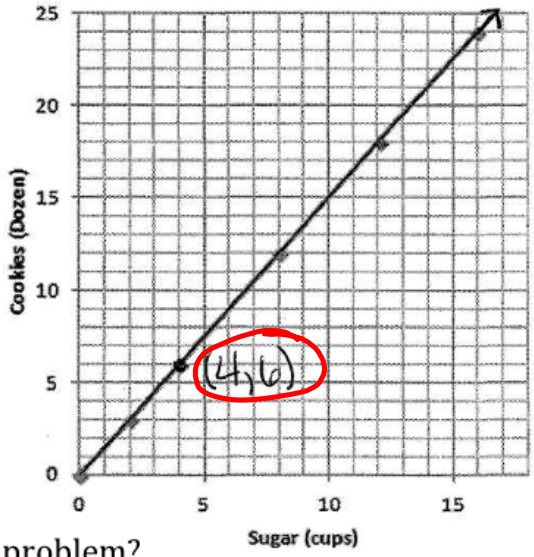
Lesson #29 – Unit Rate From Graphs

Below is a graph modeling the amount of sugar required to make Grandma's Chocolate-Chip cookies.



1) Is the amount of cookies proportional to the number of cups of sugar? Explain.

Yes. The line is straight and begins at the origin.

2) What is the constant of proportionality (k)?

(4,6) $\frac{y}{x}$ $\frac{6}{4}$ = 1.5

x y

3) What does the unit rate mean in the context of the problem?

Every 1.5 dozen cookies uses 1 cup of sugar

Unit Rate from a graph

What are the coordinates that would represent the unit rate? (1, 1.5)

Sum it up!

The point (1, k), where k is the unit rate, will always be on the graph of two quantities that are proportional to each other.

Think about it!

x y

Determine what the point (10, 15) means in the context of the problem above.

Ten cups of sugar are used to make 15 cookies

Determine what the point (14, 21) means in the context of the problem above.

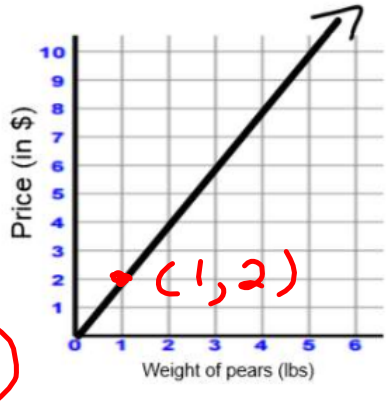
x y

14 cups of sugar are used to make 21 cookies.

Example 2) The graph shows the cost of buying pears at a farm stand.

A) Is the price in weight proportional to the price? Explain

Yes. The line begins at the origin and is straight.



B) Identify the constant of proportionality.

$\frac{y}{x}$ (1,2) $\frac{2}{1} = 2$

C) What are the coordinates of the unit rate? (1,2)

D) What does the unit rate mean in the context of the problem?

Each pound of pears cost $2

E) Write an equation (y = kx) of the relationship above. $y = 2x$

F) What do the coordinates (4, 8) represent in the context of the problem?

4 pounds of pears cost $8

3) The graph below shows Bertha's Apple Farm prices.

A) What are the coordinates of the unit rate?

(2,10) $\frac{y}{x}$ $\frac{10}{2} = 5$ (1,5)

B) What does the unit rate mean in the context

Of the problem?

Each bushel of apples costs $10.

C) Write an equation to represent the proportional relationship.

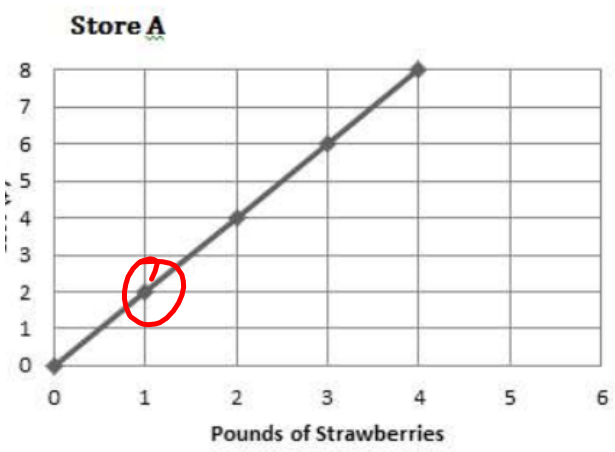
$y = 5x$

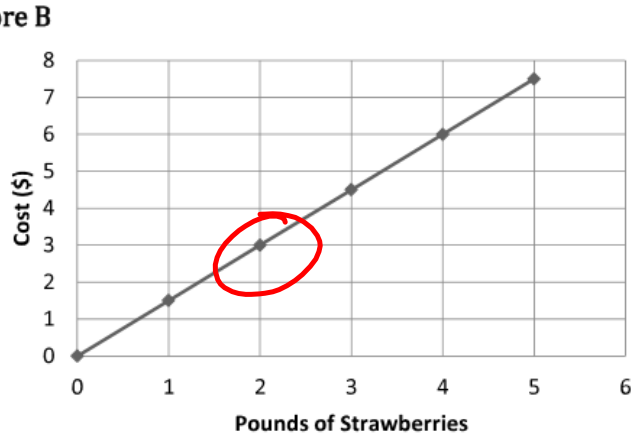
D) If you wanted to buy 80 bushels of apples, how much money would it cost?

$\downarrow$
x

$y = 5x$
$y = 5(80)$
$y = \$400$

4) Two stores are selling strawberries for a certain price per pound. The graph below represents the price per pound of both stores.





By looking at the graphs, which store ***appears*** to be selling strawberries at a higher cost per pound? Why?

Store A because the line is steeper.

What is the rate at which Store A sells strawberries?

$\frac{y}{x}$ (1, 2) $\frac{2}{1}$ → $2 per strawberry

What is the rate at which Store B sells strawberries?

$\frac{y}{x}$ (2, 3) $\frac{3}{2}$ → $\frac{1.50}{1}$ = $1.50 per strawberry

Which store sells strawberries at a higher cost per pound?

Store A. It sells strawberries at $2 per strawberry while store B sells strawberries at $1.50 per strawberry.