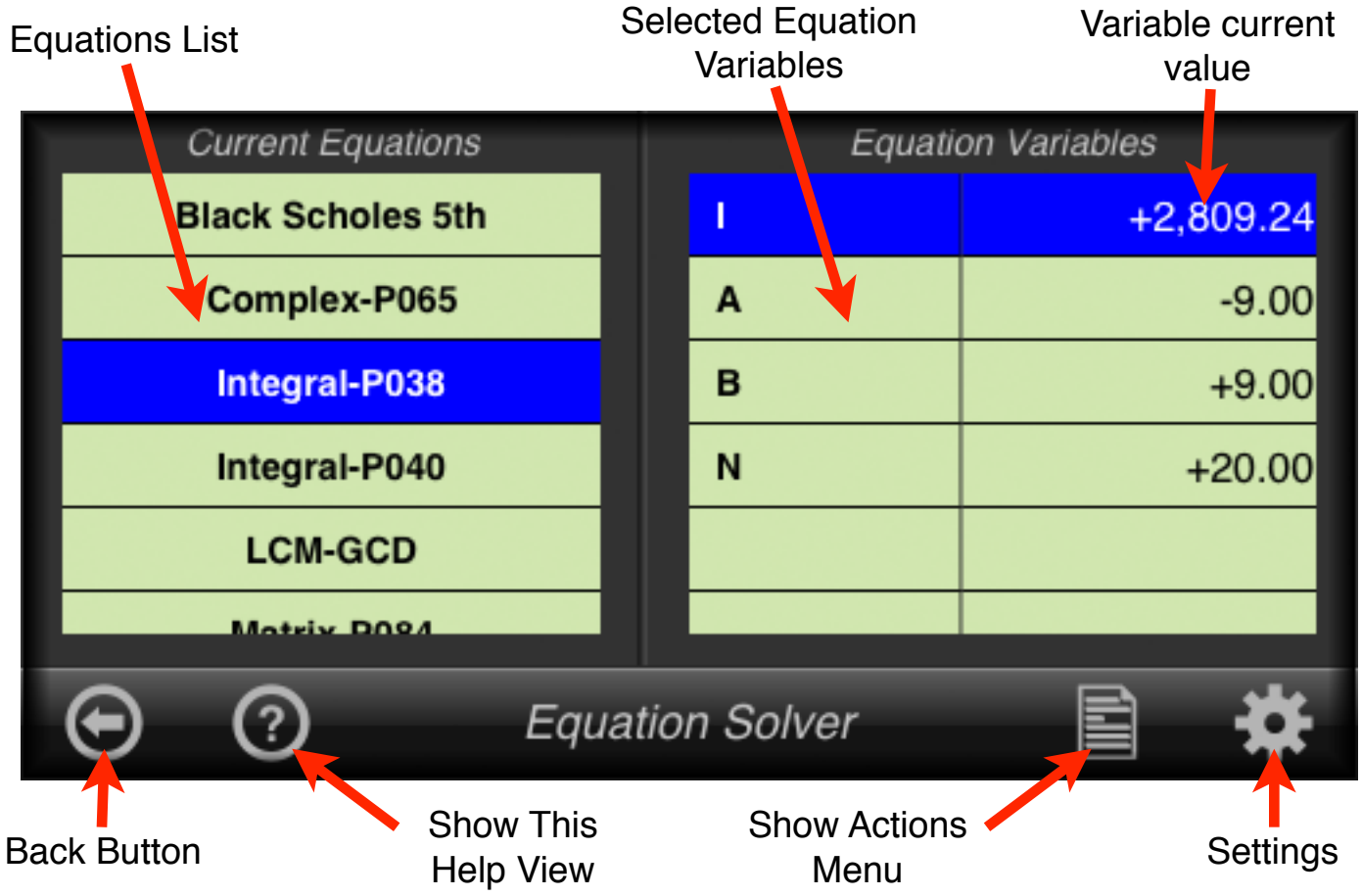
Equation Solver Tool

The RLM-12C Finance Center has a powerful Solver tool to store and edit equations that you enter.

To show this tool, press the [OPT] key and select the “SOLVER” option. The following keypad will appear:



The left side table shows a list with all the equations currently loaded in the calculator. If you select an equation, all its variables and current values are listed in the right side table.

To enter a variable value, simply type a number and touch a variable row in the right table. To calculate a variable using the equation, touch the row corresponding to the variable that you want yo solve immediately after the value entering sequence.

To create or edit an equation, touch the toolbar’s “Actions Menu” button and select the proper option.

Toolbar Button Action	
	Close the view and get back to the Options Selection Menu.
	Shows the Help View with the this topic selected.
	Pop up the Action Menu for the Units Conversion View (see “Actions Menu” below).
	Shows the “General Settings” view to customize the RLM-12 Finance Center application.

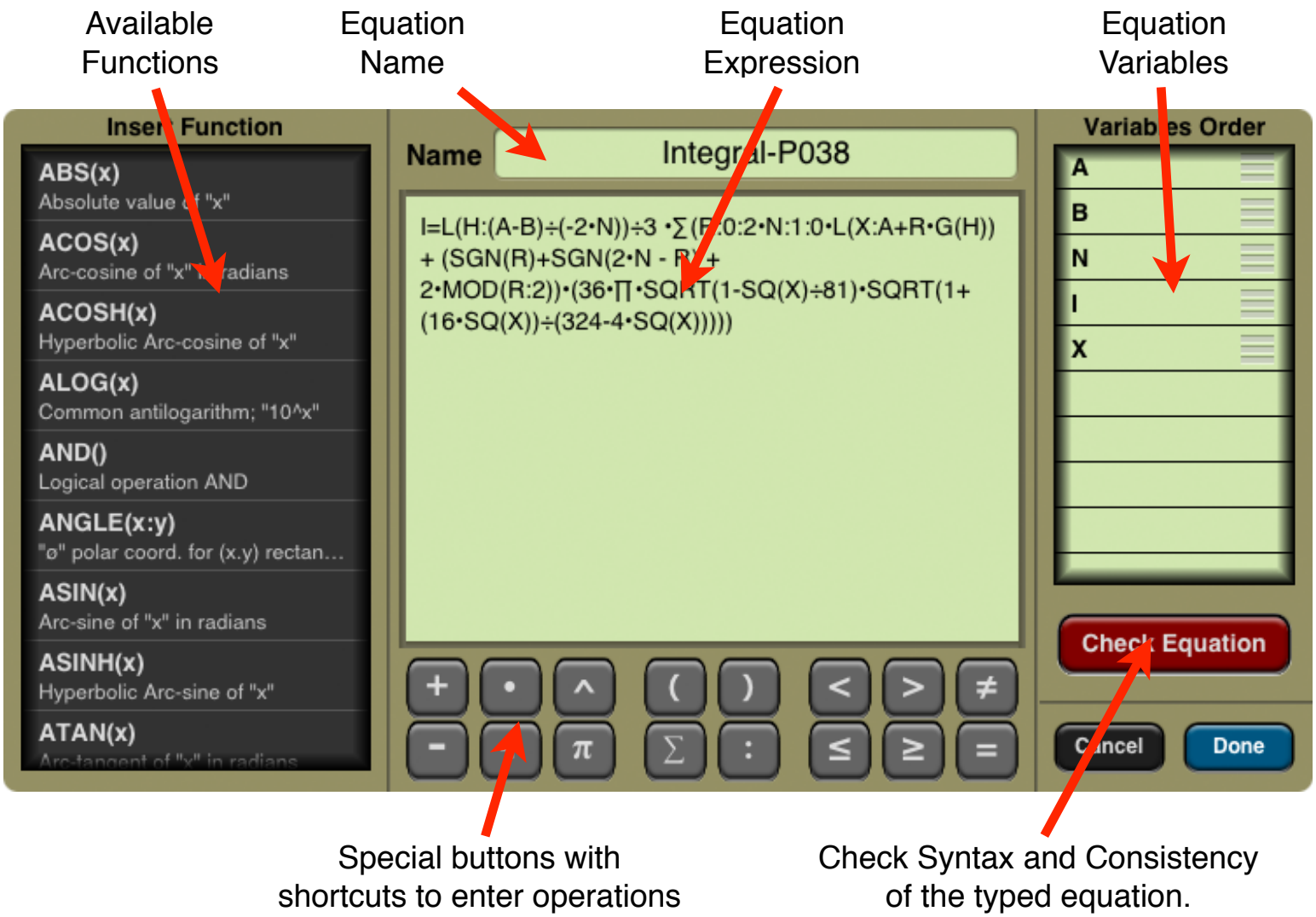
Actions Menu Items	
Load Equation	Show the file dialog to load a previously saved equation.
Save Equation	Show the file dialog to save the current equation in a file.
New Equation	Opens the Equation Editor view
Edit Equation	Opens the Equation Editor view with the current equation content.
Delete Equation	Deletes the selected equation from the list.
Clear Values	Clears to 0 the current equations variables.
Clear All	Reset the SOLVER deleting all the equations and veriables.
Cancel	Close the actions menu.

NOTE : The RLM-12 Finance Center SOLVER works in the same way of the HP-17BII and the HP-19BII calculator’s SOLVER menu.

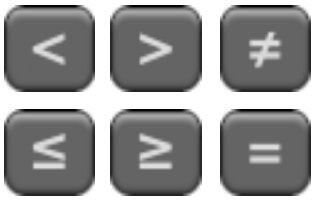
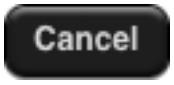
Equation Editor View

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

To show this view, press the Actions Menu button and select the “New Equation” or “Edit Equation” options.



The buttons description and functionality of this tool is summarized in the following table.

Button	Button Actions
	Shortcuts to enter the Add, Minus, Multiply, Divide or Power operations.
	Shortcut to enter the number Pi (π) in the expression.
	Shortcuts to enter the Open or Close parenthesis.
	Shortcut to enter the function argument separator character.
	Shortcuts to enter the “SUM” function.
	Shortcuts to enter the number comparison operators.
	Checks the equation syntax, consistency and updates the equation variables list.
	Closes the Equation Editor view and updates (“Done”) the selected equation, or creates (“Add”) a new equation
	Closes the Equation Editor view leaving the SOLVER unchanged.

The following table describes all the functions available for a solver equation:

Solver Functions

Function	Description
ABS(x)	Absolute value of “x”.
ACOS(x)	Arc-cosine of “x” in the current angle mode.
ACOSH(x)	Hyperbolic Arc-cosine of “x”.
ALOG(x)	Common (base-10) antilogarithm; 10^x.
AND()	Logical operation AND
ANGLE(x:y)	Angular polar coordinate ”ø” for an (x.y) rectangular coordinate calculated in the current angle mode.
ASIN(x)	Arc-sine of “x” in the current angle mode.
ASINH(x)	Hyperbolic Arc-sine of “x”
ATAN(x)	Arc-tangent of “x” in the current angle mode.
ATANH(x)	Hyperbolic Arc-tangent of “x”.
CDATE()	Current Date
COMB(x:y)	Number of combination of “x” items taken “y” at a time.
COS(x)	Cosine of “x” in the current angle mode.
COSH(x)	Hyperbolic Cosine of “x”.
CTIME()	Current Time in HH.MMSSdd, 24-hour format.
DATE(d1:n)	The date “n” days after or before the date d1.
DDAYS(d1:d2:cal)	Number of days from d1 to d2 in selected calendar “cal”. If (cal = 2), uses 365 days/year calendar; if (cal = 3), uses 360-days/year calendar; otherwise uses the actual calendar.
DEG(x)	Convert “x” radians to decimal degrees.
EXP(x)	Natural antilogarithm; e^x.
EXPM1(x)	Calculates e^{x-1}.
FACT(n)	Factorial of a positive integer “n”.
FP(x)	Fractional part of “x”.

Function	Description
G(x)	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.
HMS(time)	Converts “time” from decimal hours to HH:MMSSdd format.
HRS(time)	Converts “time” from HH.MMSSdd to decimal hours.
IDIV(x:y)	Integer part of the quotient of x / y.
IF(cond:expr$_1$:expr$_2$)	Conditional expression. If (cond is true) uses the “expr$_1$”; otherwise uses “expr$_2$”.
INT(x)	Greatest integer less than or equal to “x”
INV(x)	Inverse of “x”; 1 / x.
IP(x)	Integer part of “x”.
L(x:expr)	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.
LN(x)	Natural (base-e) logarithm of “x”.
LNP1(x)	Natural logarithm of (1+x).
LOG(x)	Common (base-10) logarithm of “x”.
MAX(x:y)	Compares “x” and “y”, and returns the larger of the two.
MIN(x:y)	Compares “x” and “y”, and returns the smaller of the two.
MOD(x:y)	Remainder of the division x / y.
NOT(logical)	Logical operation NOT
OR()	Logical operation OR
PERM(x:y)	Number of permutations of “x” items taken “y” at a time.
RAD(x)	Convert “x” decimal degrees to radians.
RADIUS(x:y)	Magnitude polar coordinate ”r” for an (x.y) rectangular coordinate.
RAND()	Pseudo-Random number ($0 \leq r < 1$).
RND(x:y)	Round “x” to “y” decimal places.

Function	Description
S(variable name)	Returns ”TRUE” if the current variable solved is ““variable name”.
SGN(x)	Sign of “x”; returns +1 if x > 0, 0 if x = 0 or -1 if x < 0.
SIN(x)	Sine of “x” in the current angle mode.
SINH(x)	Hyperbolic Sine of “x”.
SPFV(i%:n)	Future value of a single $1.0 payment; $(1+i\%/100)^n$.
SPPV(i%:n)	Present Value of a single $1.0 payment; $1 / (1+i\%/100)^n$.
SQ(x)	Square of “x”; x^2.
SQRT(x)	Square root of “x”; $\sqrt{x}$
TAN(x)	Tangent of “x” in the current angle mode.
TANH(x)	Hyperbolic Tangent of “x”.
TRN(x:y)	Truncates “x” to “y” decimals.
USFV(i%:n)	Future Value of a uniform series of $1.0 payments.
USPV(i%:n)	Present Value of a uniform series of $1.0 payments.
XCOORD(r:ø)	”x” rectangular coordinate for (r,ø) polar coord.
XOR()	Exclusive OR logical operation.
YCOORD(r:ø)	”y” rectangular coordinate for (r,ø) polar coord.
Σ(ctr:c_1:c_2:s:expr)	Sum values of algebraic expression “expr” for values of the counter “ctr” from c_1 to c_2 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, expand the RLM-12 Finance Center to show the “Options Selection Menu” and select the “SOLVER” option.

Keystrokes	Description
Touch 	Opens the Actions Menu.
Select “**New Equation**”	Opens the Equation Editor.
Touch the “Name” field and type “Carpet-Cost”	Shows the insertion point and the iPad’s Alphabetic keyboard. Type “Carpet-Cost”.
Touch the Expression area	Shows the insertion point and the iPad’s Alphabetic keyboard to enter text in the equation area.
Type”COST”  “PPSY”  “L”  “W”  9	Type the Cost equation.
	Checks the equation and obtains the variable list. You can order the variables at your preference.
	Stores the equation, closes the editor and selects the equation in the equation list.
Type”22.5” & Touch the “**PPSY**” row	Type the PPSY value ($22.5) and touch the corresponding row in the variables list to enter it.
Type”9” & Touch the “**L**” row	Type the L value (9) and touch the corresponding row in the variables list to enter it.
Type”12” & Touch the “**W**” row	Type the W value (12) and touch the corresponding row in the variables list to enter it.
Touch the “**COST**” row	Calculates the cost to carpet the room. **Result = 270.00**

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

Keystrokes	Description
Type”300” & Touch the “**COST**” row	Type the PPSY value ($22.5) and touch the corresponding row in the variables list to enter it.
Touch the “**PPSY**” row	Calculates the maximum price per square yard you can pay. **Result = 25.00**