Journal Entry:

Compare and contrast the four different ways to represent relations. How are they the same, how are they different. Which one do you feel is the easiest to tell if the relation is a function? How can you tell from that representation?

Section 2-2
Direct Variation

Students will be able to write and interpret direct variation equations.

You are building a roof. You mark off 4 equal intervals from point A to point B and you place vertical posts. What are the heights of the four vertical post? Explain.
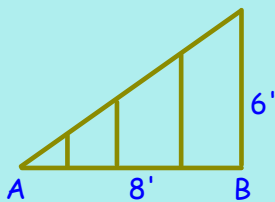
The post heights satisfy a relationship called <u>direct variation</u>.

$y = kx$ or $k = y/x$

The ratio of output values to input values equals the constant of variation k.

Does the following represent a direct variation? If so what is k?

$y = kx$

x	y
3	-21
2	-14
1	-7

Yes
dir. var. $k = -7$

x	y
2	5
3	7
6	13

$\frac{5}{2}$ $\frac{7}{3}$ $\frac{13}{6}$ No

Identifying Direct Variation from an equation.

$y = kx$

$\dfrac{7x = -12y}{-12} \quad +12$ $y = \dfrac{7}{-12}x$ Yes

$\dfrac{3y = 2x + 2}{3} \quad \dfrac{2}{3} \quad \dfrac{2}{3}$ $y = \dfrac{2}{3}x + \dfrac{2}{3}$ No

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In a direct variation, the rate of change is constant. So for every $\frac{y}{x}$ in the fuction, it is true for all.

$\dfrac{y_1}{x_1} = \dfrac{y_2}{x_2}$ proportion

Suppose y varies directly as x, and y = 15 when x = 3.
What is y when x = 12?

$\dfrac{y}{x} = \dfrac{y}{x}$

$y = kx$ $y = 5 \cdot 12$

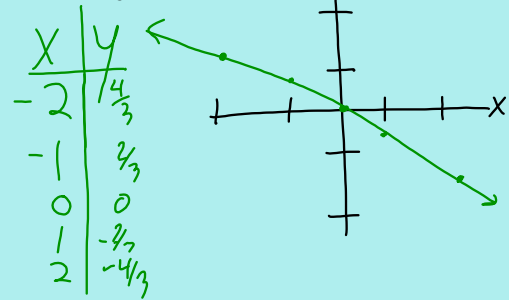$\dfrac{15}{3} = \dfrac{k \cdot 3}{3}$ $y = 60$

$5 = k$

$\dfrac{15}{3} \times \dfrac{y}{12}$

$\dfrac{3y}{3} = \dfrac{15 \cdot 12}{3}$

If it costs you $67 to 20 gallons of fuel in your truck, how much would it cost you to put in 16 gallons?

$$\frac{67}{20} \stackrel{k}{=} \$3.35/gal$$

$$\$ 53.60$$

What is the graph of the direct variation equation $y = -\frac{2}{3}x$?

X	Y
−2	4/3
−1	2/3
0	0
1	-2/3
2	-4/3

Write a function rule for the table.

x	y
2	-1
4	-2
6	-3

$$\frac{-2}{4} = \frac{k \cdot 4}{4}$$

$$-\tfrac{1}{2} = K$$

$$y = -\tfrac{1}{2}x$$

Hwk:
pg. 71 - 73
#8, 14, 20, 24 - 30 evens, 36,
44, 51, 52 - 56 evens