

## Equation Solver Menu (SOLVE)



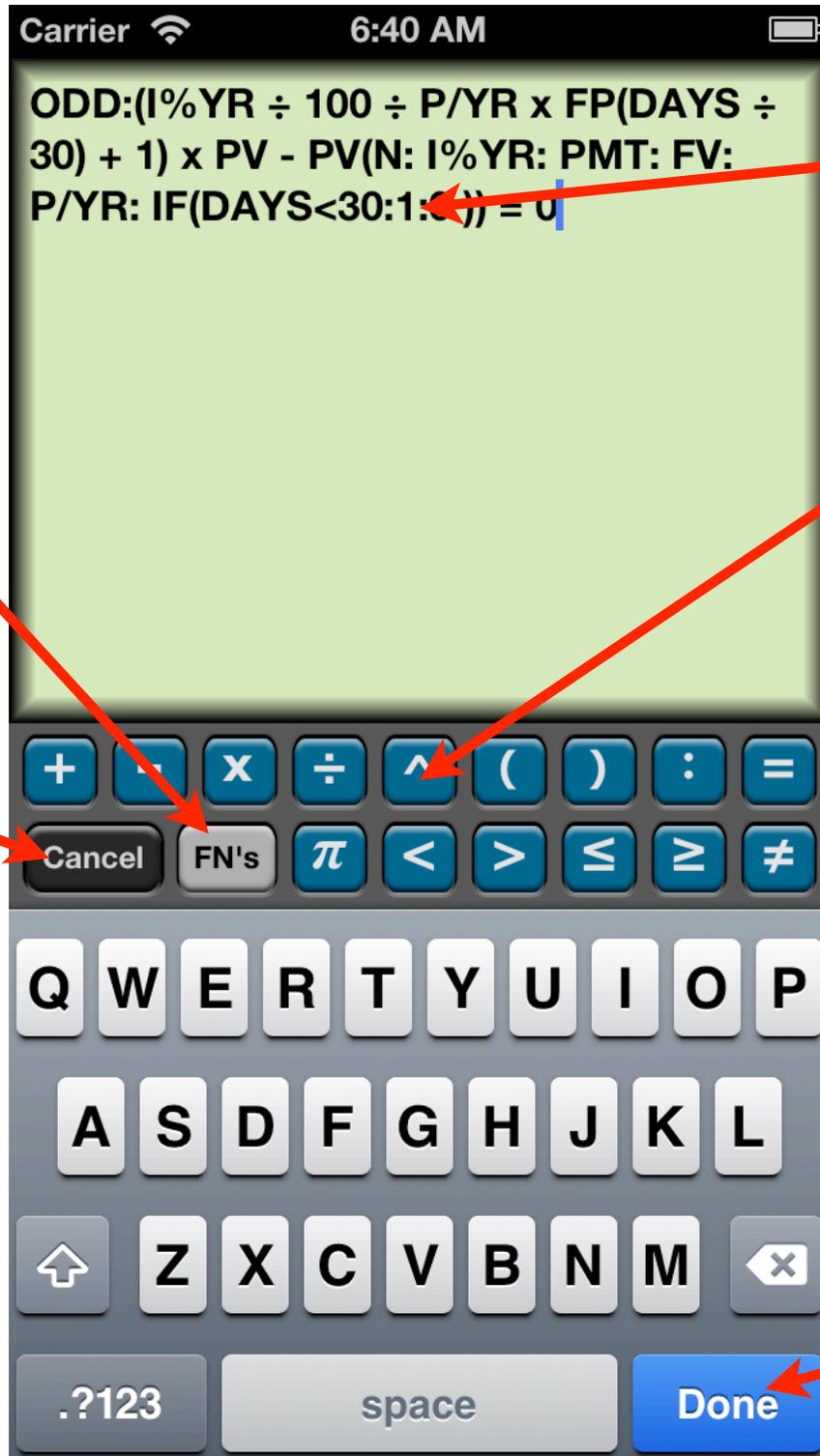
The RLM-19BII has a powerful “SOLVE” menu to store and edit equations that you enter. Once an equation is entered and validated, the solver creates a menu with all the variables of the equation. Then any variable can be calculated using the values stored in the others.

When the “SOLVE” menu is shown, the display shows a list with all the equations currently loaded in the calculator. All the above buttons actions are applied to the current selected equation.

SUM Menu Buttons	
	Shows the menu to calculate any variable of the current selected equation.
	Shows the <b>Equation Editor View</b> to create a new equation.
	Shows the <b>Equation Editor View</b> to edit the current selected equation.
	Shows a table view to Load a previously saved equation.
	Saves the current equation asking for a name for it.
	Remove the selected equation from the calculator.

# Equation Editor View

The Equations Editor view allows you to edit an existing equation or create a new one.



Equation Expression

Operation Shortcuts

Shows the Functions Menu

Close the Editor

Enter the Equation

## Solver Build-In Functions

Function	Description
<b>ABS(x)</b>	Absolute value of "x".
<b>ACOS(x)</b>	Arc-cosine of "x" in the current angle mode.
<b>ACOSH(x)</b>	Hyperbolic Arc-cosine of "x".
<b>ALOG(x)</b>	Common (base 10) antilogarithm; $10^x$ .
<b>AND</b>	Logical operation AND
<b>ANGLE(x:y)</b>	Angular polar coordinate for an (x.y) rectangular coordinate calculated in the current angle mode.
<b>ASIN(x)</b>	Arc-sine of "x" in the current angle mode.
<b>ASINH(x)</b>	Hyperbolic Arc-sine of "x"
<b>ATAN(x)</b>	Arc-tangent of "x" in the current angle mode.
<b>ATANH(x)</b>	Hyperbolic Arc-tangent of "x".
<b>CDATE</b>	Current Date in the current date format.
<b>COMB(x:y)</b>	Number of combination of "x" items taken "y" at a time.
<b>COS(x)</b>	Cosine of "x" in the current angle mode.
<b>COSH(x)</b>	Hyperbolic Cosine of "x".
<b>CTIME</b>	Current Time in HH.MMSSdd, 24-hour format.
<b>DATE(d1:n)</b>	The date "n" days after or before the date d1.
<b>DDAYS(d1:d2:cal )</b>	Number of days from date "d1" to "d2" using calendar "cal". If (cal = 2), uses 365 days/year calendar; if (cal = 3), uses 360-days/year calendar; otherwise uses the actual calendar.

Function	Description
<b>DEG(x)</b>	Convert “x” radians to decimal degrees.
<b>EXP(x)</b>	Natural antilogarithm; $e^x$ .
<b>EXPM1(x)</b>	Calculates $e^{x-1}$ .
<b>FACT(n)</b>	Factorial of a positive integer “n”.
<b>FLOW(name:idx)</b>	Returns the value of the flow at index “idx” from the “name” CFLO list.
<b>FP(x)</b>	Fractional part of “x”.
<b>FV(N:I%YR:PV:P MT:P/YR:m)</b>	TVM function for future value. ( $m \neq 0 \Rightarrow$ BEG mode).
<b>G(x)</b>	Returns (Get) the value of a variable. The variable is local, not appears in the variables list, if it is only used in the L() and G() functions.
<b>HMS(time)</b>	Converts “time” from decimal hours to HH:MMSSdd format.
<b>HRS(time)</b>	Converts “time” from HH.MMSSdd to decimal hours.
<b>IDIV(x:y)</b>	Integer part of the quotient of $x \div y$ .
<b>IF(cond:expr<sub>1</sub>: expr<sub>2</sub>)</b>	Conditional expression. If (cond is true) uses the “expr <sub>1</sub> ”; otherwise uses “expr <sub>2</sub> ”.
<b>INT(x)</b>	Greatest integer less than or equal to “x”
<b>INV(x)</b>	Inverse of “x”; $1 / x$ .
<b>IP(x)</b>	Integer part of “x”.
<b>ITEM(name:idx)</b>	Returns the value of the item at index “idx” from the “name” SUM list.

Function	Description
<b>I%/YR(N:PV:PMT:FV:P/YR:m)</b>	TVM function for interest rate per year. (m ≠ 0 => BEG mode).
<b>L(x:expr)</b>	Store the value of “expr” in the variable “x”. The variable is local, not appears in the variables list, if it is only used in the L() and G() functions.
<b>LN(x)</b>	Natural (base-e) logarithm of “x”.
<b>LNP1(x)</b>	Natural logarithm of (1+x).
<b>LOG(x)</b>	Common (base-10) logarithm of “x”.
<b>MAX(x:y)</b>	Compares “x” and “y”, and returns the larger of the two.
<b>MIN(x:y)</b>	Compares “x” and “y”, and returns the smaller of the two.
<b>MOD(x:y)</b>	Remainder of the division x / y.
<b>N(I%/YR:PV:PMT:FV:P/YR:m)</b>	TVM function for number of periods. (m ≠ 0 => BEG mode).
<b>NOT(logical)</b>	Logical operation NOT
<b>OR</b>	Logical operation OR
<b>PERM(x:y)</b>	Number of permutations of “x” items taken “y” at a time.
<b>PMT(N:I%/YR:PV:FV:P/YR:m)</b>	TVM function for periodic payment. (m ≠ 0 => BEG mode).
<b>PV(N:I%/YR:PMT:FV:P/YR:m)</b>	TVM function for present value. (m ≠ 0 => BEG mode).
<b>RAD(x)</b>	Convert “x” decimal degrees to radians.

Function	Description
<b>RADIUS(x:y)</b>	Magnitude polar coordinate "r" for an (x.y) rectangular coordinate.
<b>RAN#</b>	Pseudo-Random number ( $0 \leq r < 1$ ).
<b>RND(x:y)</b>	Round "x" to "y" decimal places.
<b>S(variable name)</b>	Returns "TRUE" if the current variable solved is "variable name".
<b>SGN(x)</b>	Sign of "x"; returns +1 if $x > 0$ , 0 if $x = 0$ or -1 if $x < 0$ .
<b>SIN(x)</b>	Sine of "x" in the current angle mode.
<b>SINH(x)</b>	Hyperbolic Sine of "x".
<b>SIZEC(name)</b>	Returns the value of the last entry index from the list specified by "name".
<b>SIZES(name)</b>	Returns the number of entries in the list specified by "name".
<b>SPFV(i%:n)</b>	Future value of a single \$1.0 payment; $(1+i\%/100)^n$ .
<b>SPPV(i%:n)</b>	Present Value of a single \$1.0 payment; $1 / (1+i\%/100)^n$ .
<b>SQ(x)</b>	Square of "x"; $x^2$ .
<b>SQRT(x)</b>	Square root of "x"; $\sqrt{x}$
<b>#T(name:idx)</b>	Returns the value of the frequency at index "idx" from the list specified by "name".
<b>TAN(x)</b>	Tangent of "x" in the current angle mode.
<b>TANH(x)</b>	Hyperbolic Tangent of "x".
<b>TRN(x:y)</b>	Truncates "x" to "y" decimals.

Function	Description
<b>USFV(i%:n)</b>	Future Value of a uniform series of \$1.0 payments.
<b>USPV(i%:n)</b>	Present Value of a uniform series of \$1.0 payments.
<b>XCOORD(r:ø)</b>	"x" rectangular coordinate for (r,ø) polar coord. "ø" is taken in the current angular mode.
<b>XOR</b>	Exclusive OR logical operation.
<b>YCOORD(r:ø)</b>	"y" rectangular coordinate for (r,ø) polar coord. "ø" is taken in the current angular mode.
<b>Σ(ctr:c<sub>1</sub>:c<sub>2</sub>:s:expr)</b>	Sum values of algebraic expression "expr" for values of the counter "ctr" from c <sub>1</sub> to c <sub>2</sub> with increments of step "s".

### **Example: Carpet Cost**

A carpet cost \$22.50 per square yard (PPSY). Calculate the cost of a carpet needed to cover a 9 feet (L) by 12 feet (W) room.

The Formula is: **COST = PPSY • L • W ÷ 9**

**Solution:** First, show the Solver menu touching the  key. Then follow the next sequence :

Keystrokes	Description
	Shows and empty Equation Editor ready to enter the equation.

Keystrokes	Description
	Type the equation using the shortcuts keys and the alphabetic keyboard.
	Touch the “Done” button to check the expression. If the expression has no errors, the variable order view is shown.
	Sort the variables in the order you want and touch “Done” to enter the equation into the calculator.
	Touch the “CALC” button to display the equation menu.
22.5 	Stores the PPSY value in the corresponding variable.
9 	Stores the L value in the corresponding variable.
12 	Stores the W value in the corresponding variable.
	Calculates the cost to carpet the room. <b>COST = 270.00</b>

if you can't pay more than \$300.00 to carpet the room. What is the most expensive carpet you can buy?

Keystrokes	Description
300 	Stores the maximum COST value in the corresponding variable.
	Calculates the maximum price per square yard you can pay. <b>PPSY = 25.00</b>