



Slide Rule for Windows Ver1.21E

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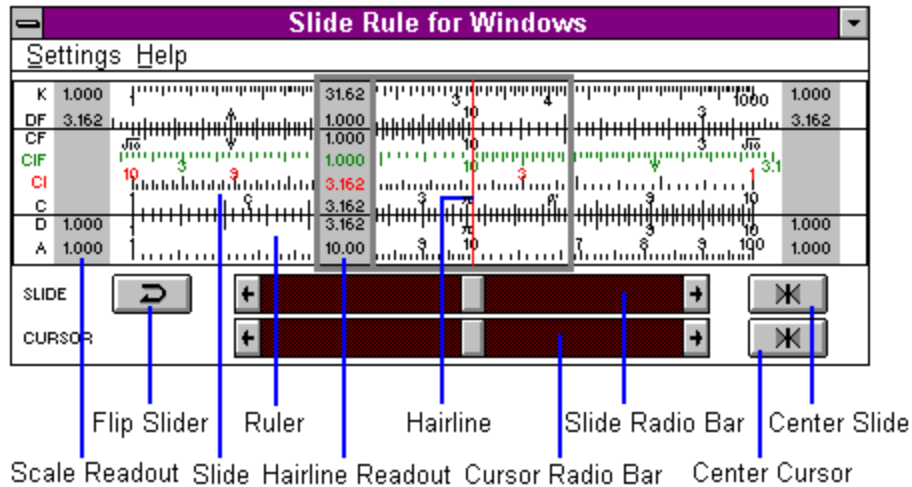
NIFTY:PFC03510

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CompuServe:100220,3402

Slide Rule for Windows is a revolutionary free software allowing Window user to use a single sided slide rule on their Windows.

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Introduction

Slide rule is a mathematical instrument with pairs of logarithmic sliding scales. It was invented in 1622 by the English mathematician William Oughtred. The modern(?) slide rule was devised by the French army officer and mathematician Amedee Mannheim in about 1850. It was in common use until the 1970's when calculators slowly replaced them.

Slide Rule for Windows is a revolutionary(?) free software that brings a single-sided slide rule to your Windows. To overcome the screen resolution limitation, scales are displayed digitally.

I have tried to bring the real slide rule as much as possible to Windows. Furthermore, there is no need for maintenance. If it is defined as an icon, it will always display with a double-click of a mouse button.

If you like it, please use it in place of a calculator. This may be the new device to replace a calculator in years to come!

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Basic Operations

Keyboard and Mouse

Installation

After decompressing SLIDE.LZH file in a directory, execute SLIDE.EXE file from the File Manager or from the Program Manager (choose [FILE]-[RUN]).

Menus

Settings

Reverse slide

Flip the middle slide. Used in trigonometric and logarithmic calculations.

Selecting this operation is the same as choosing the



button. Center the slider button and display the front slider face (CF, CIF, CI, C scales)..

Initialization

Change

Change to special graduation mode (circumstance, area, radian degrees)

Change units

Move the slider button to toggle back to normal mode. Change to unit conversion mode.

Right Click

Move the slider button to toggle back to normal mode. Change to right mouse button click or [Shift] key press operation mode.

High resolution mode

Enlarge scale to make it easier to see.

Always on top

Display Slide Rule for Windows window always on top of other windows.

Exit

End Slide Rule for Windows.

Memory

Read

Recall the slider location.

Set

Memorize the current slider location.

Help

Instruction on how to use Slide Rule for Windows.

How to use a Slide Rule

Open this help file.

About

Instruction on using a slide rule.

Display version information of Slide Rule for Windows.

Help

Using Slide Rule

Open this help file

How to use a slide rule

Open this help file and display section on using a slide rule

About Slide Rule

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Keyboard and Mouse

Keyboard

[C]	Able cursor to be moved by [←][
→][
↑][
↓] keys.	
[C]+[Shift]	Move the cursor to the center.
[S]	Able slider to be moved by [←][
→][
↑][
↓] keys.	
[S]+[Shift]	Move the slider to the center
[R]	Turn the slider
[I]	Move the slider and the cursor to the center and turn up the slider.
[H]+[Ctrl]	Toggle between normal and high resolution modes.
[F1]	Open this help file.



Using a mouse

 Click the left mouse button on the following objects:

Slider	Move the slider
Runner	Move the runner
C,CF,Cl,CIF	Turn the slider
SI,L,TI1,TI2	Turn the slider
Numerals in the runner	Toggle between black and red numerals in SI,TI1,TI2.

Basic Operations

Special Techniques

1. To simultaneously move both slider and cursor radio bar, press the right mouse button while moving a bar.
2. To move the slider radio bar over the cursor radio bar, press the right mouse button while clicking the left mouse button on the  button to the right of the slider radio bar.
3. To move the cursor radio bar under the slider radio bar, press the right mouse button while clicking the left mouse button on the  button to the right of the cursor radio bar.
4. To save the current position of slider and cursor, keep the [Shift] key down while exiting.

How to use a Slide Rule

Slide rule is based on a logarithmic scale. It uses a simple equivalence that when $A \times B = C$ is true, $\log A + \log B = \log C$ is also true. By sliding a slider in the middle and aligning runner with a hairline, it is possible to quickly find products, quotients, trigonometric values, and logarithmic values.

Unfortunately, addition and subtraction can not be calculated using a slide rule. Furthermore, only 3 to 4 digit precision is possible and placement of decimal points must be accounted for by the user.

Nevertheless, slide rule is an ingenious device capable of finding many values quickly. There are many different uses for it and with practice, users may find their own personal way of finding a value.

Relationship between scales

D and C scales have the same graduation. However, C scale is on the scale and D scale is on the ruler. This permits users to simply find ratio between 2 numbers by moving the sliding scale.

Likewise, CI and D scales also have the same graduation, but in opposite direction. Thus, reciprocal of a ratio between 2 numbers may be found by using these scales.

Calculation 1 Multiplication, division, reciprocal, square, square root, cube, cubic root

Calculation 2 Sine, cosine, tangent, logarithm

Calculation 3 Combined operations

Calculation 4 Tips

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Calculation 1

Multiplication

D and **C** scales are used to multiply two numbers.

Example: To calculate 5×4 :

1. Move the **slide** radio button until 10 on the **C** scale aligns with the multiplicand (5) on the **D** scale (or until 5.000 is displayed at the right gray area in the D scale).
2. Move the **cursor** radio button until the hairline is over the multiplier (4) on the **C** scale (or until 4.000 is displayed on the runner at the C scale).
3. Read the value on the runner at the **D** scale (i.e. 2.000). Multiply this value by the value by 10. This is the product.

Division

Division is performed by reversing the procedure used for multiplication. Thus, **D** and **C** scales are likewise used to divide two numbers.

Example: To calculate $5 / 4$:

1. Move the **cursor** radio button until the hairline is over the dividend (5) on the **D** scale (or until 5.000 is displayed on the runner at the D scale).
2. Move the **slide** radio button until the hairline is over the divisor (4) on the **C** scale (or until 4.000 is displayed on the runner at the C scale).
3. Read the value on the runner at the **D** scale displayed at the left side of the ruler (i.e. 1.250).

Reciprocal

Reciprocal of a number is found by using **C** and **CI** scales.

Example: To calculate reciprocal of 5 ($1/5$):

1. Move the cursor or the slide radio button until 5 is displayed on the **C** scale.
2. Read the reciprocal of the number on the **CI** scale.

Square/ Square root

Square and square root of a number is found by using **D** and **A** scales.

Example: To calculate square of 5:

1. Move the cursor or the slide radio button until 5 is displayed on the **D** scale.
2. Read the square of the number on the **A** scale.

To calculate the square root of a number, reverse the procedure.

Example: To calculate square root of 4:

1. Move the cursor or the slide radio button until 4 is displayed on the **A** scale.
2. Read the square root of the number on the **D** scale.

Cube and Cubic root

Square and square root of a number is found by using **D** and **K** scales.

Example: To calculate cube of 5:

1. Move the cursor or the slide radio button until 5 is displayed on the **D** scale.
2. Read the square of the number on the **K** scale.

To calculate the square root of a number, reverse the procedure.

Example: To calculate cubic root of 8:

1. Move the cursor or the slide radio button until 8 is displayed on the **K** scale.
2. Read the square root of the number on the **D** scale.

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Calculation 2


Flip the slide to find the following values



Sine

Sine of an angle is found by using the SI and CI scales.

Example: To find a sine of a 30 degree angle:

1. Flip the slide so display the SI scale (choose the  button).
2. Move the cursor or the slide radio button until 30 is displayed on the SI scale.
3. Flip the slide once again to display the CI scale.
4. Read the value on the CI scale (5).
5. Divide the value by 10 to find the sine (.5).

Cosine

Cosine of an angle is found by using the SI and CI scales.

Example: To find a cosine of a 60 degree angle:

1. Flip the slide so display the SI scale.
2. Click the SI slide numerical display on the runner. Numbers should now be appear red.
3. Move the cursor or the slide radio button until 60 is displayed on the SI scale.
4. Flip the slide once again to display the CI scale.
5. Read the value on the CI scale (5).
6. Divide the value by 10 to find the cosine (.5).

Tangent

Tangent of an angle is found by using the T11 and CI scales (<45 degrees) or T12 and CI (> 45 degrees) scales.

Example: To find tangent of a 30 degree angle:

1. Flip the slide so display the T11 scale.
2. Move the cursor or the slide radio button until 30 is displayed on the T11 scale.
3. Flip the slide once again to display the CI scale.
4. Read the value on the CI scale (5.775).
5. Divide the value by 10 to find the tangent (.5775).

If the angle is greater than 45 degrees, use the T12 scale instead of the T11 scale.

Cotangent

To find a cotangent of an angle, click the TI slide numerical display on the runner. Numbers should now be red. Follow the steps in outlined in the finding the tangent.

Logarithm

Mantissa of a common logarithm of a number is found by using the DF and L scales.

Example: To find a logarithm of 2.56:

1. Flip the slide so display the L scale.
2. Move the cursor radio button until the hairline is aligned at 1.000 on the DF scale (1.000 is displayed on the runner at the DF scale).
3. Move the slide radio button until DF scale is aligned at 2.56 (2.56 is displayed on the right gray area in the DF scale).
5. Read the value on the L scale (0.408).

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Calculation 3 - Combined Operations

To multiply a number with a sine of an angle

A number may be multiplied with a sine of an angle in a single operation by using the **D** and **SI** scales.

Example: To find $5 \times \sin(30)$:

1. Flip the slide so display the **SI** scale.
2. Move the **cursor** radio button until the hairline is aligned at 5.000 on the **D** scale (5.000 is displayed on the runner at the **D** scale).
3. Move the **slide** radio button until **SI** scale is aligned at 30.00 (30.00 is displayed on the runner at the **SI** scale).
4. Read the value on the **D** scale (left gray area in the **D** scale). It should be 2.500.

To multiply a number with a cosine of an angle

A number may be multiplied with a cosine of an angle in a single operation by using the **D** and **SI** scales.

Example: To find $4 \times \sin(70)$:

1. Flip the slide so display the **SI** scale.
2. Move the **cursor** radio button until the hairline is aligned at 4.000 on the **D** scale (4.000 is displayed on the runner at the **D** scale).
3. Click the **SI** slide numerical display on the runner. Numbers should now be appear red.
4. Move the **slide** radio button until **SI** scale is aligned at 70.00 (70.00 is displayed on the runner at the **SI** scale).
5. Read the value on the **D** scale (left gray area in the **D** scale). It should be 1.368.

To multiply a number with a tangent of an angle

A number may be multiplied with a tangent of an angle in a single operation by using the **D** and **TI1** or **D** and **TI2** scales.

Example: To find $5 \times \sin(30)$:

1. Flip the slide so display the **TI1** scale.
2. Move the **cursor** radio button until the hairline is aligned at 5.000 on the **D** scale (5.000 is displayed on the runner at the **D** scale).
3. Move the **slide** radio button until **TI1** scale is aligned at 30.00 (30.00 is displayed on the runner at the **TI1** scale). If the angle is greater than 45 degrees, use the **TI2** scale.
4. Read the value on the **D** scale (left gray area in the **D** scale). It should be 2.887.

To multiply a number with a cotangent of an angle, click the **TI1** slide numerical display on the runner to make them appear red before aligning the **TI** scale.

To multiply a number with an exponential

A number may be multiplied with an exponential of a number in a single operation by using the **D** and **L** scales.

Example: To find $2 \times (10^{0.5})$:

1. Flip the slide so display the **L** scale.
2. Move the **cursor** radio button until the hairline is aligned at 2.000 on the **D** scale (2.000 is displayed on the runner at the **D** scale).
3. Move the **slide** radio button until **L** scale is aligned at 0.500 (0.500 is displayed on the runner at the **L** scale).
4. Read the value on the **D** scale (right gray area in the **D** scale). It should be 6.324.

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Calculation 4 - Tips

Finding area from diameter of a circle

1. Select [Settings]-[Change]-[Diameter-Area].
2. Move the cursor radio button to change the diameter of the circle.
3. Find the area by reading the A scale.

Converting between degrees and radian

1. Select [Settings]-[Change]-[RAD-DEG].
2. Move the cursor radio button to find degrees and radian on corresponding scales.

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Slide Rule for Windows Ver1.10E

Slide Rule for Windows is a **FREE SOFT**.

This program was development as a past time. The developer will not guarantee the accuracy of a result.

Requirements: MS-Windows 3.1

Development Language: Visual C++ / MFC 2.0

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Liability

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