Warm-Up 11/8/17

Solve for x in the equation:

$$-3(x - 3) = x + 9 - 4x$$

$-3x+9 = -3x+9$

true statement

many solutions

Essential Question 11/8/17

- How can I create and solve linear equations from real life situations?

Learning Objective

- I can create solve linear equations from word problems.

Standard:

MGSE9-12.A.CED.2

Create linear equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

Opening Activity 11/8/17

Day 2 – Writing and Solving Equations from Word Problems

Match Races with Their Equations $y = mx + b$ (slope; y-int. or initial value)

Equation	Situation
H	Chippy the Cheatin' Chipmunk started at the 4-foot line, but jumped on a motorcycle and sped toward the finish line at a speed of 12 feet per second.
E	Zippy the Zebra started the race at the 12-foot line, and ran at a rate of 4 feet per second up toward the finish line.
A	The Tortoise got an 8-foot head start, and ran up at a rate of 3 feet per second toward the finish line.
D	Chester the Cheetah started 3 feet from the starting line, and ran up toward the finish line at the amazing speed of 8 feet per second.
G	Peter the Piñata started at the 3-foot line, and ran 8 feet per second down toward the starting line. Who knew piñatas could run so fast?
J	Loopy the Loon started at the 5-foot line, and moved back down toward the starting line at a rate of ½ foot per second.
C	Billy the Badger started ½ a foot away from the starting line and ran up toward the finish line at a rate of 5 feet per second.
I	Franco the Freshman started with the Tortoise at the 8-foot line, but ran 3 feet per second down toward the starting line.
B	The Hare started at the 12-foot line and ran down toward the starting line at a rate of 4 feet per second.
F	Sammy the Snail had a 5-foot head start, but only ran toward the finish line at a rate of ½ foot per second.

H: $12s + 4$

E: $4s + 12$

G: $-8s + 3$

Equation Choices

A: $F = 8 + 3s$ B: $F = 12 - 4s$ C: $F = \frac{1}{2} + 5s$ D: $F = 3 + 8s$ E: $F = 12 + 4s$

F: $F = 5 + \frac{1}{2}s$ G: $F = 3 - 8s$ H: $F = 4 + 12s$ I: $F = 8 - 3s$ J: $F = 5 - \frac{1}{2}s$

Steps to Writing Equations from Word Problems - INB

1. Define variable from the question.

2. Write the Equation.

3. Solve for the variable. Check the solution!

4. State solution in a complete sentence.

Guided Practice Notes 11/8/17

$y = mx + b$

Day 2 – Writing and Interpreting Linear Equations

b m

1. **Jayla's goal is write 100-page book of poetry. She has already written 30 pages. Each day she writes 10 more pages. Write an equation that represents the relationship between the numbers of days Jayla has been writing her book, x, and the total amount of page that she has, y.**

x days	0	1	2	3	4	5	6	7
y total pages in book	30	40	50	60	70	80	90	100

X represents # of days. Y represents # of pages in the book. The rate of change is 10 because She writes 10 pages each day. The y-intercept is 30 because she already wrote 30 pages. The equation that can be used to represent this situation is: $y = 10x + 30$

$f(2) = 50$

m = −0.5

2. **An 18-inch candle is burning on the dining room table. The candle burns at a rate of 0.5 inches per hour. Write an equation that represents the relationship between the numbers of hours the candle has been burning, x, and the height of the candle, y.**

x # of hrs	0	1	2	3	4	5	6	7
y height	18	17.5	17	16.5	16	15.5	15	14.5

X represents # of hours the candle burns. Y represents height of candle. The rate of change is −0.5 because the candle burns at a rate of 0.5. The y-intercept is 18 because it is the initial height of candle. The equation that can be used to represent this situation is: y = −0.5x + 18

b m

3. **A daycare center charges a $100 sign up fee, plus $50 per week. Write an equation that represents the total cost, y, for x weeks.**

$y = \underline{50}x + \underline{100}$

a) Identify the rate of change and interpret its meaning in the context of the problem.

ROC is 50 and it means the cost of daycare per week

b) Identify the y-intercept and interpret its meaning in the context of the problem.

y-intercept is 100 and it means the initial cost of daycare.

c) What does x represent? What does y represent?

X represents the # of weeks.

y represents the total cost of daycare.

d) Find the cost for a baby to attend daycare for 12 weeks. f(12)

$f(12) = 50(12) + 100$

$f(12) = 600 + 100 = \$700$

e) Calculate Y when x = 3. Explain what this question is asking you to find in the context of the problem, then discuss the reasonanbleness of this question and its answer.

$f(3) = 50(3) + 100$

$= 150 + 100$

$f(3) = 250$

This means the cost of daycare for 3 weeks = $250

You Try These on Your Own!

4.) Naya starts with $300 in her bank account. Each month, she spends $40.

Write an equation for this situation.

Y = -40 x + $300

What is the slope? m = -40

What does it represent? how much she spends

What is the y-intercept? $300

What does it represent? The amount inher account

5.) Daniel's gym costs a fee of $175 to join, and then and costs $35 per month.

Write an equation for this situation.

Y = 35 x + 175

What is the slope? m = 35

What does it represent? The cost per month

What is the y-intercept? 175

What does it represent? The fee to join

You Try These on Your Own!

6. Blockbuster Video charges $10 per month for the membership fee, and then it costs $2 for each movie that you rent. • Write an equation for this situation. $y = 2x + 10$ • What is the slope? What does it represent? Slope 2 represents money you spend to rent each movie	**7. A plant starts out at 12 inches tall and grows 1 inch per week.** • Write an equation for this situation. $y = 1x + 12$ • What is the slope? What does it represent? The slope is 1 because the plant grows 1 in per week

Class Work 11/8/17

1 - 4

Algebra 1

Multi-Step Equations B

Home Work

5 - 8

1) 212 students went on a field trip. Four buses were filled and 24 students traveled in cars. How many students were in each bus?

Step 1: Let x = # of students in each bus.

Step 2: Equation: $4x + 24 = 212$

$-24 \quad -24$

$\frac{4x}{4} = \frac{188}{4}$

$x = 47$

There are 47 students in each bus.

2) Kali won 112 pieces of gum playing horseshoes at the county fair. At school she gave four to every student in her math class. She only has 4 remaining. How many students are in her class?

Let x = the # of students in Kali's class.

$$4x + 4 = 112$$
$$-4 \quad -4$$
$$\frac{4x}{4} = \frac{108}{4}$$
$$x = 27$$

There are 27 students in her class.

$y = mx + b$

3) Pranav won 69 lollipops playing hoops at the county fair. At school he gave two to every student in his math class. He only has 7 remaining. How many students are in his class?

Let x = the # of students in his class.

$2x + 7 = 69$

$-7 \quad -7$

$\frac{2x}{2} = \frac{62}{2}$

$x = 31$

There are 31 students in his class.

4) Ming was going to sell all of her stamp collection to buy a video game. After selling half of them she changed her mind. She then bought four more. How many did she start with if she now has 20?

Let x = The total #'s of stamps

$\frac{1}{2}x + 4 = 20$

$-4 \quad -4$

$\frac{1}{2}x = 16$

$\frac{1}{2}$ $\frac{2}{1}$

$x = 16 \cdot 2$

$x = 32$

Ming started with 32 Stamps.