Pre-Algebra, Unit 5A Practice Test: Slope &Proportional Relationships

Name:

Date:

1. Define *rate of change*.

2. What does the *m* in $y = mx$ represent? Explain its meaning.

3. In a proportional relationship, explain how rate of change, slope, constant of proportionality, and the unit rate are related.

4. (SE EE5) Seth and Mary began typing the same business letter at the same time. Each types at a different rate.

    > After 3 minutes, Seth is on word 120.
    > After 8 minutes, Mary is on word 300.

    Who is typing at a greater rate of change?

    A. Seth's typing rate which is $37\frac{1}{2}$ words/min.

    B. Mary's typing rate which is $37\frac{1}{2}$ words/min.

    C. Seth's typing rate which is 40 words/min.

    D. Mary's typing rate which is 40 words/min.

5. Find the rate of change of the line in the graph.

    A. -2
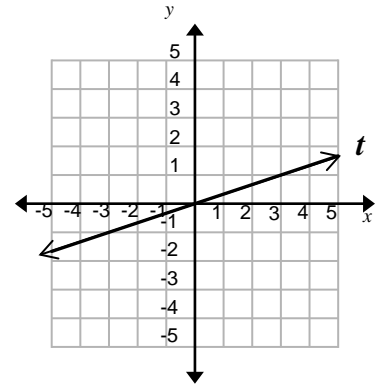
    B. $-\frac{1}{2}$

    C. $\frac{1}{2}$

    D. 2
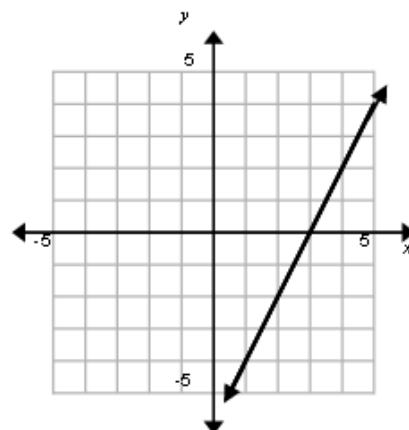
6. (SBAC EE6) Line **t** has slope $\frac{1}{3}$ and passes through (0, 0).

Follow these steps:
- Step 1: Start at (0, 0)
- Step 2: Move right 6 units

From the location designed by completing Step 2, how many units up is line **t** ?

7. (SE EE6) In the diagram, $\overline{AB}$ is the hypotenuse of the right triangle *ABD*, and $\overline{BC}$ is the hypotenuse of the right triangle *BCE*.

Which of the following statements are true?

I. $\frac{CE}{CB} = \frac{BD}{DA}$

II. $\triangle ABD$ is similar to $\triangle BCE$.

III. The slope of $\overline{CB}$ is less than the slope of $\overline{BA}$.

(A) I and II only
(B) II and III only
(C) II only
(D) III only
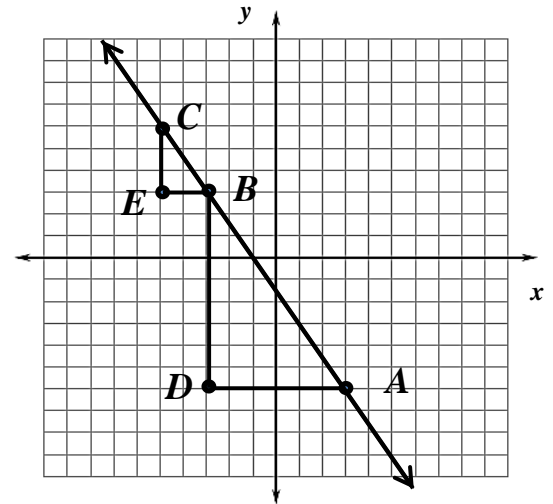
8. Plot the points from the table. Label each point on the graph.

Table #1

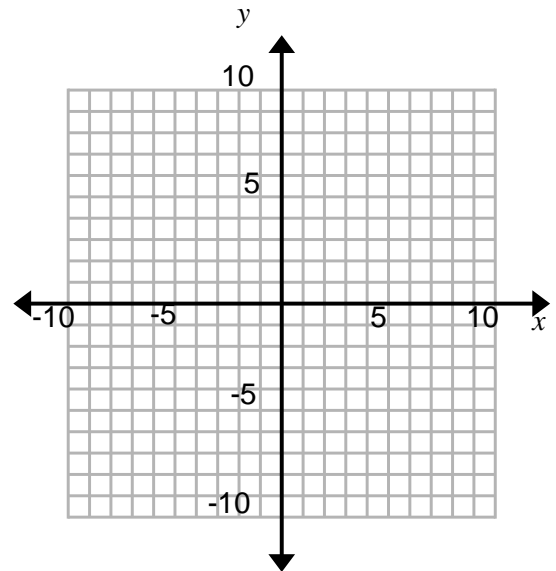| x	4	6	8	10
y	2	3	4	5

Table #2

x	-4	-2	0	2
y	-10	-6	-2	2

Which table has the greater rate of change?
Explain how you know.

Which relationship is proportional?
Explain why.

Use the given information to answer the following questions 9-10.

Function 1:

Function 3:

x	-1	0	1	2
y	6	2	-2	-6

Function 2: $y = -3x$
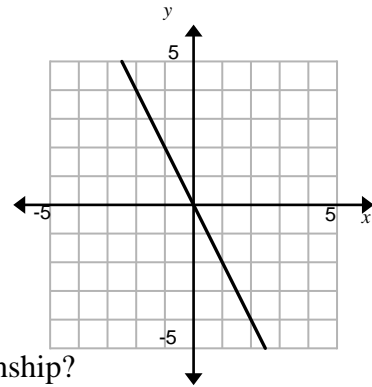
9. (SE) Which function(s) is (are) a proportional relationship?

    (A) Function 1   (B) Function 2   (C) Function 3   (D) None

10. (SE) Which function has the greater slope?

    (A) Function 1   (B) Function 2   (C) Function 3   (D) They are all the same

11. (SBAC EE5) You walk at a pace of 3 miles per hour. Which line best represents this scenario?

    a) *Line A*
    b) *Line B*
    c) *Line C*
    d) *Line D*

Time (hr)
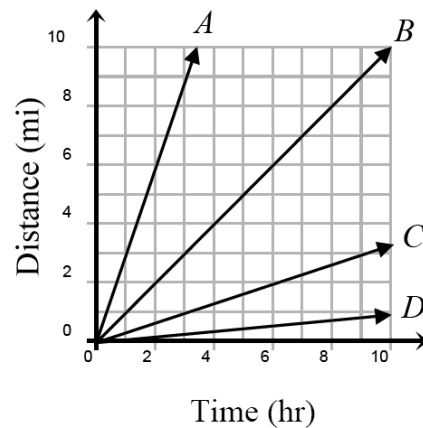
12. A local rent-a-car company charges $150 per week for a small car. Choose the graph (from the right) that displays a rent-a-car company whose weekly rate is less.

13. (SE EE5) Which boy had the fastest race time?

Carlos' Race Time

$y = \dfrac{1}{6}x$ x is time in minutes

y is miles

(A) John

(B) Carlos

(C) They are the same.

John's Race Time

14. (SBAC) The table shows the volume of water released by Davis Dam (Lake Mohave) over a certain period of time. The amount of water released by Parker Dam (Lake Havasu) is shown in the graph.

Water Released from Davis Dam

Time (sec)	Volume of water (cubic feet)
2.5	32,500
3	39,000
4.5	58,500
6	78,000

Which dam has a greater water release average? Explain your reasoning.

(A) Parker Dam; Parker Dam's rate is 13,000 cubic feet/sec and Davis Dam's is 7,000 cubic feet/sec.

(B) Parker Dam; Parker Dam's rate is 7,000 cubic feet/sec and Davis Dam's is 13,000 cubic feet/sec.

(C) Davis Dam; Davis Dam's rate is 7,000 cubic feet/sec and Parker Dam's is 13,000 cubic feet/sec.

(D) Davis Dam; Davis Dam's rate is 13,000 cubic feet/sec and Parker Dam's is 7,000 cubic feet/sec.