ML #2: Equations, Tables and Graphs (Unit 6 – Math 7 Plus)

Review from Unit 5

1. **Unit Rate** - What is a unit rate and how do you find it?

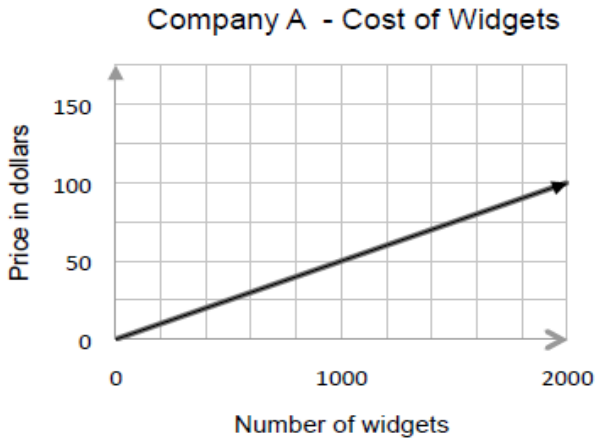
2. **Proportion** - What is a proportion?

3. **Constant of Proportionality** - What is constant of proportionality?

4. What are the characteristics of a proportional relationship?

What do you Think?

Company A and B both sell widgets. The company you work for wants you to buy widgets for them.



Company B
Cost of Widgets

Number of Widgets	Price in Dollars
200	8
400	16
600	24

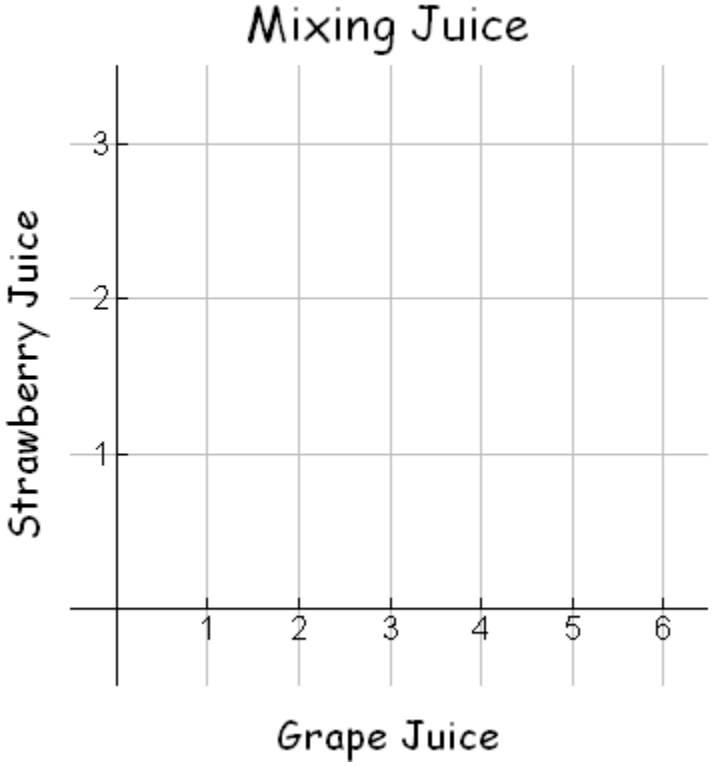
1) Which company sells widgets at the lower price?

2) Explain to your boss how you know which company sells widgets at the lower price.

Proportional Relationships

For every 6 cups of grape juice, mix in 3 cups of strawberry juice.

Cups of grape juice (x)	Cups of strawberry juice (y)
6	3



You move up _____ units for each 1 unit you move to the right.

You move up 2 • _____ units for each 2 units you move to the right.

You move up 3 • _____ units for each 3 units you move to the right.

You move up 4 • _____ units for each 4 units you move to the right.

Starting from (0, 0), to get to a point (x, y) on the graph, you will go up x • ___ units for every x units you have moved to the right.

Therefore, y = x • ___, so y = ____

What is the ordered pair where x = 1? (1, ____)

What does it stand for?

You want to make different sized batches of juice that have the same exact flavor and strength as your original batch. Use your equation to find the missing amount of juice needed.

A. 23 cups of grape juice. How many cups of strawberry juice will you need?

B. 19 cups of strawberry juice. How many cups of grape juice will you need?

Interpreting Graphs

- A relationship between two quantities is proportional if the ratio between the quantities is always the same unit rate. Proportional relationships can be represented by the equation $y = kx$, where k represents a constant. The graph of any proportional relationship will be a straight line through the origin.

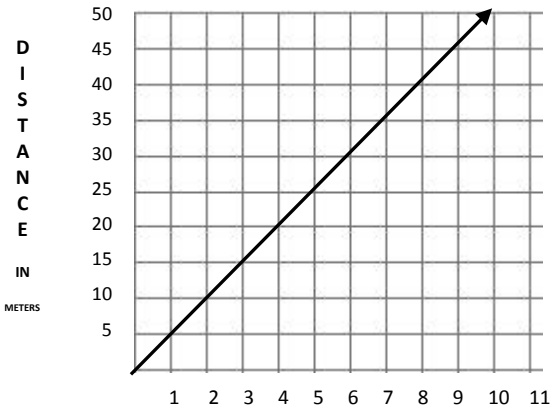
Ramon's raced Angel and Carlos in a 50-meter dash

50-meter Dash

A. Ramon's results are shown on the graph

1. What does the shape of the graph tell you about Ramon's speed during the race?

2. Explain how you can use the graph to find the unit rate for Ramon's speed.



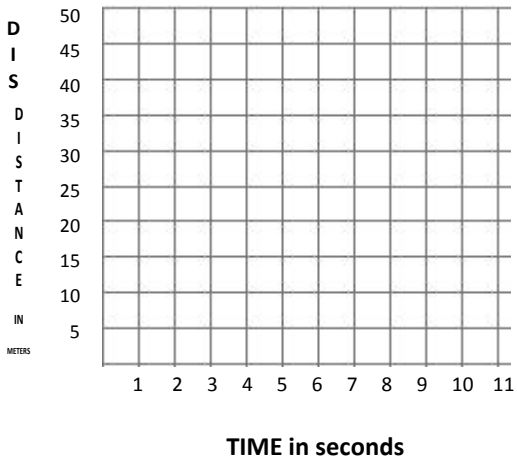
B. Angel's data during the race can be described Using the equation y = 4.5x. Explain how you can find the unit rate for Angel's speed from the equation.

C. Carlos ran the race at a constant speed. The table shows the distances Carlos traveled during different times in the race.

Time (in seconds)	2	4	6	8
Distance (in meters)	9.5	19	28.5	38

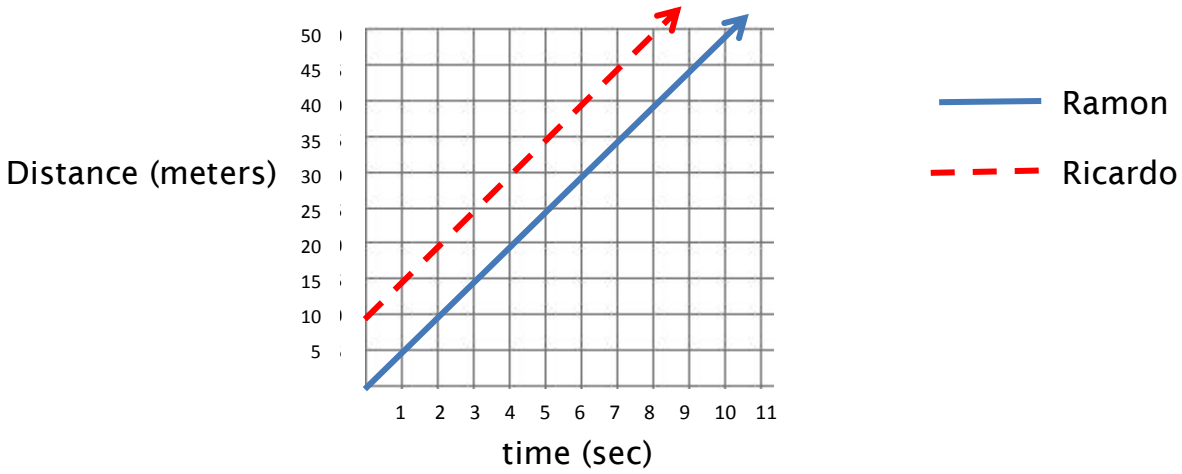
1. Plot the data on the graph to show Carlos's speed during the race.

2. Explain how you can use the graph to Find the unit rate for Carlos's speed.



D. Who won the race? Explain how you know.

E. Suppose Ramon's twin brother, Ricardo, also runs in the race. Ramon gives Ricardo a 10-m head start in the race, and they run at the same speed. The graph below shows the results.



1. Write an equation to represent Ramon's position.

2. What do the points (0, 0) and (0, 10) on the graph represent?

3. Are the lines parallel? How do you know?

4. Ricardo runs at a constant rate of 5 m/sec and has a head start of 10 m. Write an equation of the line that represents Ricardo.

5. What is the unit rate for Ramon? Ricardo? Compare and make a statement.