Name: _____ Date: _____

Learning Goal 6.1	I can solve linear equations.

Expression versus Equation

a mathematical statement. - simplify

2 expressions linked by an equal sign. - solve.

A **linear equation** is

an equation where the exponent on the variable is a one.

$x^1 = x$

To **solve** means to find the value of the variable for the equation.

Example Solve the following equations by inspection.

a. $x + 4 = 8$

what plus 4 is equal to 8?

$x = 4$

b. $x - 2 = -12$

what minus 2 is equal to -12?

$x = -10$

c. $-4x = 12$

$x = -3$

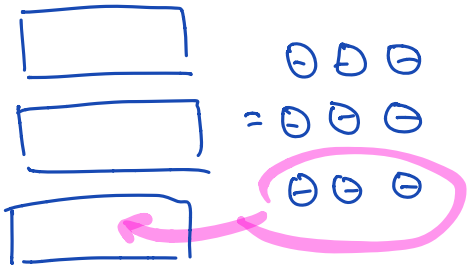
d. $\frac{x}{-5} = 4$

$x = -20$

Example Solve the following equations using models or diagrams.

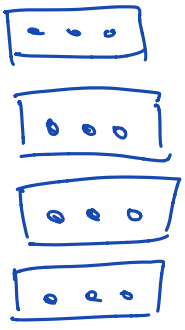
a. $3c = -9$

$c = -3$



b. $\frac{w}{4} = 3$

$w = 12$



Assignment p. 376 #5 – 7, 9, 10, 12, 13, 16, 17, 19, 21 – 26 Quiz Next Day!

Inspecting is OK for small examples **Modelling** is unpopular

True mathletes use inverse operations

Operation	Inverse Operation
Addition	subtraction
Subtraction	addition
Multiplication	division
Division	multiplication

zero is the additive identity

one is the multiplicative identity.

Example Solve using the inverse operation.

a. $x + 3 = -11$

$-3 \quad -3$

$x + 0 = -14$

$x = -14$

b. $x - 7 = 15$

$+7 \quad +7$

$x = 22$

c. $\frac{17x}{17} = \frac{-51}{17}$

$1x = -3$

$x = -3$

d. $\frac{x}{-4} = 7$ $\times -4$

$x = -28$

CHECK

$\frac{-28}{-4} \stackrel{?}{=} 7$ ✓

Example Show whether $x = -3$ is a solution to each equation.

a. $x - 4 = -7$

$(-3) - 4 \stackrel{?}{=} -7$ ✓

$x = -3$ is the solution

b. $4x = 12$

$4 \times (-3) \stackrel{?}{=} 12$ ✗

$x = -3$ is not the solution

c. $\frac{-x}{3} = 1$

$\frac{-(-3)}{3} \stackrel{?}{=} 1$ ✓

$x = -3$ is the solution.

Example Oscar can bake 23 cookies in an hour. He wants to bake 276 cookies for his party.

a. Write an equation in the form $ax = b$ to represent this problem. What does your variable represent?

x = hours of baking

$23x = 276$

b. How many hours will it take Oscar to bake 276 cookies?

$x = \frac{276}{23}$

$= 12$

Oscar needs to bake for 12 hours.

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