

Algebra 1 - Slope and Rate of Change - Test Answer Key

Common Core F-IF.B.4, F-IF.B.6, F-LE.A.1b · maths-pdf.fr/en/

Grade the slope test with this key. Every question lists the points available and how to split them between method and result. Students who show clear work should receive partial credit, even if the final answer is not correct. The test totals 20 points in all.

Algebra 1 · Common Core State Standards: **F-IF.B.4, F-IF.B.6, F-LE.A.1b**

Question 1 - Slope of two points [2 pts]

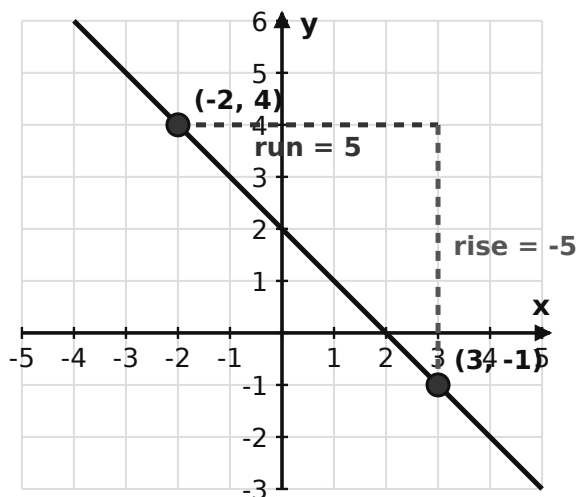
Rise: $-2 - 4 = -6$. Run: $5 - (-3) = 8$.

Slope: $\frac{-6}{8} = -\frac{3}{4}$. The slope is negative, so the line falls.

$m = -\frac{3}{4}$; **falls**

Scoring: 1 point for the slope; 1 point for the interpretation.

Question 2 - Slope from a graph [2 pts]



Rise -5, run 5.

Points $(-2, 4)$ and $(3, -1)$: rise -5 , run 5.

$m = -1$

Scoring: 1 point for reading two points correctly; 1 point for the slope.

Question 3 - Slope from a table [2 pts]

Rise from the first to the second point: $4 - 10 = -6$. Run: $3 - 1 = 2$.

$\frac{-6}{2} = -3$. The next pairs also change by -6 for 2.

$$m = -3$$

Scoring: 1 point for rise and run; 1 point for the slope.

Question 4 - Missing coordinate [2 pts]

$$\frac{y-1}{4-(-4)} = \frac{3}{4}, \text{ so } \frac{y-1}{8} = \frac{3}{4}.$$

$$y-1=6, \text{ so } y=7.$$

$$y=7$$

Scoring: 1 point for the equation; 1 point for the solution.

Question 5 - Gas tank rate [2 pts]

$$\frac{8-12}{100-0} = \frac{-4}{100} = -0.04.$$

The tank loses 0.04 gallon each mile, or 4 gallons every 100 miles.

-0.04 gallon per mile

Scoring: 1 point for the rate; 1 point for the interpretation with units.

Question 6 - Average rate of change [2 pts]

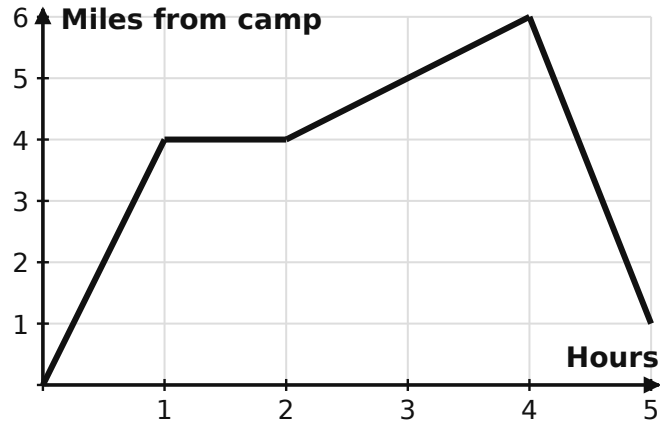
$$d(2) = 4 + 6 = 10 \text{ and } d(6) = 36 + 18 = 54.$$

$$\frac{54-10}{6-2} = \frac{44}{4} = 11.$$

11 miles per hour

Scoring: 1 point for both distances; 1 point for the rate.

Question 7 - Canoe trip [3 pts]



Same graph.

- a) From hour 1 to hour 2 the distance stays 4 miles.
- b) $\frac{6-4}{4-2} = 1$ mile per hour.
- c) $\frac{1-6}{5-4} = -5$ miles per hour. The negative sign means the canoe is moving back toward camp.

hour 1 to 2; 1 mi/h; -5 mi/h

Scoring: 1 point per part.

Question 8 - Compare rates [3 pts]

- a) $\frac{7}{2} = 3.5$ mph.
- b) The slope of $d = 3.2t$ is 3.2 mph.
- c) $3.5 - 3.2 = 0.3$.

3.5 mph; 3.2 mph; Ethan by 0.3 mph

Scoring: 1 point per part.

Question 9 - Interpret an equation [2 pts]

The slope 12 means the cost rises \$12 each month. The intercept 45 is the cost at 0 months: a \$45 joining fee.

\$12 per month; \$45 fee

Scoring: 1 point for each interpretation with units.

Total
20 points