Determine if the tables are proportional. If they are proportional, write an equation.

1.

x	y
5	3
15	9
20	12
10	6

$\frac{3}{5} = \frac{9}{15} = \frac{12}{20} = \frac{6}{10}$

Is the relationship proportional?

YES! K = 0.6

If so, write the equation:

$y = \frac{3}{5}x$

2.

x	y
0	3
2	11
6	27
3	15

$\frac{11}{2} \neq \frac{27}{6} \neq \frac{15}{3}$

Is relationship proportional?

NO!

~~If so, write the equation:~~

3.

x	0	12	6	24
y	0	4	2	8

$\frac{12}{4} = \frac{6}{2} = \frac{24}{8}$

Is relationship proportional?

YES! K = 3

If so, write the equation:

$y = 3x$

The following are proportional. Compare the relationships and answer the questions.

3. Rod and Tod are saving money over the summer.

ROD $K = \frac{9}{2}$

Time (days)	Money Saved ($)
2	9
4	18
6	27
8	36

Equation:

$y = \frac{9}{2}x$

or

$y = 4.5x$

TOD

Todd saves $20 every 5 days.

$K = \frac{20}{5} = 4$

Equation:

$y = 4x$

a. Use a sentence to explain what k means in this context for each boy.

Rod saves 9 dollars every 2 months | Tod saves 4 dollars every month

b. How much money will each boy have in 30 days? Use the equations.
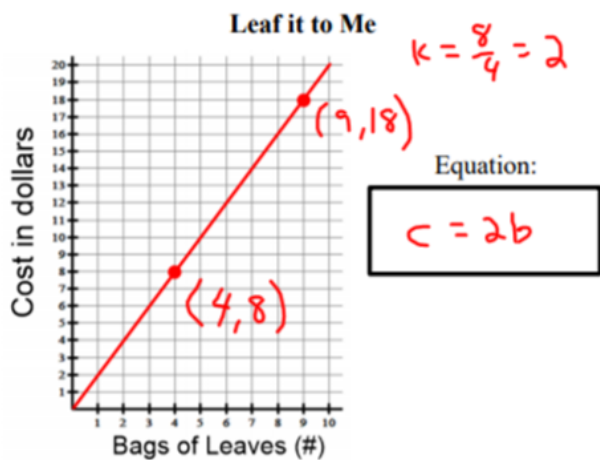
ROD: $y = \frac{9}{2}(30)$

$y = 135$ dollars

TOD: $y = 4(30)$

$y = 120$ dollars

4. "Leaf it to Me" and "Leaf Baggers Inc " are competing leaf raking companies.

Leaf it to Me

$k = \frac{8}{4} = 2$

(9,18)

(4,8)

Cost in dollars

Bags of Leaves (#)

Equation:

$$c = 2b$$

Leaf Baggers Inc (LBI)

$$c = 2.5b$$

Where c is the cost and b is # of bags of leaves raked.

a. Which company is cheaper? Justify your solution.

Leaf it to Me is cheaper. They charge $2 per bag, while LBI charges $2.50 per bag.

b. Some people say these companies are RAKING in the cash. What would each company charge for raking 14 bags of leaves? Use your equations.

Leaf it to Me: $c = 2(14)$

$$c = 28 \text{ dollars}$$

LBI: $c = 2.5(14)$

$$c = 35 \text{ dollars}$$

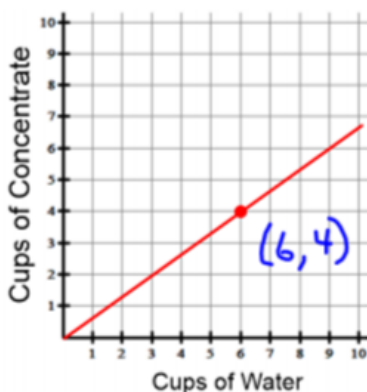5. "Crusty Lemonade" and "Main Squeeze" are competing lemonade recipes.

Crusty Lemonade

Water (cups)	Concentrate (cups)
8	2
10	2.5
12	3
14	3.5

Equation:

$$y = \frac{1}{4}x$$

$k = \frac{2}{8} = \frac{1}{4}$

Main Squeeze

(6,4)

Cups of Concentrate

Cups of Water

Equation:

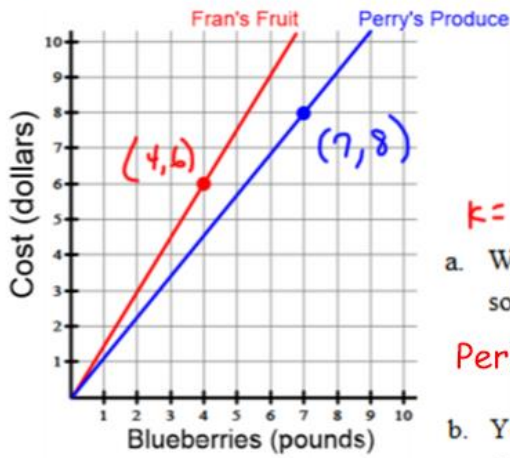$$y = \frac{2}{3}x$$

$k = \frac{4}{6} = \frac{2}{3}$

a. How much water would you need to make lemonade for each recipe if you use 8 cups of concentrate? Use your equations.

Crusty Lemonade: $4 \cdot 8 = \frac{1}{4}x \cdot 4$

$$32 = x$$

$$32 \text{ cups}$$

Main Squeeze: $3 \cdot 8 = \frac{2}{3}x \cdot 3$

$$\frac{24}{2} = \frac{2x}{2}$$

$$12 = x$$

$$12 \text{ cups}$$

Use the graph to write equations for each fruit stand. Answer the questions

7.

Y-axis: Cost (dollars), X-axis: Blueberries (pounds)

Fran's Fruit (red), Perry's Produce (blue)

Points marked: $(4,6)$ and $(7,8)$

$k = \frac{6}{4} = \frac{2}{2}$

Fran's Fruit

Equation:

$$y = \frac{3}{2}x$$

Perry's Produce

Equation:

$$y = \frac{8}{7}x$$

a. Which fruit stand sells blueberries at a cheaper price? Justify your solution.

Perry's Produce.

$Perry = \frac{8}{7} = 1.14$ dollars per pound

$Fran = \frac{3}{2} = 1.50$ dollars per pound

b. You have \$20 to buy blueberries. How many pounds could you get at each produce stand? Use your equations.

Fran's Fruit: $2 \cdot 20 = \frac{3}{2}x \cdot 2$

$\frac{40}{3} = \frac{3x}{3}$

$x = 13.\overline{3}$ pounds

Perry's Produce: $7 \cdot 20 = \frac{8}{7}x \cdot 7$

$\frac{140}{8} = \frac{8x}{8}$

$x = 17.5$ pounds

Fill in all missing representations. Graph both Spongebob and Patrick on the same graph.

8.

Spongebob

Verbal:
Spongebob runs 5 meters every 4 seconds.

Equation:

$$y = \frac{5}{4}x$$

Table:

Time (seconds)	Distance (meters)
0	0
4	5
8	10

Is the relationship proportional?

(YES) or No

Patrick

Verbal:

Patrick runs 1 meter every 2 seconds, but has a 4 meter head start at the beginning of the race.
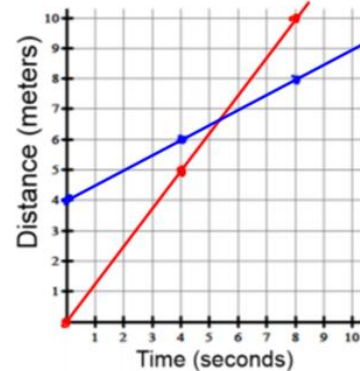
Equation:

$$d = \frac{1}{2}t + 4$$

Table:

Time (seconds)	Distance (meters)
0	4
4	6
8	8

Is the relationship proportional?

YES or (No)

GRAPH:

Y-axis: Distance (meters), X-axis: Time (seconds)

a. If the race is 100 meters long, who wins the race? How much do they win by?

Spongebob

$4 \cdot 100 = \frac{5}{4}x \cdot 4$

$\frac{400}{5} = \frac{5x}{5}$

$80 = x$

80 seconds

Patrick

$100 = \frac{1}{2}x + 4$

$-4 \qquad -4$

$2 \cdot 96 = \frac{1}{2}x \cdot 2$

$192 = x$

192 seconds

Spongebob wins by 112 seconds

$\begin{array}{r} 192 \\ -\ 80 \\ \hline 112 \end{array}$