   NOTE: Adobe Photoshop allows you to specify any custom color in the color picker for generating distinct spot color plates for Duotone images.

Related topics:

<u>Choosing Custom Colors</u>

<u>Using Channels to Create Masks</u>

<u>Creating Duotones</u>

Recognizing Non-printable Colors

Some colors in the RGB and HSB color models, such as pure green and neon colors, cannot be printed, because they have no equivalents in the CMYK model.

If you select a non-printable color, an alert triangle with an exclamation point appears beside the color swatches in the Adobe Photoshop color picker dialog box. (The Colors palette and Info palette also display this alert triangle when a non-printing color is selected). The range of printing colors available depends on your output device.

If you click the triangle, Adobe Photoshop automatically selects the printable color closest to the color you selected. Printable colors are determined by the printing values you enter in the Printing Inks Setup dialog box. To see or change these values, choose Preferences from the File menu and Printing Inks Setup from the submenu.

Related topics:

Using the Adobe Photoshop Color Picker

Choosing Custom Colors from the Color Picker

Color Models

Reading Color Information on the Image

Color values are continually displayed in the Info palette. In effect, this palette is an on-screen densitometer.

To use the Info palette to read color values:

1 Choose Show Info from the Window menu to display the Info palette.

2 Move the pointer over an area of the image you want to examine. The eyedropper reads color values for a single pixel: a 3-by-3 area or a 5-by-5 area, depending on the sample size option you have chosen in the Eyedropper Options dialog box.

When you are using a color adjustment dialog box (such as Levels or Curves), the Info palette displays the before and after color values of the pixels.

To display color values in the Colors palette:

Position the tip of the eyedropper tool on the pixel whose color levels you want to display, and click to display the color values in the Colors palette.

If the background color selection box is selected in the Colors palette, Alt-click the eyedropper to display information about the foreground color.

NOTE: To use this feature, you must have the Point Sample option selected in the Eyedropper Options dialog box.

Related topics:

Info Palette

Colors Palette

Eyedropper Tool

Color Display Options

Each image type in Adobe Photoshop uses a different color lookup table, or color palette, to store the colors used in the image. When you're working with a display system that supports 8-bit color (or less), the video card displays only 256 different colors at one time. For example, the palette for a grayscale document consists of 256 shades of gray, while the palette for an image that contains mostly shades of blue is weighted toward the color blue. Adobe Photoshop uses a technique called dithering to simulate the display of colors that are not in the current color palette.

Choosing a dithering option

By default, Adobe Photoshop uses pattern dithering, which can result in a distinctive pattern of darker or lighter areas in the image. You can choose to use diffusion dithering instead. Diffusion dithering spreads out the inaccuracy in representing the color of a pixel to the surrounding pixels and eliminates distinctive patterning. Diffusion dithering can cause visual inconsistencies, however, by showing the boundaries when only part of a screen is redrawn (for example, when you scroll, edit, or paint).

To use diffusion dithering:

1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.

2 Select the Use Diffusion Dither option.

Choosing a display palette

To optimize the display for each image, the program stores a different palette for each open file and displays the active document using its associated palette. This tends to make the colors in inactive documents look inaccurate. To make the colors in inactive documents appear closer to their actual colors, you can choose to display all open documents using the System color palette (rather than using the document's individual palette). Using this option, however, makes the colors in the active document less accurate than when the document's custom palette is used.

To use the System color palette:

1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.

2 Select the Use Common Palette option.

Related topics:

Color Modes in Photoshop

Working with RGB, CMYK, and Lab Images

RGB and CMYK images

Both RGB and CMYK image types let you display and edit a composite of the various image channels. However, because computer monitors are RGB devices, CMYK colors must be temporarily converted to RGB values to be displayed on-screen.

You can use the CMYK Composites options in the General Preferences dialog box to determine whether the actual values or an interpolation of the values are displayed for a CMYK image. The Faster option interpolates the RGB values from a lookup table and is almost as fast as the normal RGB mode; however, it can produce some banding and imperfections in the screen display (especially in process color blends). The Smoother option uses the correct values for each pixel but requires more time to display the image.

If you are working with CMYK images, such as those imported from Adobe Illustrator or from a Scitex system, you might want to import and edit the images directly in CMYK mode. You can then keep the initial color information in the image intact. Working with images in CMYK mode also prevents the use of RGB colors that are out of gamut; that is, RGB colors that have no CMYK equivalent and cannot be printed.

In general, it's not a good idea to convert between RGB and CMYK mode multiple times, since each time the image is converted, the color values must be recalculated, resulting in less accurate colors.

Lab Images

Because the Lab gamut, or range of colors, encompasses both RGB and CMYK gamuts, Lab is used internally by Adobe Photoshop when converting images between RGB and CMYK modes. Lab color is also the recommended color mode for moving images between systems and for printing to PostScript Level 2 printers. To print Lab images to other color PostScript devices, convert the image to CMYK before printing.

Lab images consist of a luminance, or lightness, component (L) and two chromatic components: the "a" component, which ranges from green to magenta, and the "b" component, which ranges from blue to yellow. Because it separates the luminance from the color, Lab mode is useful when you want to edit color values and lightness separately. You can also edit and display Lab images in a composite image channel.

Related topics:

Mode Menu Commands

Converting to CMYK

Converting to RGB

Converting to Lab

Adjusting Brightness, Contrast, and Gamma

You can adjust the <u>brightness</u> and <u>contrast</u> of a selection or the entire image using the Brightness/Contrast dialog box, the Levels dialog box, or the Curves dialog box. These three dialog boxes allow you to adjust the brightness and contrast of an image with increasing degrees of precision.

You access these dialog boxes by choosing the appropriate command in the Adjust submenu of the Image menu.

If you are working on an RGB, CMYK, or indexed color image, you can adjust the composite <u>channel</u> or each channel individually by choosing an option from the Channel drop-down list in the Levels or Curves dialog box.

See Chapter 12 of the *Adobe Photoshop User Guide* for examples of adjusting brightness, contrast and <u>gamma</u>.

Related topics:

<u>Adjusting Brightness/Contrast</u>

<u>Adjusting Levels</u>

<u>Adjusting Curves</u>

Previewing Color Corrections

In most cases, when you make color changes to a selection, Adobe Photoshop displays the changes throughout the entire screen. This process is called color table animation; the program is modifying the monitor's color lookup table dynamically in response to the changes you specify. When you use the Preview feature, you turn off the color table animation; only the selected area is shown with the color correction. This allows you to see the effect of the color correction much more exactly.

☐ In some cases, such as in CMYK and Duotone modes, viewing the image without color table animation is useful, since color table animation is not accurate in these modes.

☐ Preview is available for all the commands in the Map and Adjust submenus in the Image menu, except the Invert command.

☐ To turn on previewing, select the Preview option in the color correction dialog box. The color table animation is deactivated and Adobe Photoshop displays the effects of the changes on the current selection only.

☐ To turn off previewing, deselect the Preview option. You return to color table animation.

☐ To cancel color adjustments without closing the color correction dialog box, hold down the Alt key to change the Cancel button to a Reset button. Click reset to return the adjustment settings to their defaults.

☐ While using the color adjustment controls, the eyedropper tool is automatically active outside the dialog box; however, you still have access to the scroll controls and the hand and zoom tools using the keyboard.

Previewing color values

You can use the Colors palette and the Info palette to preview the color values of <u>pixels</u> affected by the color adjustments that you make.

When you are working with a color adjustment dialog box, the Info palette displays two values: the value in the left column is the original pixel's color value; the value in the right column is the color value after the adjustment is made.

To use the Info palette to preview color changes:

1 Choose Show Info from the Window menu to display the Info palette.

2 Move the pointer over an area of the image you want to examine. The eyedropper reads values for a single pixel: a 3-by-3 area or a 5-by-5 area, depending on the sample size option you have chosen in the Eyedropper Options dialog box.

The Info palette displays the before and after color values at the location under the mouse pointer.

To use the Colors palette to preview color values:

1 Choose Show Colors from the Window menu to display the Colors palette.

2 Click the pixel you want to preview. The color values of the pixel after the adjustment has been made are shown in the Colors palette.

Related topics:

<u>Info Palette</u>

<u>Colors Palette</u>

<u>Histogram</u>

Tips on Color Correction

Color correction allows you to address differences between an original image and the image as it appears on the screen and in print.

The color corrections you make affect the color values of the <u>pixels</u>. All the changes you specify using the color correction commands are applied to the current selection. If you have not made a selection, the changes are applied to the entire image. The Equalize command allows you to specify whether you want the changes applied to the selected area or to the entire image.

NOTE: In order for your color corrections to be accurate, your system must be calibrated properly.

Using a histogram

As you make adjustments, use the Histogram command in the Image menu to create a histogram and track the tonal balance in your image. This graphic illustration of darkness and brightness levels can help you see the overall <u>contrast</u> in the image.   It plots the number of pixels in at each level.

When you create a histogram of an RGB, CMYK, or indexed color image, you can view the gray levels (or brightness levels) of the pixels in the entire image, or of the pixels in individual <u>channels</u>. When you create a histogram of any other type of image, Adobe Photoshop plots the color values of the pixels in the active channel.

If part of the image is selected, the histogram is based on the pixels that are at least 50 percent selected. Otherwise, the histogram is based on the entire image.

Devising a color correction strategy

The key to good color reproduction is to produce an image with proper tonal balance (correct brightness, saturation, contrast, and <u>density range</u>) and no color deficiencies. Making your color corrections in a specific order can help you achieve this goal.

Suggested procedure for making color corrections:

1 Set the highlight (white) and shadow (black) points in the image. You can have Adobe Photoshop do this for you, or you can use the eyedropper tool in the Levels or Curves dialog box to set these values.

2 Make adjustments to the middle tones (three-quarter tones, midtones, and quarter tones) using the <u>gamma</u> adjustments in the Levels and Curves dialog boxes. A good range of overall density in an image makes individual color adjustments much easier.

3 Correct for overall color imbalance, such as a color cast in skin tones. The gray eyedropper option in the Levels and Curves dialog boxes can remove a color cast. You can also use the Color Balance command to make color corrections to an entire image.

4 Make selective color corrections. For example, you might want to make a sky bluer or take some yellow tone out of a landscape of trees. The Adjust Hue/Saturation command in the Image menu is useful for making color corrections to specific selections or color ranges. In some cases you might want to add color to an image. The Colorize option in the Hue/Saturation dialog box lets you add tints to a selection or image. Of course, you can always use the painting and editing tools to make fine color adjustments to your images.

5 Apply the Unsharp Mask filter.

With these corrections made, you are ready to convert your image to CMYK for printing.

Applying color corrections to multiple images

In a production environment, you might need to scan a large number of images and apply the same set of color corrections to all of them. You can do this using a keyboard enhancement program or

using the Save and Load buttons in the Adobe Photoshop color correction dialog boxes.

Keyboard enhancement programs, such as QuicKeys™, allow you to record the keystrokes for your first set of corrections and play the keystrokes back for subsequent images. The playback is dependent on the sophistication of the keyboard enhancement program.

The Save and Load buttons in the Levels, Curves, and Hue/Saturation dialog boxes let you save the color corrections you make using that dialog box and apply them to other images.

To apply color corrections to other images:

1 Save your color corrections using the Save button in the Levels, Curves, Hue/Saturation, or Variations dialog box.

When you choose Save, a dialog box appears so you can name the file.

2 Close the color correction dialog box.

3 Open the image to which you want to apply the corrections.

4 Open the color correction dialog box you used in step 1.

5 Use the Load button to locate and load the appropriate color correction file.

6 Click OK to apply the corrections to the image.

Related topics:

Previewing Color Corrections

Tips on Calibrating Your System

Tips on Color Separation

Color Modes in Photoshop

Color Basics

Splitting and Merging Channels

Splitting channels into separate documents

You can split the various <u>channels</u> that make up an image into separate documents using the Split Channels command in the Channels palette menu. When you choose Split Channels, Adobe Photoshop places each channel into a separate document and closes the original document. Each document appears in an open window on the desktop. Any changes you've made since you last saved are reflected in the new documents but are lost in the original document.

Merging channels

You can combine different channels to form a single image. For example, some grayscale scanners allow you to scan a color image through a red filter, a green filter, and a blue filter to generate red, green, and blue documents. Merging allows you to combine the channels of a color image that was scanned in this way, and save the image as a single, color document.

The images you want to merge must be the same size (in pixels) and must be open. In addition, the image type you are merging channels into cannot contain more than the number of split channels you have open. For example, you can't merge the split channels from an RGB image into a CMYK image, because a CMYK image requires four channels and an RGB image contains only three channels.

Related topics:

<u>Merge Channels Options</u>

<u>Using the Channels Palette</u>

Using Channel Calculation Commands

You can perform a number of operations on the <u>channels</u> in an image, using the channel calculation commands in the Calculate submenu of the Image menu. Most channel calculation commands compare or perform mathematical operations on the <u>pixels</u> of two channels corresponding to the same location on the image.   Choose the calculation command you want and a dialog box appears.

To use the channel calculation commands, the images must be exactly the same size (in pixels). If the images are different sizes, the correct image names will not appear in the Source or Destination areas in the calculation command dialog boxes.

Most of the channel calculation commands compare or perform mathematical operations on the corresponding pixels of two channels; that is, the pixels that correspond to the same location on the image. For some of these commands, you specify two source channels to be used in the operation a destination channel for the results of the operation.

To use a channel calculation command:

1 Choose Calculate from the Image menu; then choose a calculation command from the submenu.

A dialog box with the title of the chosen calculation command appears.

2 To include a channel in a calculation, select the document you want to use from the source Document drop-down list; then select the source channel from the source Channel list. Repeat this procedure to select all the documents and channels to be included in the calculation.

In most cases, the active document is used to perform calculations. However, if you have split a document into separate channels, you can use any channel document. You can also use any open document that is the same size (in pixels) as the active document.

3 Choose the document in which you want to store the results of the calculation from the Document drop-down list in the Destination area of the dialog box; then select the destination channel from the Channel list. By default, the results of a channel calculation are stored in a new channel in a new document.

WARNING: If you assign the results of a channel calculation to an existing channel (the destination channel), the channel calculation results will overwrite the pixels in the existing channel.

4 Click OK to perform the calculation.

Related topics:

<u>Calculate Menu</u>

<u>Using the Channels Palette</u>

Using Channels to Create Masks

You create and use a mask when you want to isolate part of an image and apply color changes, filters, or other effects to just that section. You can also use a mask to isolate an area that you want to protect from change. For example, you might create a mask that isolates a boat sailing on an ocean so that you could change the color and texture of the boat's cabin and sails. Conversely, you might use the mask to retain the original boat while you change the ocean and clouds surrounding it.

You can use any selection tool to create a mask, and you can use the painting and editing tools to modify a mask after it is created.

Adobe Photoshop provides two ways to make masks:

☐ Use channels (sometimes called <u>alpha channels</u>) to create multiple masks for an image and to save selection borders as masks that will become selections.

☐ Use Quick Mask mode to create and view a single mask for an image. Temporary masks are useful when you don't want to save the mask for later use.

You can create a channel that is a separate 8-bit grayscale image within a document used for isolating, modifying, and storing masks. (These channels appear in addition to the channels that Adobe Photoshop automatically creates for documents, such as the three color channels that make up an RGB image.)

When you save a document in Photoshop format, any channels you create are saved automatically with the document (unless you delete them). Channels substantially increase the disk space required for an image. If you have a shortage of disk space, you may want to delete any channels you've added before saving your image, or save them to a separate file using the Duplicate command.

To create a mask and place it in a channel:

1 Select the area or areas of the image that you want to isolate.

2 Choose Save Selection from the Select menu. Any previously saved channels appear in a submenu along with the option New.

3 Choose New to save the selection in its own channel, or select an existing channel to replace the selection in that channel.

The channel is assigned a number that appears in the Channels palette. To see the saved selection, select the channel in the Channels palette. A channel displays the mask as a grayscale representation. By default, unselected areas in a channel are opaque (black) and selected areas are transparent (white). Gray areas represent any areas within a feather radius or an <u>anti-aliased</u> range; these areas are only partially affected by modifications to the image.

You can name channels and change channel options (including whether color indicates masked or selected areas).

4 Modify the mask using any painting or editing tools.

You can redefine areas and reshape the mask using black, white, and gray paint.

If you want to create another mask, repeat the procedure. Remember to delete any channels you no longer need before saving the image.

To place the selection back into an image:

1 Choose Show Channels from the Window menu to display the Channels palette.

2 Select the channel or channels you want to edit using the mask.

3 Choose Load Selection from the Select menu.

To place a selection into a document other than the original:

1   Choose a channel in the Channels palette.

2   Choose Calculate from the Image menu and Duplicate from the submenu. The Duplicate dialog box appears.

3   Select the Destination document and channel in the dialog box; then click OK.

The channel containing the mask appears in the destination document's Channels palette.

Related topics:

Using the Channels Palette

Working in Quick Mask Mode

Using Channel Calculation Commands

Working in Quick Mask Mode

In Quick Mask mode, you can view the image and edit the mask simultaneously. You can use any selection tool to create the mask, and you can use the painting and editing tools to modify a mask after it's created. The modified mask becomes a new selection upon reconverting to Standard mode.

By default, Quick Mask mode colors all of the protected area in the image (everything except the selected area) using a red, 50-percent opaque overlay. Quick Mask options allow you to color the unprotected (or selected) area instead, and change the color and <u>opacity</u> of the overlay.

To create a quick mask:

1 Select the part of the image you want to change.

2 Click the Quick Mask mode control in the toolbox.

A red overlay (similar to a piece of rubylith) covers all of the image except the selected area. All red areas are protected from change.

3 Edit the mask (see below); then click the Standard mode control to return to your original image.

The unprotected area appears as a selection border.

4 Apply the changes to the image. The changes affect only the selected area.

To change the Quick Mask options:

1 Double-click the Quick Mask mode control in the toolbox. The Mask Options dialog box appears.

2 Select what the colored area of the mask indicates:

☐ The Masked Areas option colors all of the image except the selection. All colored areas are protected from change.

☐ The Selected Areas option colors only the selection. All colored areas are affected by changes.

NOTE: Alt-click the Quick Mask mode control to automatically switch between the Masked Areas and Selected Area options.

3 Click the color swatch to display the color picker; then choose a mask color.

4 Enter an Opacity value. Values can range from 0 to 100 percent. Use this setting to reveal more or less of the underlying image; the opacity of the mask is not affected.

To edit a quick mask:

1 Make a selection and view the image in Quick Mask mode.

2 Choose a tool from the toolbox and paint on the mask.

The effect of the tool on the mask depends on the tool settings. When you switch to Quick Mask mode, the foreground and background colors return to their default black and white settings. Painting with black (which paints in the image using the mask color) adds to the mask. Painting with white erases the mask and reveals the underlying image. Painting with gray or another color creates a partial mask.

Related topics:

Quick Mask and Standard Mode Contros

Using Channels to Create Masks

Positioning Type in an Image

While the type is selected in an image, you can move the type by dragging it, or delete some or all of the characters. However, once you deselect the type, it becomes part of the image; you can then change the type only by editing the <u>pixels</u> that make up the characters.

Aligning type

You align type based on the last point you clicked with the type tool pointer. For example, if you want to align type so that it is centered on the image, choose the type tool, click the center of the image, and then click Center in the Type dialog box.

Adjusting individual characters

While a text block is selected on an image and the type tool is active, you can deselect individual characters and words in the text block, and move the characters that are still selected. This allows you to move characters to another position on the image and to adjust the letterspacing.

To deselect characters in a floating text block, use one of the following methods:

☐ Hold down the Control key and drag the lasso around the character or characters you do not want selected.

☐ Hold down the Shift and Control keys, and drag the lasso tool around the characters you want to remain selected.

> NOTE: Make sure that you encircle the entire character you want to select or deselect; any portion of a character outside the lasso will not be altered.

To adjust the letterspacing:

Place the pointer on one of the selected characters and use one of the following methods:

☐ Hold down the mouse button, and when the arrow pointer appears, drag the characters to their new position. To constrain the movement to a straight line, hold down the Shift key.

☐ Use the arrow keys to move the selected characters in 1-pixel increments. Press the arrow key that points in the direction you want to move the type.

Related topics:

<u>Creating Type with the Type Tool</u>

Tips on Calibration

Calibration is the process of adjusting your monitor and the Adobe Photoshop color conversion parameters to compensate for various factors that affect both the on-screen image and its conversion to printed output. These factors include the room lighting conditions, the monitor phosphors, the paper stock, and the printing inks.

The purpose of calibration is to get as close a match as possible between the image you see on-screen and the final output. When you have achieved this, you can be sure of consistent results with any future projects.

Once you have calibrated your system, you should not have to recalibrate unless you change any of the factors affecting calibration. You can save and load calibration settings for different monitors and printing inks. If you change the room lighting, or readjust the monitor brightness and contrast controls, you will need to recalibrate the system. For this reason, it is recommended that you tape down your monitor's brightness and contrast controls after calibrating the monitor, and that you maintain consistent room lighting conditions.

How the Adobe Photoshop calibration tools work

The monitor calibration device included with the Adobe Photoshop program affects only the monitor display. In comparison, the color calibration dialog boxes in Adobe PhotoshopMonitor Setup, Printing Inks Setup, and Separation Setupwork primarily by modifying the way the program converts colors between RGB and CMYK modes. Adjusting options in any of these dialog boxes, therefore, has two important implications:

€ Because monitors are RGB devices, Adobe Photoshop must convert an image in CMYK mode into RGB data to display it on the monitor. This means that adjusting the color calibration options affects how a document is displayed in CMYK mode. In RGB mode, these adjustments do not affect the display of the document.

€ While the color calibration options may have a profound effect on how a CMYK document is displayed, they affect the actual image data only when you convert the file from RGB to CMYK mode. If you convert an image to CMYK mode, and then you change the calibration settings, you must reconvert the image to CMYK for the new settings to take effect.

NOTE: In addition to affecting how colors are converted between CMYK and RGB modes, the settings in the Monitor Setup dialog box affect the overall brightness of all images and the appearance of certain Photoshop operations, such as compositing between a selection and a background.

An overview of calibrating in Adobe Photoshop

The following summary indicates the steps you take to calibrate your system.

1 Calibrate your monitor.

Before you begin working in Photoshop, use the Calibrate option in the Monitor Setup dialog box or a third-party program to calibrate your monitor. This will ensure that your monitor grays are as neutral as possible.

2 If using a third-party calibration program, enter the monitor data in the Monitor Setup dialog box. This data adjusts the display for all image types and affects the conversion between color modes.

3 Enter Printing Inks Setup information.

If you are going to print color plates, use the Printing Inks Setup dialog box to specify the types of inks and paper you will be using and the expected dot gain on the output device. This dialog box also contains an option for specifying dot gain for grayscale images.

4 Print a pre-separated CMYK proof.

The document you use to generate the proof should contain color samples of all the CMYK color combinations and must be created or imported directly in CMYK mode. You can create your own CMYK sample document or use the TESTPICT.JPG image included with Adobe Photoshop.

5 Calibrate the on-screen CMYK image to the proof.

After examining your printed output, you may need to go back to step 2 to adjust the Gamma setting or to step 3 to further adjust for dot gain and ink colors. Continue making adjustments until the on-screen image matches your printed output as closely as possible.

Once you have a good match between the on-screen image and your printed output, you can be sure of consistent results with any artwork, provided you do not change any of the factors affecting calibration. If you are working with various output devices, monitors, or lighting conditions, be sure to save your calibration settings using the Save buttons in the calibration dialog boxes.

Related topics:

Tips on Color Separation

Monitor Calibration

Monitor Setup

Printing Inks Setup

Printing a Color Proof

Tips on Color Separation

Once you have an image on-screen that accurately reflects the <u>dot gain</u>, gray balance, tints, and other characteristics of your color proof, you can work in individual images and be sure that the colors you see on your screen will reproduce correctly when you produce a color separation.

Producing a color separation is the process of converting an RGB image to a CMYK image. The conversion splits the RGB colors into the four process colors: cyan, magenta, yellow, and black. Save a copy of the RGB file before converting it to CMYK. You will then have the original file available if you need to reconvert the file later. It is not a good idea to convert between RGB and CMYK multiple times, since each conversion requires the color values to be recalculated and can cause degradation of the image.

When you convert an RGB image to CMYK, Adobe Photoshop uses its color separation utilities to build a color table containing the CMYK equivalents of the RGB values. This color table is stored in the Preferences file. Each time you change a setting in the Monitor Setup, Printing Inks Setup, or Separation Setup dialog box, a new table must be built when you separate the image.

You can use the default table, or you can save and use tables you create in Adobe Photoshop or third-party applications. Use the Separation Tables command in the Preferences submenu to choose, save, and load tables.

To produce consistent color separations:

1 Calibrate your system. For more information see <u>Tips on Calibration</u>.

NOTE: You should not have to adjust the calibration settings for individual images. However, if you make changes to these settings after you have converted a file to CMYK mode, you must revert to the original file and reconvert the file for the changes to take effect.

2 Make color corrections to your image in RGB mode.

3 Adjust the settings in the Separation Setup dialog box (black generation and undercolor removal).

4 Convert the RGB image to CMYK, and check the black and white points.

5 Apply the Unsharp Mask filter.

6 Create color <u>trap</u>.

7 Print the color plates.

Determining how color plates are generated

In some cases, you may want to adjust the way the CMYK plates are generated. You can control the color translation process by adjusting the <u>black generation</u> and undercolor removal parameters used by Adobe Photoshop in converting images to CMYK. This is done through the Separation Setup preferences.

NOTE: Because color GDI printers generate their own black values, the Separation Setup parameters have no effect on this type of output.

Related topics:

<u>Tips on Color Correction</u>

<u>Adjusting Brightness, Contrast, and Gamma</u>

<u>Converting the Image to CMYK</u>

<u>Trapping</u>

<u>About Black Generation</u>

<u>Separation Setup</u>

Black Generation (UCR and GCR)

Color separation is based on the principle of translating the three additive colorsred, green, and blueinto their subtractive counterparts cyan, magenta, and yellow. In theory, equal parts of cyan, magenta, and yellow combine to subtract all light and create black. Due to impurities present in all printing inks, however, a mix of these colors instead yields a muddy brown. To compensate for this deficiency in the color separation process, printers remove some cyan, magenta, and yellow in areas where the three colors overlap, and add black ink.

There are an infinite number of ways that a given color can be translated from RGB mode to CMYK mode. Prepress operators typically use one of two styles of color translation: undercolor removal (UCR) or gray component replacement (GCR).

In UCR, the black plate is used to add depth to shadow areas and to neutral colors. In GCR, more black ink is used over a wider range of colors. GCR separations tend to reproduce dark, saturated colors somewhat better than UCR separations and maintain gray balance better on press. The type of separation you should use is determined by the paper stock you are using and the requirements of your print shop.

Related topics:

Adjusting Black Generation in Photoshop

Calibrating the On-Screen Image to a Color Proof

Once you have calibrated your monitor and have entered the adjustments for printing inks, you print a CMYK image and create a color proof.

You can print the TESTPICT.JPG image included with the Adobe Photoshop software to produce this proof, or you can create your own CMYK image. For this step, it is recommended that you avoid using an RGB image that has been converted to CMYK in Photoshop; it is preferable to use a file whose CMYK values have been assigned directly in CMYK mode.

To create your own CMYK proof document:

1 Create a new Adobe Photoshop document in the CMYK mode.

2 Create a set of swatches in the document. Include the following swatches:

€ Four swatches, each containing 100 percent of the CMYK colors (100-percent cyan, 100-percent magenta, 100-percent yellow, and 100-percent black).

€ Four combination swatches (100 percent each of magenta and yellow, 100 percent each of cyan and yellow, 100 percent each of cyan and magenta, and 100 percent each of cyan, magenta, and yellow).

To include a calibration bar in the image, click the Calibration Bars option in the Page Setup dialog box.

3 Print the document.

Calibrating the screen image to the proof

After examining the color proof, you may need to adjust some additional calibration settings to make the on-screen image exactly match the proof. In particular, you may need to adjust the calibration settings in the Printing Inks Setup dialog box to compensate for dot gain, custom ink colors, and color casts.

Related topics:

Compensating for Dot Gain

Compensating for Color Casts

Printing Inks Setup

Specifying Printing Options

Compensating for Dot Gain

Dot gain or loss is a change in the size of the <u>halftone</u> dots specified in printing. A 50-percent halftone screen, for example, may show an actual density of 55 percent on the printed image when read with a <u>densitometer</u>.

Dot gain or loss can be caused by two factors: the absorption of ink into a given paper stock, or the use of a miscalibrated imagesetter during the imaging process.

Compensating for dot gain in a grayscale proof

To simulate the dot gain on press for a grayscale image, click the Use Dot Gain for Grayscale Images option in the Printing Inks Setup dialog box. This option adjusts the display to reflect the dot gain; you then use the Curves or Levels dialog box to compensate for the adjustment.

Compensating for dot gain in a color proof

To compensate for dot gain in the proof of a color image, use the Dot Gain text box in the Printing Inks Setup dialog box. The dot gain estimate in the Printing Inks Setup dialog box represents dot gain for the specified paper stock for the midtones (that is, the 50-percent pixels). Photoshop then uses this value to create a dot gain curve that adjusts for dot gain throughout the image.

The default dot gain estimate reflects the expected dot gain between film and final output. (Printers typically tell you the expected dot gain between the color proof and the final output, which is usually between 2 and 5 percent.)

To get the correct dot gain, include a calibration bar with your proof by clicking the Calibration Bar option in the Page Setup dialog box. Using a reflective densitometer, take a reading at the 50-percent mark of the printed calibration bar; then add that value to your printer's estimate of the expected dot gain between proof and final output. If you do not have a densitometer, adjust the Dot Gain value until the on-screen image looks like the proof.

Remember that the Printing Inks Setup options change the screen display of CMYK images (not the image data itself). For example, higher dot gain values make the display darker, with a higher contrast. By changing the dot gain value, you can simulate the effect of printing on different kinds of paper stock. You then use the Curves or Levels dialog box to compensate for the dot gain reflected in the screen display.

Related topics:

<u>Compensating for Color Casts in a Printed Image</u>

<u>Printing Inks Setup</u>

<u>Adjusting Transfer Functions for Printing</u>

Compensating for Color Casts in a Printed Image

The Gray Balance text boxes in the Printing Inks Setup dialog box let you compensate for color casts in a printed image by adjusting the gamma of the individual channels. These color casts are typically due to non-uniform dot gain between the printing inks. Non-uniform dot gain can be caused by the order in which the inks are printed, the screen angles of a given ink screen, or the specific properties of the inks themselves. For example, cyan ink, which is often printed first, tends to have higher dot gain values than the other process inks.

To adjust the gray balance:

1 With the calibration image in CMYK mode, choose Adjust from the Image menu and Levels from the submenu. The Levels dialog box appears.

2 Adjust the Input Levels gamma slider for each channel until the on-screen image matches the color proof.

3 Write down the gamma value for each channel (the gamma level is in the middle text box above the Input Levels histogram); then click Cancel to close the Levels dialog box without modifying the image. Because you are calibrating your system, you want to change the overall gray balance used in the Adobe Photoshop color conversions, not just the balance of an individual image.

4 Open the Printing Inks Setup dialog box, and enter the values for the channels in the Gray Balance text boxes; then click OK. If the existing values are not all 1.0, multiply the new values by the old values.

Once again, keep in mind that changing the settings in the Printing Inks dialog box affects the display of images while in CMYK mode, as well as the conversion from RGB to CMYK. It has no effect on the separation data if you change the settings while an image is in CMYK mode and do not reconvert the image.

Saving and loading printing inks settings

Use the Save and Load buttons in the Printing Inks Setup dialog box to save these settings for use with other Adobe Photoshop images.

Related topics:

Compensating for Dot Gain

Printing Inks Setup

Levels Dialog Box

Creating Color Trap

After you have converted the image to CMYK, you can adjust the color trap.

Adobe Photoshop uses the value in the Trap dialog box to determine how far overlapping colors should be spread outward to compensate for misregistration on press. Adobe Photoshop traps only by spreading; it does not choke colors. In general, Adobe Photoshop uses the standard rules for trapping:

☐ All colors spread under black.

☐ Lighter colors spread under darker colors.

☐ Yellow spreads under cyan, magenta, and black.

☐ Pure cyan and pure magenta spread under each other equally.

When creating trap, keep in mind that most four-color images do not need to be trapped extensively unless you are using solid tints in CMYK mode. Excessive trapping may generate a keyline effect (or even cross-hair lines) in the C, M, and Y plates. These problems are not visible in the composite channel and might show up only when you output to film.

To create trap:

1 Choose CMYK Color from the Mode menu to convert the image to the CMYK mode. Save a version of the file in RGB mode, in case you want to reconvert the image later.

2 Choose Trap from the Image menu. The Trap dialog box appears.

3 Choose a unit of measurement from the size units drop-down list.

4 Enter the misregistration amount in the Width box; then click OK. Consult your print shop to find out the amount of misregistration you can expect on press.

Related topics:

Tips on Color Separation

Tips on Printing Photoshop Documents

In most instances, the default settings in Adobe Photoshop produce excellent printing results. For high-resolution printing, it is important to make sure that your system is correctly calibrated, taking into account variations in monitors, printing inks, and output devices.

Printing overview

The most common way to output images is to produce a positive or negative image on paper or film, and then transfer the image to a printing plate to be run on a press.

In order to print continuous-tone images, the image must be broken down into a series of dots. These dots are created by applying a halftone screen to the image. The dots in a halftone screen control how much ink is deposited at a specific location. Varying the size and density of the dots creates the optical illusion of variations of gray or continuous color in the image. In the case of a color printout, four halftone screens are usedcyan, magenta, yellow, and blackone for each of the inks used in the printing process.

In conventional graphics, a halftone is produced by placing a halftone screen between a piece of film and the image, and exposing the film. In Adobe Photoshop, you specify the attributes for the halftone screen prior to producing the film or paper output. To achieve the best results, the output device you use, such as a PostScript imagesetter, should be set to the correct density limit, and the processor should be properly calibrated. If these factors are inconsistent, the results might be unpredictable.

To print any type of image in Adobe Photoshop, you first select the printing options you want, and then specify settings for the particular image type. For color separations, you may also want to adjust how the various plates are generated and create traps. Finally, you print the image as one or several plates.

To print an individual channel, select the channel in the Channels palette and make it the only visible channel before choosing the Print command.

General printing options

For any type of image you print, you can choose to print the document name, along with crop marks, registration marks, and a caption. You can print a negative of the image, specify an emulsion side for your film processor, and select a background color for the image. The various printing options appear in the Page Setup dialog box, displayed by choosing Page Setup from File menu.

Related topics:

Calibration and Color Separation

Specifying Printing Options

Specifying Halftone Screen Attributes

Trapping

Menu Bar

The Adobe Photoshop menu bar across the top of the screen contains the main menus of the program. To select a command from a menu, click the menu name and drag to highlight the desired command; then release the mouse button.

Commands with an arrow to the right of the command name have submenus. A submenu may appear on the left or right side of the primary command. Drag to the appropriate side to choose a submenu command.

Related topics:

Photoshop Commands

Tool Box

The toolbox contains tools for selecting, viewing, painting, and editing images. It also contains controls for choosing the foreground and background colors, switching to Quick Mask mode, and changing the screen display mode.   Select a tool by clicking on its icon.   Access tool options by double-clicking on the icon.

In full-screen mode you can access all the command menus through a Control menu in the upper left corner of the toolbox.

Related topics:

Tools and Palettes

Palette Windows

Adobe Photoshop includes several palettes that you use when painting and editing images: the Brushes palette, the Channels palette, the Colors palette, the Info palette, and the Paths palette. These palettes are displayed using the commands in the Window menu.

Related topics:

Brushes Palette

Channels Palette

Color Palette

Info Palette

Paths Palette

Tips on Using Palettes

Rulers

The Adobe Photoshop program can display rulers across the bottom and along the right side of the document window. These rulers are displayed by choosing the Show Rulers command from the Window menu. The unit of measurement displayed in the rulers can be changed by choosing Preferences from the File menu and Units from the submenu.

Related topics:

Using Rulers

Status Bar

The Status Bar is located along the bottom of the Adobe Photoshop window. From left to right, it displays the following information:

☐ File size (in kilobytes) of the active document.

☐ Brief instructions for using the tool that is currently selected in the toolbox.

☐ Keystroke options available for the selected tool (shown in parentheses).

When performing a keystroke option, instructions for using the tool change to reflect the modifications to the operation.

Related topics:

Info Palette

Multiple Document Interface

Adobe Photoshop allows you to have several documents open at a time. Each open document is displayed in a separate document window.

All currently opened documents are listed at the bottom of the Window menu. The Multiple Document Interface lets you choose the active document from the list by clicking on the filename of the document. The active document is indicated by a checkmark next to the filename.

Color Basics

The human eye perceives color according to the wavelength of the light that reaches it. Light that contains the full color spectrum appears as pure white light. In the absence of light, the eye perceives black.

All colors can be described in terms of three fundamental characteristics: hue, saturation, and brightness.

A large percentage of the visible spectrum can be represented by mixing three basic components of colored light in various proportions. These components are known as the primary additive colors: red, green, and blue (RGB). Additive colors combine to produce white light. Additive color is used for lighting, video, film recorders, and monitors.

The appearance of color on the printed page is a result of color being absorbed, or subtracted, by the ink on the page. As white light strikes translucent inks, a portion of the spectrum is absorbed. Color that is not absorbed is reflected back to the observer. In theory, pure cyan, magenta, and yellow (CMY) pigments combine to absorb all color and produce black; these are the subtractive primaries. Because all printing inks contain some impurities, these three inks actually produce a muddy brown and must be combined with some black ink to produce a true black.

Related Topics:

Color Modes in Photoshop

Color Modes in Photoshop

A color mode in Adobe Photoshop is the color model you use to display and print Adobe Photoshop documents. The most commonly used modes are Grayscale, for displaying black-and-white documents, RGB, for displaying color documents on the screen; and CMYK, for printing four-color separations.

Grayscale

Grayscale mode uses up to 256 shades of gray to represent the image. In Photoshop, every pixel of a grayscale image has a brightness value ranging from 0 (black) to 255 (white). The values in between correspond to the grayscale spectrum. Images produced using black-and-white or grayscale scanners are typically displayed in Grayscale mode. You can use the all painting and editing tools in grayscale images.

RGB

In RGB color, various brightness values of red, green, and blue light combine to form the colors on the screen. The range of colors in the visible spectrum is represented by controlling the intensities of the individual RGB components.

In RGB mode, you have full access to the painting and editing capabilities of Adobe Photoshop. RGB color is the default mode for new documents. When working in other color modes, such as CMYK, Photoshop must convert the CMYK data into RGB data before the image can be displayed on the monitor.

CMYK

Color printing is normally performed with inks that are complementary to RGB: cyan, magenta, and yellow. In addition, black ink is used in most printing to add depth and detail, and to compensate for deficiencies in the colored pigments. These fours colors (CMYK) are known as the process colors. Process colors are combined on the printed page to reproduce the range of colors in the original image.

In CMYK printing, the color is controlled by layering or mixing inks of various colored pigments when you are ready to print. In Adobe Photoshop, the process of converting an RGB image into the CMYK format needed for printing is called creating a color separation.

Lab

L*a*b* is a color model developed by the Centre Internationale dEclairage (CIE), an international organization that established specifications for measuring color in 1931. These specifications are internationally accepted standards for all colorimetric measurements. The Lab model, like other CIE color models, defines color values mathematically, in a way that is device independent. This means that Lab colors do not vary with different, properly calibrated monitors or printers.

HSB

HSB color is defined by hue, saturation, and brightness. The hue of a color is described by its position on the color wheel. Saturation is defined as the amount of gray in a color. Brightness describes the intensity of light reflected from or transmitted through an image.

Related Topics:

Measuring Color and Brightness in Photoshop

A grayscale image consists of various levels of gray. Depending on the number of bits of information saved when the image was scanned, a grayscale image can contain up to 256 levels of gray. Gray levels can range from 0 (black) to 255 (white).

For RGB color images, Photoshop assigns an intensity value to each pixel ranging from 0 (black) to 255 (white) for each RGB component. For example, a bright red color might have an R value of 246, a G value of 20, and a B value of 50. When the values of all three components are equal, the result is a shade of gray. When the value of all three components is 255, the result is pure white; when all components have a value of 0, the result is pure black.

Every pixel in a CMYK image is assigned a percentage value for each process ink. The lightest (highlight) colors are assigned small percentages of process ink colors, while darker (shadow) colors have higher percentage values. For example, a bright red might contain 2 percent cyan, 93 percent magenta, 90 percent yellow, and 0 percent black. In CMYK images, pure white is generated when all four components have a value of 0 percent; pure black results when all components have a value of 100 percent.

The gamut of a color system is the range of colors that can be displayed or printed. RGB colors have a different gamut than CMYK colors. When colors that cannot be printed are displayed on the screen (that is, they are outside the CMYK gamut), they are referred to as out of gamut colors.

Related Topics:

Image Types in Photoshop

Color Modes in Photoshop

Color Basics

Image Types

Adobe Photoshop supports a variety of image types, including bitmapped, grayscale, duotone (including monotone, tritone, and quadtone), indexed color, RGB, CMYK, and Lab color.

Every Adobe Photoshop image contains one or more <u>channels</u> that represent information about the color elements in the image. For example, a CMYK image has at least four channels: one for cyan information, one for magenta information, one for yellow information, and one for black information. In this sense, a channel is analogous to a plate in the printing process. In addition, extra channels can be added to an image for storing and editing masks; these additional channels are sometimes called <u>alpha channels</u>.

A document can have up to 16 channels. By default, bitmapped, grayscale, duotone, and indexed color images have one channel; RGB and Lab mode images contain three channels; CMYK images contain four channels. You can add channels to all image types except bitmapped images.

Bitmap

Bitmapped images are made up of one bit of color (black or white) per <u>pixel</u> and require the least amount of memory of all image modes. Because few editing options are available in this mode, it is usually best to convert the image to Grayscale mode, and then back to bitmap mode if necessary for export.

Grayscale

Grayscale images are made up of 8 bits of information per pixel, and use 0 to 255 shades of gray to simulate gradations of color. This is a single-channel mode for converting high-quality black-and-white images to and from color images. You can add new channels to a grayscale mode image.

Duotone

Duotone mode is used for monotones, duotones, tritones, and quadtones. These images are grayscale, single-channel images (8 bits per pixel). Monotones reproduce gray using one non-black ink, duotones use two inks, tritones use three inks, and quadtones use four inks; a curve is used to distribute the inks.

Indexed color

Indexed color images are single-channel images (8 bits per pixel) that use a color lookup table containing 256 colors.   These images are useful for editing the color table or creating a limited palette for export, for example, to multimedia applications.   Limited editing is available in this mode; for extensive editing you should convert temporarily to RGB mode.

RGB color

RGB images use three colors to reproduce up to 16.7 million colors on-screen.   This mode is used by most images and scanners, and is generally the mode used for color editing and painting. RGB images are three-channel images, so they contain 24 (8 x 3) bits per pixel.

CMYK color

CMYK images consist of the four colors used to print separations.   These are four-channel images, containing 32 (8 x 4) bits per pixel. This mode allows you to work directly with CMYK images that have been scanned or imported from high-end systems.

Lab color

Lab images use three components to represent color.   They are three-channel images containing 24 (8 x 3) bits per pixel.   This mode is useful when you want to edit the luminance of a pixel but not its color values. Lab mode produces device-independent color and is recommended for moving images between systems or printing to a PostScript Level 2 printer.

Multichannel

Deleting a channel from an RGB, CMYK, or Lab image creates a Multichannel image, which has 8 bits per pixel. Adding a channel to a grayscale image also creates a Multichannel image.

Converting image types

You convert one type of image to another using the commands in the Mode menu. For example, you can easily convert an RGB image to a CMYK image, which produces a color separation. When you perform this conversion, the red, green, and blue values in the image undergo an intermediate conversion to Lab coordinates, which are then converted to cyan, magenta, yellow, and black values. The three-channel RGB image becomes a four-channel CMYK image.

NOTE: Certain image types cannot be converted directly to other image types. Image types not available for the active document appear dimmed in the Mode menu.

Related Topics:

Color Models Supported by Photoshop

Making Bitmap Conversions

Making Grayscale Conversions

Making Color Conversions

Creating Duotones

Using Channels to Create Masks

File Formats

File Formats

Adobe Photoshop allows you to open and save documents in many file formats, including Photoshop 2.5, Amiga IFF, BMP, EPS, GIF, JPEG, MacPaint, PCX, PIXAR, PixelPaint, Raw, Scitex™ CT, Targa, and TIFF.

Files can be opened in the PhotoCD format and can be scanned using the TWAIN interface. You can also open and decompress EPS files saved using the EPS JPEG compression module.

The Adobe Photoshop program includes export modules for exporting documents to Amiga HAM format, for saving EPS files using JPEG, and for exporting paths to Adobe Illustrator.

Photoshop 2.5

Photoshop 2.5 is the default file format for newly created images. This format is a simple, unencoded format and is the only format that supports all of the available Photoshop image modes (Bitmap, Grayscale, Duotone, Indexed Color, RGB, CMYK, Lab, and Multichannel). If, however, you need to compress your files to save disk space, you should use another format. If youre going to export the image to an illustration or page layout program that does not support Photoshop format, save the file in a different format.

Amiga IFF

The Amiga Interchange File Format (IFF) is used to transfer documents to and from Commodore Amiga computers.

BMP

BMP is the standard MS-Windows™ raster format.

EPS

The Encapsulated PostScript™ file (EPS) format is supported by most illustration and page layout programs, and in most cases is the preferred format for these applications. Note that this is also the only file format that supports transparent whites in Bitmap mode.

> NOTE: When exporting Adobe Photoshop documents to Adobe Illustrator, be sure the image is in CMYK mode before saving it in EPS format. This prevents any problems if you use the document in Adobe Separator or QuarkXPress for separations.

GIF

The CompuServe® Graphics Interchange Format (GIF) is commonly used to upload documents to the CompuServe Information Service and to pass documents between other types of computers. This is a highly compressed format that is designed to minimize file transfer time over phone lines.

JPEG

Joint Photographic Experts Group (JPEG) compression economizes on the way data is stored and also identifies and discards extra data, that is, information beyond what the human eye can see. Because it discards data, the JPEG algorithm is referred to as lossy." This means that once an image has been compressed and then decompressed, it will not be identical to the original image. In most cases, the difference between the original and compressed version of the image is indistinguishable.

In the JPEG dialog box, choose a quality setting for the compression. In general, images compressed using the Excellent quality option have compression ratios of between 5:1 and 15:1. A trade-off does exist between the image quality and the amount of compression: an image compressed using the Excellent quality option is less compressed (and thus takes up more disk space) than an image compressed using the Fair quality option.

You do not need to decompress images saved in the JPEG format. They are automatically decompressed when they are opened.

MacPaint

You can use this format only for Adobe Photoshop images that are in the Bitmap mode; in addition, the images must be no larger than 576 by 720 pixels.

In the MacPaint dialog box, you can choose to center the image on the page or place it in the upper left corner of the page when it is opened.

PCX

PCX format, established by Zsoft for its PC Paintbrush software, is commonly used by IBM computers. You can also save Adobe Photoshop images in PCX format.

Most PC software supports version 5 of the PCX format. Version 3 files do not support a custom color palette. For this reason, the palette in any version 3 PCX file is ignored, and a standard VGA color palette is used instead.

PIXAR

The PIXAR format is designed specifically for exchanging files with PIXAR image computers. PIXAR workstations are designed for high-end graphics applications, such as work involving three-dimensional images and animation. There are no format options associated with the PIXAR file format.

PixelPaint

The PixelPaint file format allows a document to be opened in the PixelPaint and PixelPaint Professional graphics applications. You should only use this format for writing files for PixelPaint 1.0 and 2.0; PixelPaint Professional no longer allows a document to be saved in this format. This format allows you to specify the image size (canvas) you want to use and whether you want the image to appear in the center or in the upper left corner of the canvas when you open the document.

Raw

The Raw format is a flexible file format for transferring documents between different applications and computer platforms. Raw format consists of a stream of bytes describing the color information in the file. Each pixel is described in binary format, where 0 equals black and 255 equals white. Adobe Photoshop designates the number of underlined channels needed to describe the image, plus any additional channels in the document. You can specify the file extension and header information.

Scitex CT

The Scitex Continuous Tone (CT) format is available for CMYK color images and grayscale images. Scitex computers are used for high-end image processing. Contact Scitex to obtain utilities that will allow you to transfer a document saved in the Scitex CT format to a Scitex system. When you select the Scitex CT option, the active Adobe Photoshop document is converted directly to the Scitex format; you do not select options for the conversion.

Targa

The TGA (Targa) format is designed for use on systems that use Truevision® video boards, and is commonly supported by MS-DOS color applications. If you are saving an RGB image, you can choose the resolution you want.

TIFF

The Tagged-Image File Format (TIFF) is used to exchange documents between different applications

and different computer platforms. The TIFF format supports LZW compression. This is the same compression used by GIF format; however, unlike GIF, LZW TIFF supports image types other than indexed color.

Related Topics:

[Importing Images](#)

[Exporting Images](#)

[Using Plug-in Modules to Import and Export Images](#)

[Color Modes in Photoshop](#)

Resolution

Several types of resolution are important when discussing the properties of digitized images: bit resolution, device resolution, screen resolution (or screen ruling), image resolution, and output resolution.

Bit resolution

Bit resolution, or bit depth, is a measurement of the number of bits of stored information per pixel. This resolution determines how much color information is allocated for each <u>pixel</u> in the image file. Common values for this resolution range from 1 to 32 bits per pixel.

Device resolution

Defines the number of dots or pixels that are represented per unit length of output. It is commonly measured in dots per inch (dpi) or pixels per inch (ppi). The device resolution for a PC monitor can vary from 60 to 120 dpi. It cannot be changed through Adobe Photoshop software.

Screen resolution

Screen resolution, also known as screen ruling or screen frequency, refers to the number of dots per inch in the <u>halftone</u> screen used to print a grayscale image or color separation. Screen resolution is measured in lines per inch (lpi).

Image resolution

Refers to the amount of information stored for an image, measured in <u>pixels</u>   per inch (ppi). The image resolution and the documents dimensions determine the overall file size of the document. The higher the image resolution, the more space on disk the image requires and the more time it takes for printing and other operations.

Output resolution

Refers to the number of dots per inch (dpi) that the output device (such as an imagesetter or laser printer) produces.

Image Size and Resolution

The concept of resolution is central to understanding the process of resizing and resampling.   The image resolution and the dimensions of the image determine the file size of the document, which is expressed in kilobytes (K) or megabytes (Mb).

The resolution of an image is a critical factor in determining the quality of printed output. If you are working with scanned images, you should scan your images in the highest resolution that can be used by your printer. If the resolution is too low, the PostScript language uses color values of single pixels to create more than one halftone dot. This results in pixelization, or very coarse-looking output. If the resolution is too high, your file contains more information than your printer needs, and printing time is increased.

Related Topics:

<u>Adlusting Image Resolution</u>

<u>Changing Image Size</u>

<u>Scanning an Image</u>

<u>Printing an Image</u>

additive primary colors

Red, green, and blue, which are the three colors used to create all other colors when direct, or transmitted, light is used (for example, on a computer monitor).   They are called additive primaries because when pure red, green, and blue are superimposed on one another, they create white.

alpha channel

An 8-bit, grayscale representation of an image, often used for creating masks that isolate part of an image.

anchor point

The point that determines where a path segment starts or ends. Anchor points are invisible unless any segment of the path they form is selected. Anchor points that end curve segments have direction lines and points associated with them.

anti-aliasing

A method for smoothing the borders of images created with painting, selection, or type tools.   Pixels surrounding the border are assigned gray values to smooth the transition from foreground to background, and thereby give a softer contrast to jagged edges.

arbitrary map

An option in the Curves dialog box that allows you to define a gamma curve precisely .

ASCII

Acronym for American Standard Code for Information Interchange.   A standard that assigns a unique binary number to each text character and control character.

aspect ratio

The height-to-width ratio of a marquee selection.

bitmapped image

A single-channel image with 1 bit of color information per pixel. The only colors displayed in a bitmap-type image are black and white.

black generation

The amount of black generated on the black plate of a color separation.

black and white points

The end points for the tonal range in an image. You can set these points in the Curves and Levels dialog boxes.

brightness

One of the three dimensions of color; the other two are hue and saturation. The term is used to describe differences in the intensity of light reflected from or transmitted through an image independent of its hue and saturation. In Photoshop, brightness values range from 0 (darkest) to 255 (brightest).

bull's eyes (registration marks)

Marks that appear on a printed image, generally for color separations, to help in aligning the various printed plates.

calibration bars

The printed 11-step grayscale wedge that appears on printed output. When you print a CMYK color separation, this step wedge appears only on the black plate. On a color image, this refers to the color swatches printed at the sides of the image.

caption

Text that appears below a printed image.

channel

Analogous to a plate in the printing process, channels represent information about the color elements in an image. In addition, channels can be added to an image for storing and editing masks. Some image types have only one channel, while other types have several channels. An image can have up to 16 channels.

clipping path

A pen tool path saved with a document to be used as a mask in other applications.

CMYK

The four process colors used in printing: cyan, magenta, yellow, and black.

CMYK image

A four-channel image containing cyan, magenta, yellow, and black channels. A CMYK image is generally used to print a color separation.

color correction

Changing the colors of pixels in an image - including adjusting brightness, contrast, mid-level grays, hue, and saturation - to achieve optimum printed results.

color separation

An image that has been separated into the four process colors - cyan, magenta, yellow, and black (CMYK) - and is then printed on four separate plates, each plate representing one of the four process colors.

color table animation

When you make color changes to a selection, Adobe Photoshop displays the changes throughout the entire screen. This process is called color table animation; the program is modifying the monitors color lookup table dynamically in response to the changes you specify.

color wheel

A model that displays the range in hue as the 360 degrees of a circle. Red is considered 0 degrees and is located at 3 o'clock on the wheel; violet is 90 degrees clockwise from red; cyan is 180 degrees clockwise from red; and green is 240 degrees clockwise from red. Color saturation ranges from zero at the center of the wheel to 100 percent at the perimeter of the wheel.

contrast

The tonal gradation between the highlights, midtones, and shadows in an image.

crop

To select part of an image and discard the unselected areas.

crop marks

The marks that are printed near the edges of an image to indicate where the image is to be trimmed.

densitometer

An instrument used to measure the density of printed halftones. A densitometer is used to measure the density levels on the printed calibration bars.

density

The ability of a material to stop or absorb light. The less the light is reflected or transmitted by the material, the higher its density. In scanning and printing, density differences are usually described by gray levels or dot percentage.

density range

The range from the smallest highlight dot a press can print to the largest shadow dot it can print. Synonymous with *tonal range*.

dithering

The technique of making adjacent pixels different colors to give the illusion of a third color. Dithering can produce the effect of shades of gray on a black-and-white display, or more colors on an 8-bit color display.

direction line

The straight line between an anchor point and its direction point. The direction line touches the curve at the anchor point.

direction point

A point that defines the direction in which a curve enters or leaves an anchor point. The position of a curve's two direction points determines the shape of the curve.

dot gain

A defect in printing that causes dots to print larger than they should, causing darker tones or colors. Dot gain is reflected in an increase in the density of light reflected by an image.

dpi

Dots per inch; a measure of resolution.

emulsion

The photosensitive layer on a piece of film or paper.

fade-out rate

The rate at which the paintbrush and airbrush tools fade out as you paint with them to simulate an actual brush stroke.

feather edge

The area along the border of a selection that is partially affected by changes you make to the selection.

fill

To paint a selected area with a gray shade, a color, or a pattern.

floating selection

A selection that has been moved or pasted on an image or converted to a floating selection using the Float command in the Select menu. It floats above the pixels in the underlying image until it is deselected and can be moved without affecting the underlying image.

gamma

A measure of contrast that affects the mid-level grays (midtones) of an image. Gamma is commonly used to describe the relationship of the output density to the original density (changes in brightness) across the midtones when you are performing color correction on an image.

gamut

The range of colors that can be displayed or printed.

gradient fill

A fill that displays a gradual transition from the foreground to the background color. Gradient fills are made with the gradient tool.

grayscale image

A single-channel image consisting of up to 256 levels of gray, with 8 bits of color information per pixel.

gray-component replacement (GCR)

Like undercolor removal (UCR), GCR is the removal of a mixture of cyan, magenta, and yellow, and the replacement of them with black. GCR is generally more extreme and uses more black than UCR.

halftone

The reproduction of a continuous-tone image, made by using a screen that breaks the image into various size dots.

highlight

The lightest part of an image, represented in a halftone by the smallest dots, or the absence of dots.

histogram

A graphic representation of the number of pixels with given color values. A histogram shows the breakdown of colors in an image.

hue

The main attribute of a color that designates its dominant wavelength (position in the light spectrum) and distinguishes it from other colors.

indexed color image

A single-channel image, with 8 bits of color information per pixel. The index is a color lookup table containing up to 256 colors.

kern

To adjust the character spacing in type.

leading

The line spacing for type, measured from baseline to baseline.

linear fill

A fill that is projected from one point to another in a straight line.

lpi

Lines per inch; a measurement of resolution.

luminosity

Measures the brightness of a color. This value is computed by taking the weighted average of the pixels RGB values using the following expression: Luminosity = (.30 x Red) + (.59 x Green) + (.11 x Blue).

midtone

Describes a tonal value approximately halfway between white (highlight) and black (shadow).

moiré pattern

An undesirable pattern in color printing resulting from incorrect screen angles of overprinting halftones. Moiré patterns can be minimized with the use of proper screen angles.

noise

In an image, pixels with randomly distributed color values.

opacity

A characteristic of paint, ranging from 1percent (most transparent) to 100 percent (most opaque).

pixel

A single dot on a computer display or in a digital image.

plug-in module

Software developed by a third-party vendor that lets you use a function that is not available in the standard Adobe Photoshop application.

process color

The four color pigmentscyan, magenta, yellow, and blackused in color printing.

quarter tone

A tonal value approximately halfway between the highlight and midtone.

radial fill

A fill that is projected from a center point outward in all directions.

random access memory (RAM)

The part of the computers memory that stores information temporarily while youre working on it.

registration marks (bull's eyes)

Marks that appear on a printed image, generally for CMYK color separations, to help you align the various printed plates.

resample

To change the resolution of an image. Resampling down discards pixel information in an image; resampling up adds pixel information through interpolation.

resolution

The number of pixels per inch in an image, or the number of dots per inch used by an output device. Resolution can also refer to the number of bits per pixel.

RGB image

A three-channel image containing red, green, and blue channels.

saturation

The amount of gray in a color. More gray in a color means lower saturation; less gray in a color means higher saturation, or more purity of color.

scanner

An electronic device that digitizes and converts photographs, slides, paper images, or other two-dimensional images into bitmapped images. A video camera is a scanner that converts three-dimensional objects into digital, bitmapped images.

screen angles

The angles at which halftone screens are placed in relation to one another.

screen frequency

The density of dots on the halftone screen, commonly measured in lines per inch. Also known as screen ruling.

shadow

The darkest part of an image, represented in a halftone by the largest dots.

spacing

The distance between the brush tips for brushes used by each painting and editing tool.

star targets

The printed pinwheels, used primarily in printing color separations, to align the different plates and measure dot doubling, grain, and slurring during printing.

subpath

A sequence of connected path segments.

subtractive primary colors

Cyan, magenta, and yellow, which are the three printing inks that together theoretically absorb all color and produce black.

tolerance

A parameter of the magic wand and and paint bucket tools that specifies the color range of the pixels to be selected.

toolbox

The set of tools, normally displayed to the left of an image. The toolbox is a floating palette that you can move or hide.

trap

An overlap that prevents gaps from appearing along the edges of an object in a separated image, due to slight misalignment or movement of the separations on press.

undercolor removal (UCR)

The technique of reducing the cyan, magenta, and yellow inks from the darkest neutral shadow areas in an image and replacing them with black.

virtual memory

Temporary disk space used for storing data and performing computations on files during a work session when RAM (random access memory) is insufficient. Virtual memory allows you to work on large documents without requiring you to have large amounts of RAM.