1.7

Solving Equations Using Inverse Operations

LET'S PLAY A GAME!!!!

I'm thinking of a number.....

If you multiply it by 15....

and then subtract 17....

you get 73.

WHAT'S THE NUMBER?!?!

We can guess what the number would be using guess-and-check, but that may take too long.....

Another way to solve for this number is to start at the answer and UNDO the operations.

Using our example:

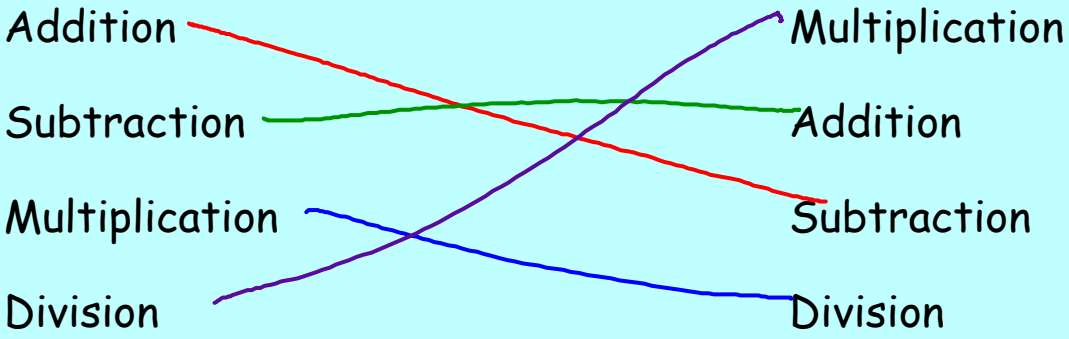
$73 + 17 = 90$

$90 \div 15 = 6$

So the number is 6!!

We can undo operations by doing the opposite of the operation. For every operation there is an INVERSE OPERATION!!

Match the operation with its inverse operation:



Example: Solve each equation by using the inverse operation.

$x - 8 = 29$

$+8 \quad +8$

$x = 37$

$m + 16.2 = 51.6$

$-16.2 \quad -16.2$

$m = 35.4$

$$\begin{array}{r} 51.6 \\ -\ 16.2 \\ \hline 35.4 \end{array}$$

Example: Solve each equation by using the inverse operation.

$\frac{a}{7} = 34$

$a = 34$

$\cdot 7 \quad \cdot 7$

$a = 238$

$$\begin{array}{r} 20. \\ 24.\overline{)480.} \\ -48 \\ \hline 00 \\ -\ 0 \\ \hline 0 \end{array}$$

$2.4y = 48$

$\div 2.4 \quad \div 2.4$

$y = 20$

Example: Solve each equation by using the inverse operation.

$23 = 17 + m$

$-17 \quad -17$

$6 = m$

$c - 18 = 6$

$+18 \quad +18$

$c = 24$

Example: Solve each equation by using the inverse operation.

$4y = 16$

$\div 4 \quad \div 4$

$y = 4$

$\frac{4y}{4} = \frac{16}{4}$

$y = 4$

$12 = \frac{x}{11}$

$12 = x \div 11$

$\cdot 11 \quad \cdot 11$

$x = 132$