Journal Entry:
Is it true that a line with a slope of 1 always passes through the origin? Explain your reasoning. Also, draw a picture of a graph to show your answer.

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Section 5-2
Direct Variation

Students will be about to write and graph an equation of a direct variation.

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video

How far away is it from the camera?

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Because of this general rule for lightning/ thunder we can say that the time it takes to hear thunder varies directly with the distance from lightning.

If the ratio of two variables is constant, then the variables have a special relationship, known as direct variation.

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Equation of Direct Variation:

$y = kx$

k is the constant of variation

$k = y/x$

If the equation represents a direct variation, it will be in the form y= kx

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Does the equation represent a direct variation? If so, find the constant of variation.

$y = kx$

1. **8x = -2y**
$$\frac{}{-2} \quad \frac{}{-2}$$
$$-4x = y \qquad yes, \; k = -4$$

2. **2x + 3y = 5** $- 2x$
$$\frac{-2x}{3} \quad \frac{}{3} \quad \frac{}{3}$$
$$y = -\frac{2}{3}x + \frac{5}{3} \qquad No$$

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1

Suppose that y varies directly with x, and y = 10 when x = -2. What is the direct variation equation that relates x and y?

$$y = Kx$$
$$K = \frac{y}{x} = \frac{10}{-2} = \boxed{-5} \qquad y = -5x$$

What is the value of y when x = -15?

$$y = -5(-15)$$
$$y = 75$$

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Weight on the moon *y*, varies directly with weight on Earth *x*. A person who weights 100 lbs on Earth weighs 16.6 lbs on the moon. What is an equation that relates weight on Earth *x* and weight on the moon, *y*? What is a graph of the equation? If a moon rock weighs 8.5 lbs on the moon, how much does it weigh on earth?

$$y = Kx$$
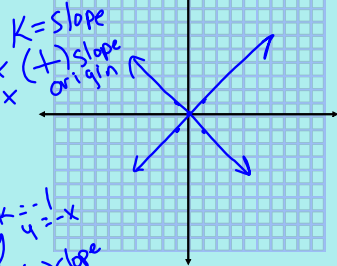$$\frac{16.6}{100} = \frac{K(100)}{100} \qquad K = .166$$
$$51.2 \leftarrow 8.5 = .166x$$
$$\frac{}{.166} \quad \frac{}{.166}$$
$$y = .166x$$

moon

earth

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Generate a rule for the graph of y = kx for the following:

k > 0

$$K = slope$$
$$y = Kx \quad (+) slope$$
$$y = x \qquad origin$$

x	y
-1	-1
0	0
1	1

k < 0

$$K = -1$$
$$y = -x$$

x	y
-1	1
0	0
1	-1

(-) slope
origin

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Hwk: pg. 304 - 306
#10 - 26 (4th), 28, 32 - 40 (even), 44

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