MTH_Work_Sample_3

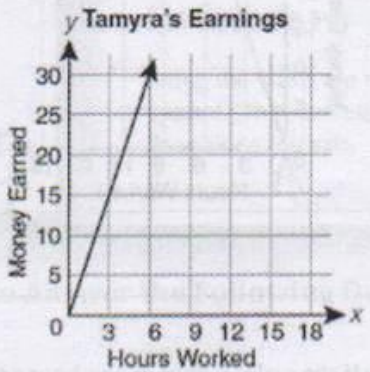
Sunday, February 05, 2012
6:18 AM

What follows is a worksheet filled out in class by this student.
After that there is a reproduction of the quiz questions.
Finally, there is a scan of the quiz handed in by this student.

Readers Read This:

We are going to work on the following problem together.

Tamyra earns money walking her neighbors' dogs. The graph shows the amount of money Tamyra earns based on the number of hours she walks the dogs.



What is the slope of the line in the graph?

- A. $\frac{3}{15}$
- B. $\frac{1}{3}$
- C. $\frac{3}{1}$
- D. $\frac{15}{3}$

You may know the answer to this problem right away, you may not, but as we work through the questions below, I think we will all learn something.

Work Together As a Group to Answer the Following Questions:

Graphs are used to describe a **relationship** between two things, or **quantities.** What are the two quantities being related in this problem?

How many hours were worked and how much was earned.

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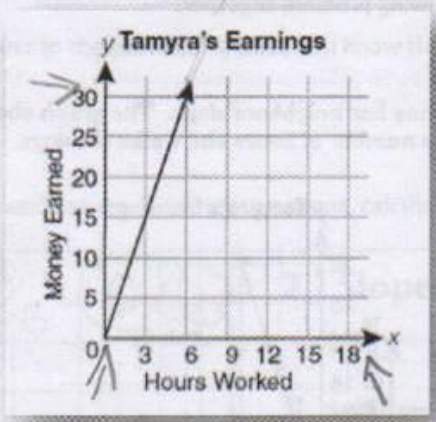


Does Tamyra get paid differently if she walks 5 dogs in one hour or 10 dogs in one hour?

Yeah. The more dogs are walked, the more is earned. ⊗ $-\frac{1}{2}$

We usually draw two lines to divide up or provide a border for our graph. They are called **axes** (say "ACK sees"). The word "**axes**" is plural of **axis** (say "ACK sis"). Traditionally we usually name one axis the **x-axis**, and it is normally horizontal. The other axis is usually at a right angle to the x-axis and it is called the **y-axis**. The **origin** of a graph is where zero on the x-axis and zero on the y-axis meet. Can you find the x-axis and the y-axis on the plot? Can you find the origin?

Yeah. I put 3 arrows where they are. ✓

A **label** on a graph is some text that is there to help us understand the graph.

a. What is the label for the x-axis? (besides the little 'x')

Hours Worked ✓

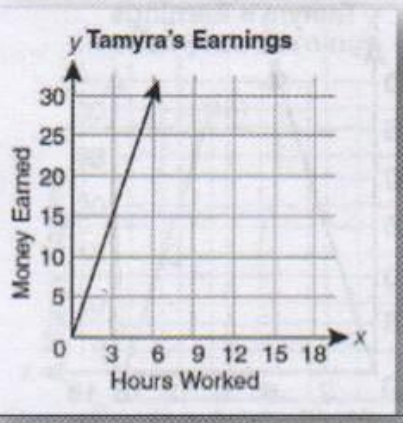
b. What is the label for the y-axis? (besides the little 'y')

Money Earned ✓

c. What is the label for the whole graph?

Tamyra's Earnings ✓

Readers Read This:



If you are ever asked to make a graph, you should always draw and label your axes clearly. You should also label the graph. This makes it easier for someone else to understand your graph.

Along the x-axis are numbers which are evenly spaced. They correspond to the tick marks or vertical lines along the axis.

Along the y-axis are numbers which are also evenly spaced. They correspond to tick marks or horizontal lines along the axis.

Work Together As a Group to Answer the Following Questions:

What is the spacing between numbers on the x-axis?

3 ✓

What is the spacing between numbers on the y-axis?

5 ✓

What does the line going up and to the right mean? (we are finally getting to this)

Data of hours 3 payment when the day is done ✓

What does it mean that line has an arrow on the end?

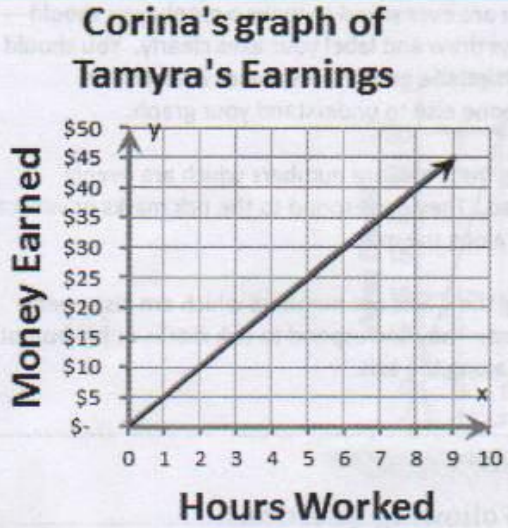
It's a ray, it keeps going. ✓

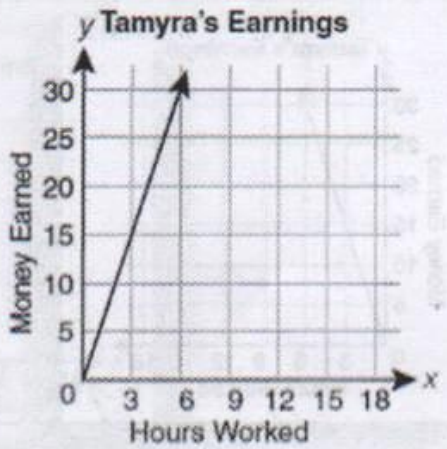
Answer the following True or False: (Circle T or F)

If Tamyra works 0 hours she gets paid $0 (T) / F ✓	If she works 9 hours she doesn't get paid. T / (F)
If she works 3 hours she gets $30 T / (F) ✓	If she works 6 hours she gets $30. (T) / F
If she works 3 hours she gets $15 (T) / F ✗	If she works 12 hours she gets $60. (T) / F

-1

Readers Read This





Tamyra's friend Corina also made a graph of Tamyra's earnings. They disagreed that the graphs were the same. We are going to help them decide.

But first, let's go over how you name points that are on a line on a graph. You name a point by listing its x-value and its y-value in that order in **parentheses**, like this **(x-value, y-value)**. For example, the origin is where x=0 and y=0, and we can name it like this **(0,0)**. We say that both lines on both graphs "go through the origin (0,0)."

Work Together As a Group to Answer the Following Questions:

What does the point (4,20) on the line in Corina's graph mean? (Talk about hours and money).

$20 earned over 4 hours

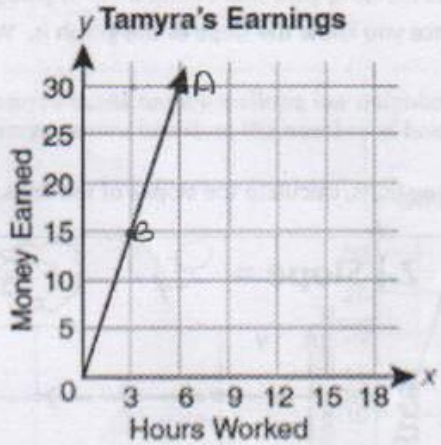
Write down another point that is on Tamyra's graph.

(3,15) 's Earnings

Is the point you wrote down also on the line in Corina's graph?

Yes it is (It is the last coordinate of the file)

Readers Read This



What is the slope of the line in the graph?

- A. $\frac{3}{15}$
- B. $\frac{1}{3}$
- C. $\frac{3}{1}$
- D. $\frac{15}{3}$

We are now ready to talk about **slope**. First you pick out two points on a line, let's call them point A and point B for short. Then imagine that you wanted to get from point A to point B, but you could only go horizontally or vertically. The distance you have to go vertically (measured along the y-axis), divided by the distance you have to go horizontally (measured along the x-axis), is the slope. Put in a math sentence:

$$\text{Slope between point A and point B} = \frac{\text{rise between point A and B}}{\text{run between point A and B}} = \frac{\text{rise}}{\text{run}}$$

Work Together As a Group to Answer the Following Questions:

Fill out the following table for some points on Tamyra's graph:

Pick Point A, Write Name Here	Pick Point B, Write Name Here	Rise from A to B (vertical change)	Run from A to B (horizontal change)	Slope = Rise/Run
(6,30)	(3,15)	-15	-3	-15/-3 = 15/3 = 5
(0,0) C	(3,15) B	15	3	15/3 = 5

Slope has units, which you can find by taking the units of the y-axis and dividing by units of the x-axis. What are the units for the slope on Tamyra's graph?

money/hours = dollars per hour = wage

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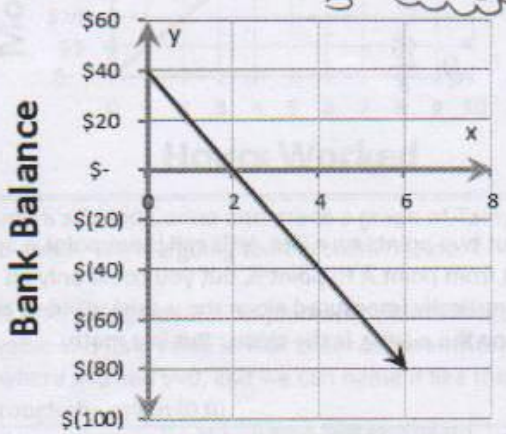
CONGRATULATIONS! john.wezenfield@gmail.com

You can now say what the answer to the problem is, since you know the slope of the graph is. Write the letter for the answer here:

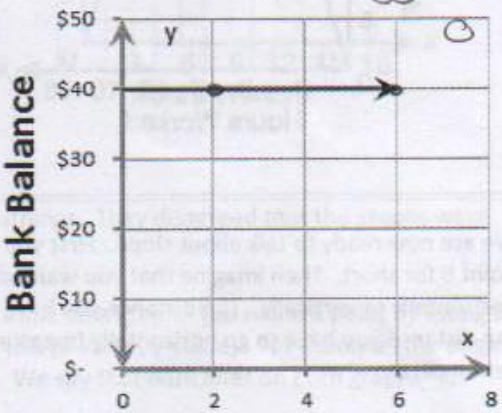
D

If you have some time you can work on the following questions, calculate the slopes of the lines.

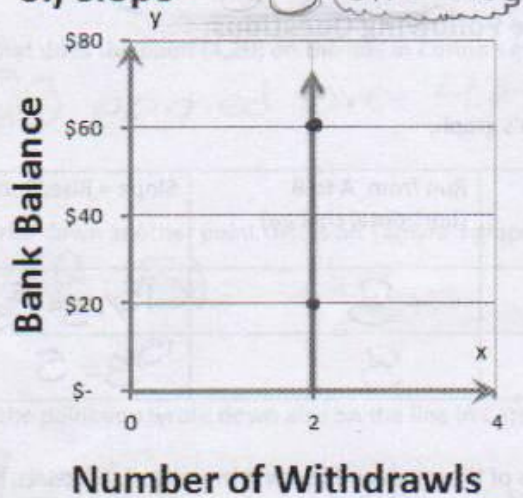
1.) Slope = 100/-5 = 20



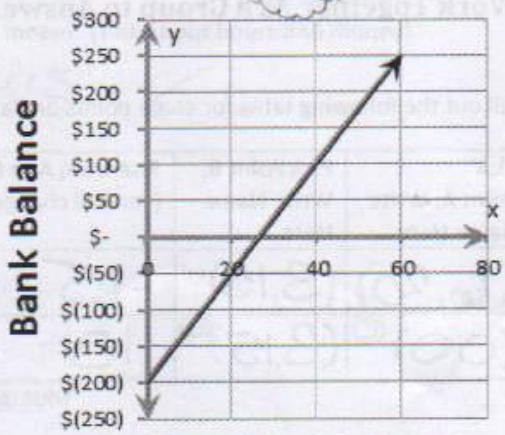
2.) Slope = 0/4 = 0



3.) Slope = -40/0 = Undefined



4.) Slope = 15/2

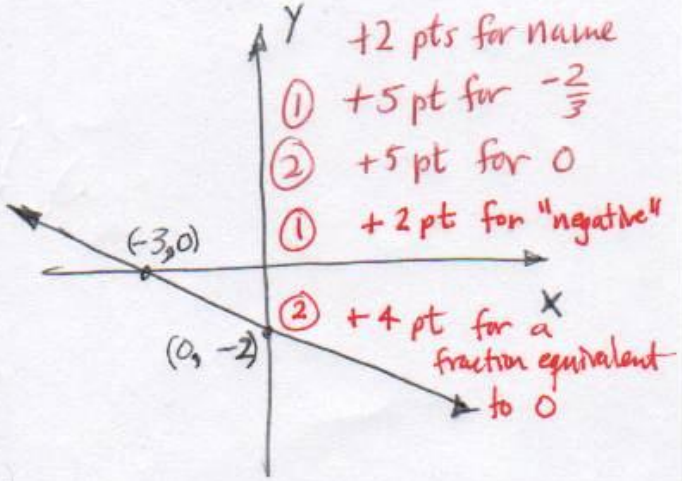


A→C
300/40
15/2

B→C
-150/-20
15/2

Question #1

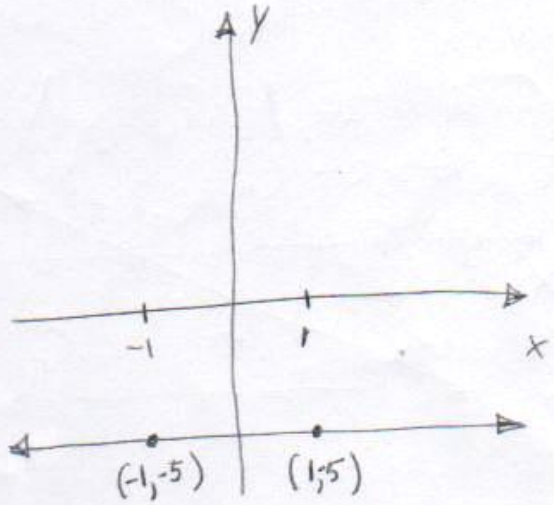
ANSWER KEY



What is the slope of this line?

$\frac{rise}{run} = \frac{-2}{3}$

Question #2



What is the slope of this line?

$\frac{rise}{run} = \frac{0}{2} = 0$

[redacted]

$+\frac{7}{12}$

① IDK (-2) wrong $\frac{2}{3}$

② 0 ✓ +5

[redacted]i, in problem #1 you would apply the rise/run formula to compute the slope.

In problem #2 you get full credit for recognizing that the slope of a horizontal line is 0. Nice job!