Test Review Rate of Change, Constant, Slope

Name Key Hr ___

For questions #1-6, refer to the information in the chart below.

1. Abby, Jamie, and Sam are friends and they all got summer jobs as babysitters. Below is information about the pay each of them earned for the hours they were babysitting.

Abby	Jamie	Sam
<table><tr><th>Time (hours)</th><th>Total Money Earned</th></tr><tr><td>3</td><td>24</td></tr><tr><td>4</td><td>32</td></tr><tr><td>5</td><td>40</td></tr><tr><td>6</td><td>48</td></tr></table> +1 +8 +1 +8	Jamie earned $63 babysitting for 9 hours straight.	After 4 hours, Sam had earned $28 and after 8 hours had earned $56. +4 (4, 28) (8, 56) +28
Define Variables: x = # of hours y = total $ earned	Define Variables: x = # of hours y = total $ earned	Define Variables: x = # of hours y = total $ earned
Rate of Change or Slope: $\frac{\Delta y}{\Delta x} = \frac{8}{1} = \boxed{\$8/hr}$	Rate of Change or Slope: $\frac{\Delta y}{\Delta x} = \frac{\$63}{9h} = \boxed{\$7/hr}$	Rate of Change or Slope: $\frac{\Delta y}{\Delta x} = \frac{28}{4} = \boxed{\$7/h}$

2. What information about Abby, Jamie, and Sam's babysitting jobs can you obtain from the rate of change?

Abby makes the most money per hour, and Jamie and Sam make the same $7/hr.

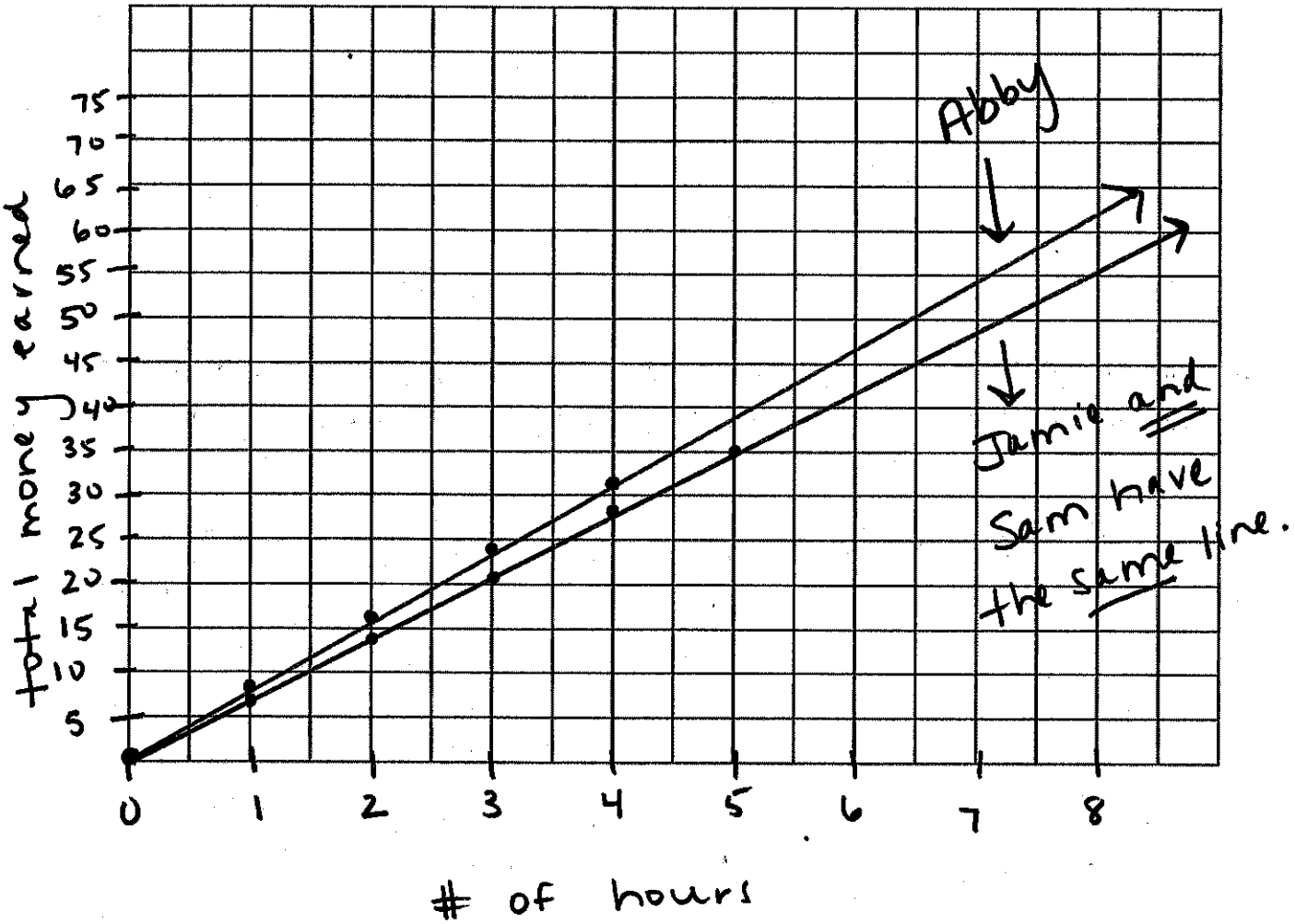
3. What would be the total money earned for Abby, Jamie, and Sam at a time of 0? Why does this make sense?

$0, since if either of the girls don't work any hours they won't get paid any money.

4. What does your answer to question number 3 tell you about the constant in each of the equations?

The constant for each equation will be 0.

5. Graph Abby, Jamie, and Sam's babysitting earnings on the Coordinate Plane below. Be sure to label each axis and make sure to label each line with the student name it corresponds with.



6. If all three friends were saving up for the same pair of jeans to purchase, who would reach the goal last and why?

Jamie and Sam since they both earn the least amount of money at $7 per hour.

For #'s 7 and 8, find the slope of the line through each pair of points.

7. (-4, 1) (-4, 3) 7. undefined

x	y
-4	1
-4	3

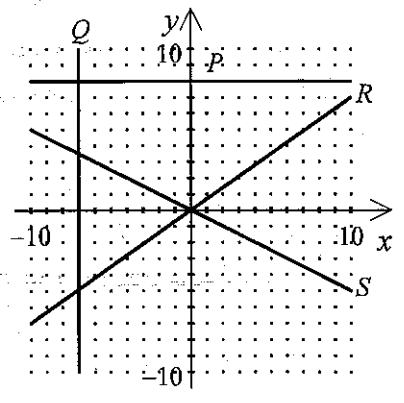
$0 < +2$ $\frac{\Delta y}{\Delta x} = \frac{2}{0}$ = undefined

8. (4, -2) (7, -3) 8. $\frac{-1}{3}$

x	y
4	-2
7	-3

$+3 > -1$ $\frac{\Delta y}{\Delta x} = \frac{-1}{3}$

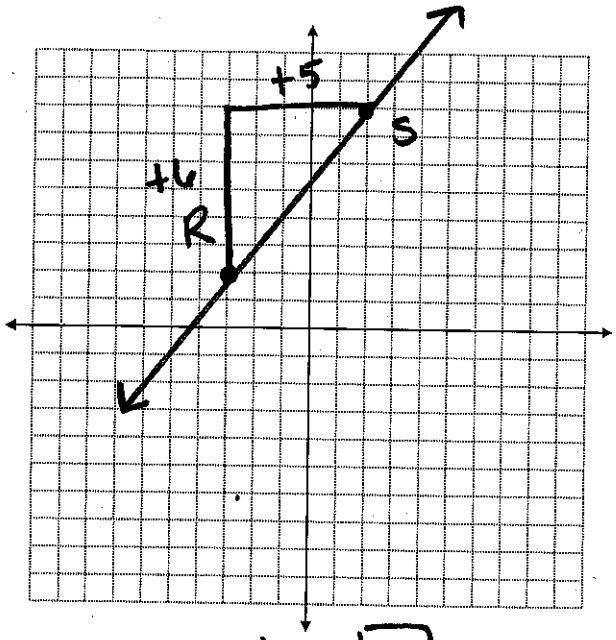
9. Use the graph provided to answer the following questions. The capitol letters Q, R, S, and P represent the lines and should be used as the answers for each blank.



a. Which line has a positive slope? a. R
b. Which line has a negative slope? b. S
c. Which line has a slope of zero? c. P
d. Which line has an undefined slope? d. Q

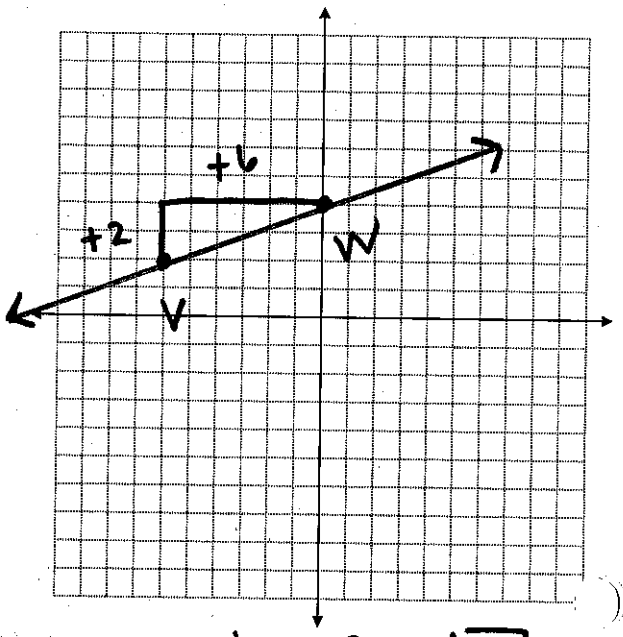
10. For the given points below, graph the points and draw the one straight line through both points. After the line is drawn, find the slope and place your answer of the line.

10a. Graph $R(-3, 2)$ and $S(2, 8)$



Slope = $\frac{\text{Rise}}{\text{Run}} = \boxed{\frac{6}{5}}$

10b. Graph $V(-6, 2)$ and $W(0, 4)$



Slope = $\frac{\text{Rise}}{\text{Run}} = \frac{2}{6} = \boxed{\frac{1}{3}}$

11. Using the tables below, find the slope AND find the constant.

x	y
0	-5
3	-4
6	-3
9	-2

+3, +1, +3, +1 $\quad \frac{\Delta y}{\Delta x} = \frac{1}{3}$

11a. Slope: $\frac{1}{3}$

Constant : -5

x	y
-2	3
-1	1
0	-1
1	-3

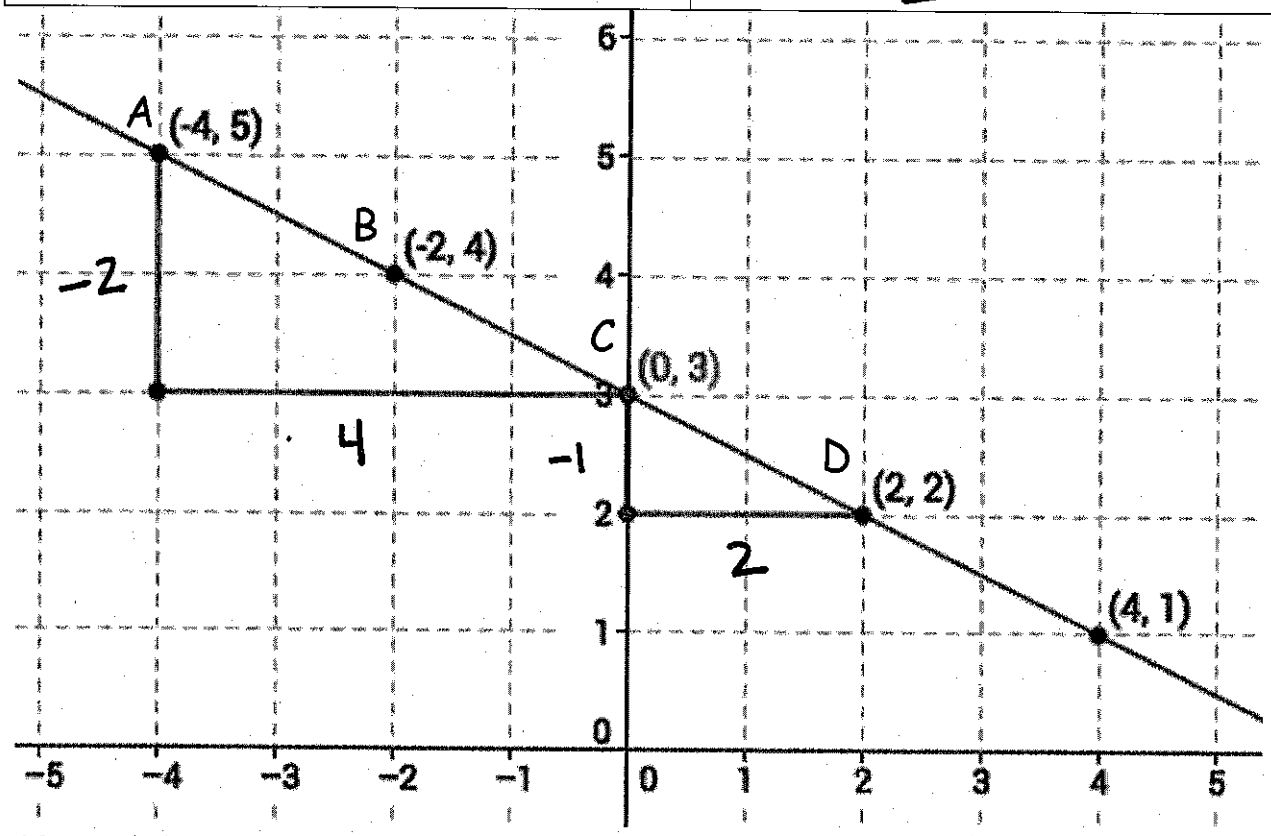
+1, -2, +1, -2 $\quad \frac{\Delta y}{\Delta x} = \frac{-2}{1}$

11b. Slope: -2 or $-2/1$

Constant : -1

12. Find the slope of line from the graph below using points A and C. Then find the slope of the line using points C and D.

Points A and C	Points C and D
Slope: $\frac{-2}{4} = \boxed{\frac{-1}{2}}$	Slope: $\boxed{\frac{-1}{2}}$



13. Use the properties of similar triangles to explain why any two points on a line can be used to calculate slope.

Similar triangles have side lengths that are multiples of one another. The side lengths, however, will reduce back down to the slope. This allows any points to be used to calculate the slope.

14. Explain how slope and rate of change are related. Use mathematical reasoning to justify your response.

Slope and rate of change are the same thing. They both measure how 2 variables are changing. The rate of change finds the $\Delta y/\Delta x$ and the slope looks at the rise/run.