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Sept. 10 - bell ringer

$$1) 7x + 5 = 10(x - 7) - 3x$$

no sol

$$2) \frac{3}{4}f + 24 = 4 - \frac{1}{5}f$$

$$f = \frac{-400}{19}$$

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$$38) \frac{3}{4} = \frac{r - 5}{-3 - 3}$$

$$\frac{3}{4} = \frac{r - 5}{-8}$$

You can solve direct and inverse variation.

### Section 3-4: Direct variation

Example:

Joe delivers newspapers. He is paid 3 cents for each paper he delivers. His increase depends directly on the number of papers he delivers.

Formula:

$$\frac{x_1}{x_2} = \frac{y_1}{y_2}$$

Solve.

1. If  $y$  varies directly as  $x$  and  $y=27$  when  $x=6$ , find  $x$  when  $y=45$ .

$$\frac{x_1}{x_2} = \frac{y_1}{y_2} \quad \frac{6}{x} = \frac{27}{45}$$
$$27x = 270$$
$$x = 10$$

2. The weight of an object on the moon varies directly as its weight on earth. A certain astronaut weighs 168 pounds on earth and 28 pounds on the moon. Kris weighs 108 pounds on the earth. What would she weigh on the moon?

~~$$\frac{168}{108} = \frac{28}{y}$$~~

18lbs

## Section 11-1: Inverse variation

Example:

Anne plans to drive on a 60 mile trip. Her time, in hours, for the trip will be determined by her average rate in mph. As her rate for the trip increases her time for the trip decreases.

Formula:

$$\frac{x_1}{x_2} = \frac{y_2}{y_1}$$

$$x_1 y_1 = x_2 y_2$$

1. If y varies inversely as x and y=3 when x=12, find x when y=4.

$$\frac{x_1}{x_2} = \frac{y_2}{y_1}$$

$$\frac{12}{x} = \frac{4}{3}$$

$$4x = 36$$

$$\underline{x = 9}$$

2. In sounds and harmonies, the frequency of a vibrating string is inversely proportional to its length. A violin string 10 inches long vibrates at a frequency of 512 cycles per second. Find the frequency of an 8 inch string.

$$\frac{l_1}{l_2} = \frac{f_2}{f_1}$$

$$\frac{10}{8} = \frac{f}{512}$$

$$8f = 5120$$

$$f = 640 \text{ cycles per}$$

822

feet

3. The fulcrum of a 16 ~~feet~~ long seesaw is placed in the middle. Jason, who weighs 108 pounds, is seated 8 feet from the fulcrum. How far from the fulcrum should Luke sit if he weighs 132 pounds?

$$\frac{W_1}{W_2} = \frac{d_2}{d_1}$$

$$W_1 d_1 = W_2 d_2$$

$$108(8) = 132d$$

$$d = 6.5 \text{ ft}$$

4. An 8 ounce weight is placed on one end of a yardstick. A 10 ounce weight is placed on the other end. Where should the fulcrum be placed to have the yard stick balanced?

$$w_1 d_1 = w_2 d_2$$

$$8d = 10(36-d)$$

$$8d = 360 - 10d$$

$$18d = 360$$

$$d = 20$$

$d =$  distance from ful. for 8oz  
 $36-d =$  dist for 10oz

The fulcrum is 20 in from the 8oz weight.

5. Patti and Cathy are on one side of a seesaw and Jack is on the other side. Patti is 6 feet from the fulcrum and weighs 115 pounds. Cathy is 8 feet from the fulcrum and weighs 120 pounds. On the other side, Jack is 10 feet from the fulcrum. How much does he weigh if the seesaw is balanced?

$w = \text{Jack's weight}$

$$115(6) + 120(8) = 10w$$

$$690 + 960 = 10w$$

$$1650 = 10w$$

$$w = 165 \text{ lbs}$$

Assignment:

Side 3-4&11-1(2-16E,17-20 all)

Seesaw side: All