

What does it mean to solve an equation?

Is it any more than just undoing the procedure of building an equation?

Part I: Making a Number Trick

Choose a secret number.

Now choose four more non-zero numbers and in any random order
add one of them,
multiply by another,
subtract another, and
divide by the final number

Record in words what you did and your final result on the communicator with a blank Building and Undoing an Expression or Equation template. (Do not record your secret number.)

Switch communicators and have another students find your secret number.

Part II: Solve Equations is Just Undoing Operations

Use the Build and Undo Expression or Equations Chart to complete the following number tricks.

Complete the first three columns only.

Pick a number
Divide the number by 4
Add 7
Multiply the result by 2
Subtract 8

Suppose the value of this expression is 28. Find the value of x that yields 28.

Here is an equation. What is it saying? First build the equation, then we'll solve it.

$$\frac{3 + 2(x - 4)}{5} + 6 = 11$$

Place the Building and Undoing an Expression Template in your Communicator®.

Record an equation in the cell at the top.

Complete the description column using the order of operations.

Complete the undo column.

Finally, work up from the bottom of the table to solve the equation.

Write a few sentences explaining why this method works to solve an equation

Part III: Simplifying the Process

Use the Undoing an Equation Template to complete this problem.

To some number, add 3, multiply by 2, add 18, and finally divide by 6.

- a. Convert the description into an expression, and write an equation that states that this expression is equal to 15.
- b. Find the starting number if the final result is 15.
- c. Test your solution to part b using your equation from part a.

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*Building and Undoing an Expression or
Equation*