



hp calculators

HP 17bII+ Writing and Solving Equations

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Your HP 17bII+ allows you to create an equation, solve for each of the equation's variables, edit the equation, and store the equation for future use.

THE SOLVE MENU:

From the main menu, press 'SOLVE,' shown to the right of the display. In the SOLVE menu you will see "NEW." Press that and you will see six groupings of letters that together comprise the alphabet. You will select the group that contains the letter you want for your equation. Once you press that group key, you'll see each of the letters in the group with its own key for you to select that particular letter. Way to the right there is a key for "OTHER." Press that and you will see choices of symbols you can use. In these symbol menus to the right there is a choice of "MORE." Pressing that shows you additional symbols that may be selected. Press 'EXIT' to go back to the letter groups menu.

CREATING AN EQUATION:

Let's come up with an equation of our own. How about the formula for the operating expense ratio. This is the ratio of operating expenses to the effective gross income for an income-producing property. In formula:

$$\text{OER} = \text{OE} \div \text{EGI}$$

OER = operating expense ratio

OE = annual operating expenses

EGI = effective gross income

Annual operating expenses are those expenses, such as real property taxes, hazard insurance, utilities, and maintenance, that a property owner must pay to ensure the property will continue to earn income. Effective gross income is the annual gross income, called the "potential gross income," adjusted downward for estimated vacancy and collection loss the property is expected to suffer on an annual basis. For more on real property incomes and expenses see our section on Capitalization Rates and Value.

To put our equation (or formula) in, press the letter group containing the letter we want and then that letter. So, to put in "OER," press:

NO PQ
O
ABC DE
E
RST UV
R

That gives us "OER." Now we need an equals sign. Use the one on the keyboard and then go ahead with the next part of the equation:

=
NO PQ
O
ABC DE
E

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Press in the division sign on the keyboard and complete the equation:

÷
ABCDE
E
FGHI
G
FGHI
I

EDITING AN EQUATION:

That gives us our equation/formula: $OER = OE \div EGI$. Exit from the letter groups menu and you'll be in the edit menu. Arrows in the middle of the menu labels allow you to move back and forth in the equation. If you want to delete a letter, use the arrows to place the blinking cursor over the letter to be deleted and then press 'DEL.' To go back to the letter groups to put in a new letter, press 'ALPHA' and select the new letter you want. The equation with the blinking cursor stays with you as you edit.

Hit 'EXIT' until you see in the display "SAVE THIS EQUATION?," with choices of "YES," "NO," and "EDIT." If you press 'YES,' it will exit you to the SOLVE menu where you began. Notice there is a choice for "CALC." Press that. You will momentarily see "VERIFYING EQUATION . . ." It is verifying that it is a valid equation. If it isn't mathematically valid, that is, the equation cannot be solved, the display will tell you it is invalid. In that case, you would have to edit the equation.

TRY IT OUT:

When the equation is verified, the calculator takes you to a menu where each of your variables is displayed as a menu choice. For our equation we will see "OER," "OE," and "EGI." Let's test it out for a property whose operating expenses are \$40,000. and effective gross income is \$110,000 with these keystrokes:

40000
OE
110000
EGI

Then, solve for the operating expense ratio by pressing:

OER Answer: 0.36

This ratio is usually expressed as a percentage, in this case 36%. You can clear the variables by pressing 'SK' (shift key) and 'CLR DATA.' Clearing here doesn't mean we are deleting the variables. We are just zeroing them out.

MORE EQUATIONS:

If you want to put in another equation, you would press 'NEW' in the SOLVE menu and repeat the process described above. With two or more equations stored in your calculator, you must use the arrow up and down keys in the SOLVE menu to view each of them.