To solve an equation, find the number that makes the equation true.

If the equation has a variable, we need to isolate the variable. Isolating the variable means to get the variable alone on one side of the equation.

We use inverse operations to isolate the variable.

* To isolate the variable, think about doing order of operations backwards.

Inverse operations: are operations that undo each other. Addition and subtraction, and multiplication and division, are inverse operations.

Operation	**Opposite**
Addition	Subtraction
Subtraction	Addition
Multiplication	Division
Division	Multiplication

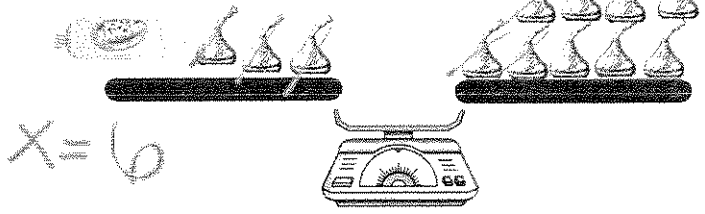
Example 3 Example 4

Example problem: Radayyah has 1 candy bar and 3 Hersey's kisses one side of a balance scale (seen below). On the other side there are nine Hershey's kisses. How much did the candy bar weigh?

$x + 3 = 9$

$-3 \quad -3$

$x = 6$



$x = 6$

Example 2: What is the value of D when
D x 7 = 56

Strategy: Isolate the variable.

Inverse Operation Chart

$$D \times 7 = 56$$

$\frac{7d}{7} = \frac{56}{7}$

$1d = 8$

$d = 8$

Daniel gave his sister some Pokemon cards. He gave 135 to his sister and now he has 48. How many did he ~~give away~~ start with?

Equation for the Problem:

$$P - 135 = 48$$
$$+135 \quad +135$$
$$P = 183$$

Inverse Operation Chart

What is the value of T in the equation
28 + T = 59

Inverse Operation Chart

$$28 + T = 59$$

Solve for L: L ÷ 8 = 7

Inverse Operation Chart

$$L \div 8 = 7$$

Things to remember:

1. Get rid of the number furthest from the variable first (usually the number being added or subtracted)

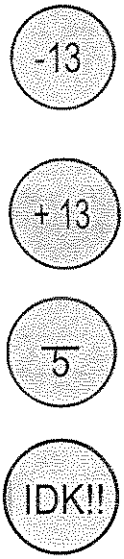
2. Then do the inverse of multiplication or division

Try it out!

$5z - 13 = 22$

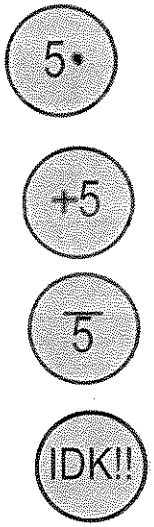
$+13 \quad +13$

Step 1:



$5z = 35$

Step 2:



$$3x + 2 = 17$$
$$-2 \quad -2$$
$$3x = 15$$
$$\frac{3x}{3} = \frac{15}{3}$$
$$x = 5$$

Solve for x:

$$2x + 4 = 8$$
$$-4 \quad -4$$
$$2x = 4$$
$$\frac{2x}{2} = \frac{4}{2}$$
$$x = 2$$

$$2x + 3 = 7$$
$$-3 \quad -3$$
$$2x = 4$$
$$\frac{2x}{2} = \frac{4}{2}$$
$$x = 2$$

$$6x + 3 = 15$$

$$6x + 3 = 15$$
$$-3 \quad -3$$
$$6x = 12$$
$$\frac{6x}{6} = \frac{12}{6}$$
$$x = 2$$