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$$\frac{2}{3} \cdot \frac{3}{2} (3m - 7) = -15 \cdot \frac{2}{3}$$

$$3m - 7 = -10$$

$$+7 \quad +7$$

$$3m = -3$$

$$m = -1$$

Chapter 9-4 Notes - Direct Variation

Direct Variation: when two variable quantities change at a constant rate. An example is $y = 20x$.

If x (independent variable) increases by 1, then y (dependent variable) increases by 20.

Direct Variation means the ratio of y/x is always the same for each ordered pair.

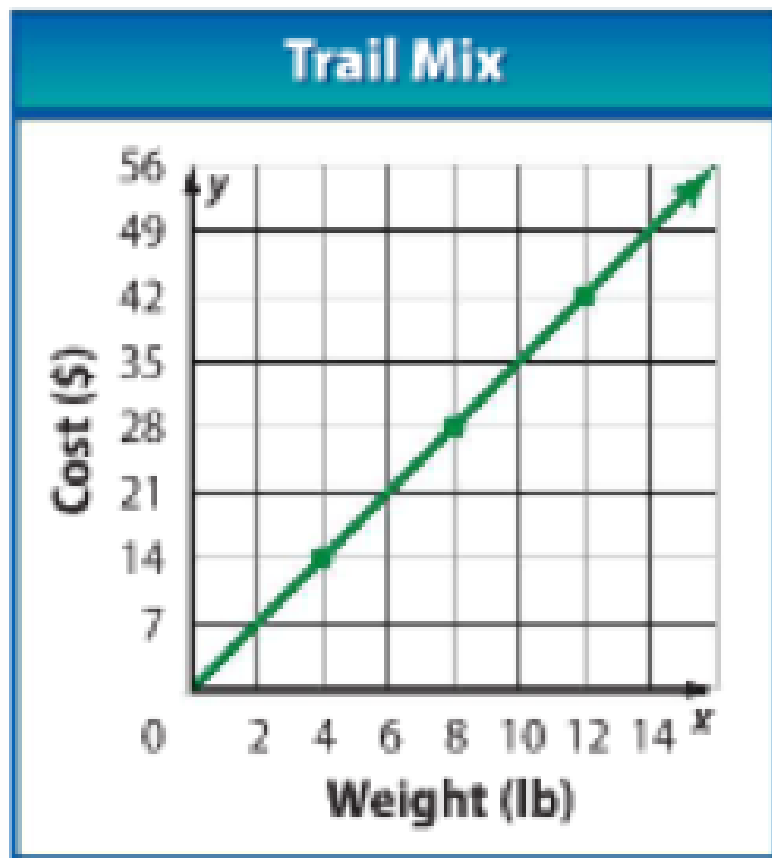
Direct Variation Model $y = mx$

m = slope or the constant of variation or the constant of proportionality

On a direct variation graph, the line **MUST** pass through the origin (0,0) or the data is not a direct variation.

Example of a Direct Variation Graph

- what is the constant rate of variation?
- what is a model equation for this graph?



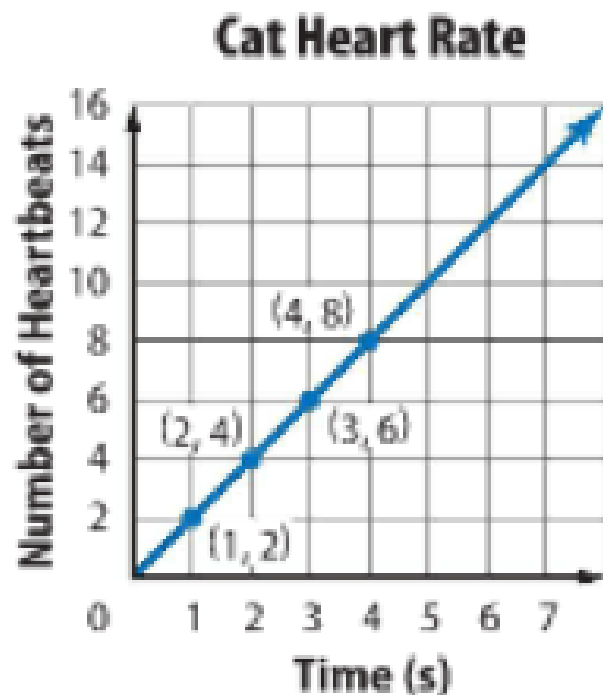
$$\text{Constant} = \frac{\$}{\text{lb}}$$

$$\$3.50/\text{lb}$$

$$y = \$3.50x$$

The equation $y = 3x$ represent the heart rate of a rabbit, where x is the time in seconds and y is the number of heart beats.

Does the rabbit or cat have a faster heart rate?
Explain.



The rabbit's heart rate is faster than the cat's heart rate because 3 beats is faster than 2 beats.

The cost of bulk candy varies directly with the weight. At a store, 2 pounds of candy costs \$5.80. Write and solve an equation to find the cost of 5 pounds.

$$\text{Constant} = \frac{\$}{\text{lbs}} = \frac{\$5.80}{2} = \$2.90/\text{lb}$$

$$y = 2.90x$$

$$y = 2.90(5)$$

$$y = \$14.50$$

must use the equation method for this chapter

Does the equation $y = 25x + 5$ model direct variation? Explain.

x	y	$\frac{y}{x}$
1	30	$\frac{30}{1}$
2	55	$\frac{55}{2}$

must choose values for "x";
using 1 and 2 are selected.
Then solve for y and determine
if a constant exists.