

funcs

COLLABORATORS

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Chapter 1

funcs

1.1 Spreadsheet Functions

The following functions are available in EasyCalc:

ABS

ACOS

ASIN

ATAN

AVG

AVERAGE

CINT

COMPARE

COS

COSH

COUNT

DATE

DEG

EXP

FALSE

FIX

IF

INSTR

INT
ISNUM
ISSTR
LENGTH
LINK
LOG10
LOG
MAX
MIN
MOD
NOT
NOW
ORD
PI
RAD
RAND
RND
SIGN
SIN
SINH
SQR
SQRT
SUM
TAN
TANH
TIME
TODAY
TRUE

VAL

VAT

1.2 abs

Synopsis:

ABS(expression)

Description:

This function returns the ABSolute value of the expression. ie. The sign of the number is ignored so that all numbers become positive.

Examples:

VAT(-123.4) would give, 123.4.

VAT(10+1) would give, 11.

1.3 acos

Synopsis:

ACOS(expression)

Description:

This function returns the arc-cosine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD

and

DEG

will help.

1.4 asin

Synopsis:

ASIN(expression)

Description:

This function returns the arc-sine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD

and
DEG
will help.

1.5 avg

Synopsis:

AVG (cell range)

Description:

This function returns the average of all values given in the cell range.

Examples:

AVG (A1:BB56) could give, 1.52084.

AVG (B6:A4) could give, -1.3734.

1.6 average

Synopsis:

AVERAGE (cell range)

Description:

This function returns the average of all values given in the cell range.

Examples:

AVERAGE (A1:BB56) could give, 1.52084.

AVERAGE (B6:A4) could give, -1.3734.

1.7 comp

Synopsis:

COMPARE ("string2", "string2")

Description:

Compares the two supplied strings. The comparison is not case sensitive (ie. A=a etc); If the strings are the same "1" is returned otherwise a "0" is returned.

Examples:

COMPARE ("fred", "ginger") = 0

COMPARE (d45, "reorder") could give 1

1.8 atan

Synopsis:

ATN(expression) or ATAN(expression)

Description:

This function returns the arctangent of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

Examples:

ATN(20) would give, 1.52084.

ATN(-5) would give, -1.3734.

1.9 cint

Synopsis:

CINT(expression)

Description:

This converts an expression into an integer by rounding the fractional part.

Examples:

CINT(1.5) would give 2.

CINT(-1.5) would give -2.

1.10 cos

Synopsis:

COS(expression)

Description:

This function returns the cosine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and

DEG
will help.

Examples:

COS(0) would give 1.
COS(1) would give 0.5403023.

1.11 cosh

Synopsis:

COSH(expression)

Description:

This function returns the hyperbolic cosine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

1.12 count

Synopsis:

COUNT(range)

Description:

This function returns the number of used cells in a range.

Examples:

COUNT(A1:A5) could give 3

1.13 date

Synopsis:

DATE(YY,MM,DD)

Description:

Converts the supplied date into a number of days since 1-Jan-1978. This will appear as a date if the celltype is a date.

Examples:

DATE(78,1,1) = 0

1.14 deg

Synopsis:

DEG(expression)

Description:

This function converts an expression in radians into degrees.

Examples:

DEG(1) would give 90.

1.15 exp

Synopsis:

EXP(expression)

Description:

This function returns the exponential function of the given expression.

Examples:

EXP(1) would give 2.718...

1.16 false

Synopsis:

FALSE

Description:

Returns the value 0. This is useful for making logical operations more readable.

Examples:

FALSE would return 0

1.17 true

Synopsis:

```
TRUE
```

Description:

Returns the value 1. This is useful for making logical operations more readable.

Examples:

```
TRUE would return 0
```

1.18 instr

Synopsis:

```
INSTR("string1", "string2")
```

Description:

This function searches for string2 in string1. The search is case insensitive. (ie. A=a); If the string is found then a 1 is returned otherwise a 0 is returned.

Examples:

```
INSTR("hello", "hell") = 1  
INSTR("hello", "bye") = 0
```

1.19 leng

Synopsis:

```
LENGTH("string")
```

Description:

Returns the length of the string.

Examples:

```
LENGTH("hello") = 5  
LENGTH(b56) could give 23
```

1.20 ord

Synopsis:

```
ORD("string")
```

Description:

Returns the ASCII value of the first character in the string.

Examples:

```
ORD("A") = 65
```

```
ORD("0") = 48
```

1.21 val

Synopsis:

```
VAL("string")
```

Description:

Converts the supplied string into a number.

Examples:

```
VAL("45.6") = 45.6
```

1.22 fix

Synopsis:

```
FIX(expression)
```

Description:

This returns the truncated expression. See the examples for how it differs from

```
INT
```

```
.
```

Examples:

```
FIX(1.5) would give 1.
```

```
FIX(-1.5) would give -1.
```

1.23 if

Synopsis:

IF(expression,true action,false action)

Description:

This function examines the expression. If the expression is true (in a boolean sense), then the true action is evaluated, else the false action is evaluated.

Notes:

IF must be in a cell on its own. You can not have 10+IF(5<6,1,0) or simular. However you can use other functions inside IF as normal.

Examples:

IF(A1<5,1,A1)

If the contents of A1 were less than 5 then this would display in the cell, "1", else the contents of A1 would appear.

1.24 int

Synopsis:

INT(expression)

Description:

This removes the fractional part of the expression by always rounding down.

Examples:

INT(1.5) would give 1.
INT(-1.5) would give -2.

1.25 isnum

Synopsis:

ISNUM(cell ref)

Description:

Returns 1 if the cell reference is pointing to a cell that contains a value. Otherwise a 0 is returned.

Examples:

ISNUM(A5) could give 1.

1.26 isstr

Synopsis:

```
ISSTR(cell ref)
```

Description:

Returns 1 if the cell reference is pointing to a cell that contains a string. Otherwise 0 is returned.

Examples:

```
ISSTR(A5) could give 1.
```

1.27 xlink

Synopsis:

```
LINK("worksheet>cell")
```

Description:

This function returns the cell value in the specified worksheet. This function will return 0 the first time it is used. The value will not be retrieved until the "Uplink" menu option is chosen. Also all links are updated the first time the worksheet is loaded into memory.

Notes:

If the worksheet is in memory already then it will be referenced from memory instead of disk. Even if the referenced worksheet changes it will not be reflected in the LINK unless it is explicitly Uplinked.

Notice the > symbol, this divides the worksheet name from the cell address.

Examples:

```
LINK("worksheet1>A5") - would return the contents of cell A5 in worksheet1.  
LINK("income87>G67") - would return the contents of cell G67 in income87.
```

1.28 log

Synopsis:

```
LOG(expression)
```

Description:

This returns the natural logarithm (base e) of the expression. The expression must be greater than 0.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

If you want the base-10 log then use

LOG10

.

Examples:

LOG(2) would give 0.30103.

1.29 log10

Synopsis:

LOG(expression)

Description:

This returns the logarithm (base 10) of the expression. The expression must be greater than 0.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

1.30 max

Synopsis:

MAX(range)

Description:

This returns the maximum value in the specified cell range.

Examples:

MAX(A1:A12) could give 56.7.

1.31 min

Synopsis:

MIN(range)

Description:

This returns the minimum value in the specified cell range.

Examples:

MIN(A1:A12) could give 56.7.

1.32 mod

Synopsis:

MOD(x,y)

Description:

Returns the remainder (the modulus) of x divided by y.

Examples:

MOD(10,3) would give 1 (10/3 = 3 remainder 1)

1.33 not

Synopsis:

NOT(expression)

Description:

Performs a binary invert on the expression. Imagine the expression changed into binary (1s and 0s). Every 0 is turned into a 1 and vice versa.

Examples:

NOT(1) would give 0.

1.34 now

Synopsis:

NOW

Description:

This function returns the number of seconds since last midnight (anything up 86400). If the cell has a type of time then it will appear as a time in the HH:MM:SS format. This function allows access to the Amigas built in system clock.

Examples:

NOW could give 45743

1.35 pi

Synopsis:

PI

Description:

Returns the value 3.14159... (The ratio of a circles diameter to its circumference)

Examples:

PI would give 3.14159

1.36 rad

Synopsis:

RAD(expression)

Description:

This function converts an expression in degrees into radians.

Examples:

RAD(90) would give 1.

1.37 rnd

Synopsis:

RND(expression)

Description:

This function returns a number between 0 and expression. Every time the worksheet is calculated this value will change.

Examples:

RND(10) could give 5.

1.38 rand

Synopsis:

RAND

Description:

This function returns a number between 0 and 1 (but never 1). Every time the worksheet is calculated this value will change. This function is provided for compatibility with Lotus, AsEasyAs etc.

Examples:

RAND could give 0.4545452.

1.39 sign

Synopsis:

SIGN(expression)

Description:

This function returns -1 if the expression is negative, 0 if the expression is 0, and +1 if the expression is positive.

Examples:

SIGN(-5) would give -1.

SIGN(2) would give 1.

1.40 sin

Synopsis:

Description:

This function returns the sine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

Examples:

SIN(1) would give, 0.8414709.

1.41 sinh

Synopsis:

Description:

This function returns the hyperbolic-sine of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

1.42 sqr

Synopsis:

SQR(expression) or SQRT(expression)

Description:

This function returns the square root of the expression. The expression must not be negative.

Examples:

SQR(49) would give, 7.

1.43 sqrt

Synopsis:

SQR(expression) or SQRT(expression)

Description:

This function returns the square root of the expression. The expression must not be negative.

Examples:

SQRT(49) would give, 7.

1.44 sum

Synopsis:

SUM(range)

Description:

Returns the total of all cells in the specified range added together.

Examples:

SUM(A1:B12) - Returns the total of all the cells in the range, A1->B12.

VAT(SUM(A1:B12)) - Returns 17.5% of the total of all the cells in the range, A1-B12. (follow that?)

1.45 tan

Synopsis:

TAN(expression)

Description:

This function returns the tangent of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD
and
DEG
will help.

Examples:

TAN(0) would give 0.

TAN(1) would give 1.5574077.

1.46 tanh

Synopsis:

TANH(expression)

Description:

This function returns the hyperbolic-tangent of the expression.

Note: Trig functions are all specified in radians. If you need to convert between degrees and radians, the functions,

RAD

and
DEG
will help.

1.47 time

Synopsis:

TIME (HH,MM,SS)

Description:

Returns the number of seconds since midnight for displaying in a time format cell.

Examples:

TIME (23,59,59)=86400

1.48 today

Synopsis:

TODAY

Description:

Returns the number of days since 1-Jan-1978 for displaying in a date format cell. This function allows access to the Amigas built in system clock.

Examples

TODAY could give 98345.

1.49 vat

Synopsis:

VAT (expression)

Description:

This function returns 17.5% (current UK sales tax) of the expression given.

Examples:

VAT(100) would give, 17.5.
VAT(10+1) would give, 1.925.

1.50 ops

An operator is something that performs an action on an expression. Basically that means $+-*/$ etc. Below is a list of available operators, and a description of the priority system:

```
(, )
^, >, <, >=, <=, <>, =
*, /
+, -
```

They have been listed in order of priority (also called precedence). If O Level maths theory has long since escaped you then let me explain. For example if you had $10+2*3$, the laws of precedence would give an answer of 16 ($2*3$ then $+10$), this is because multiply has a higher precedence than $+$. The highest precedence of all goes to brackets. Using brackets you can force the order something is calculated in. The previous example would be $(10+2)*3$ to give 36. By knowing about precedence you can order calculations to minimise brackets and speed up the calculation.

Some of the above operators may look unfamiliar to you. Here is a description of each:

(,) - See precedence above.
 $^$ - Raise to the power of. eg. 2^4 would be "2 raised to power of four" or would be written as 2 followed by a little four in the corner.

The next few are called comparisons, they are normally used in the IF command to compare numbers however you may need them for logical functions sometimes. Basically they show if something is "true":

$>$ - Greater than. Equals -1 if the value on the left of the $>$ is greater than the value on the right. Otherwise it returns 0.
 $<$ - Less than. The opposite of above.
 $>=$ - Greater than or equal to.
 $<=$ - Less than or equal to.
 $<>$ - Not equal to.
 $=$ - Equal to.

$*, /, -, +$ - Do I need to explain these?

Examples:

```
=10>5 would give -1. (10 IS greater than 5)
=5<>5 would give 0. (5 DOES equal 5)
=5<=5 would give -1. (5 IS less than or equal to 5)
```

Note the equal sign at the start of the examples. This tells EasyCalc that what follows is a formula and not a string or something.

1.51 brackets

Unmatched Brackets

This error can have two meanings:

- Left and right brackets do not match. eg. $10+((2*3)$ would give this error. You should ALWAYS have a matching right bracket for every left bracket used.

- Or too many right brackets were encountered before the matching left brackets. eg. $2+(5*2))$ would give this error.

It should be noted that the above examples are artificially simple, often these errors occur in complex expressions.

1.52 div0

Division by Zero

Since a division by 0 is impossible if you have an expression that tries to divide by zero then it will fail. This error is not always trapped, so if you suddenly get strange numbers in some cells then check for 0.

1.53 less0

Invalid Parameter

You have given a negative value to a function that cannot cope with one. Functions like `SQR()` can only have positive (none zero) numbers. This is because the square root of a negative number is mathematically impossible when using real (not complex) numbers.

Functions affected:

.

SQR

.

SQRT

.

LOG

.

LOG10

1.54 numprob

Invalid Number Entered

You have entered an invalid number. Invalid means that the number contains a character that is not part of a number and the EasyCalc evaluator cannot cope with it.

Alternatively, you have entered a formula, but forgotten to start the formula with a '=' sign. An example is $2+4$. EasyCalc sees that the cell starts with a number so it tries to process the cell as a number, but then

it comes across the +. Just add a '=' to the start of the formular and all should be alright.

1.55 range

Invalid Range

A spreadsheet range (eg. A1:Z34) is invalid. This could be because you have exceeded the area of the worksheet or you have made a typing mistake (eg. AAZ) and caused the evaluator to be confused.

1.56 unexpect

Enexpected Character

During the course of evaluating a formular, EasyCalc has discovered a character it wasn't expecting. This has probably been caused by mistyping something.
