Slope Practice

Use this key to check answers and read the explanations.

1. One step along a line goes 8 grid units right and 3 grid units up. What is the slope?
   - A. 3/8
   - B. 8/3
   - C. −3/8
   - D. 11

   Correct answer: A. 3/8
   The rise is 3 and the run is 8. Divide the rise by the run to get 3/8.

2. On a scale drawing, a straight roof edge goes downward as you look from left to right. What does that tell you about its slope?
   - A. The slope is zero.
   - B. The slope is positive.
   - C. The slope is negative.
   - D. The slope is undefined.

   Correct answer: C. The slope is negative.
   The horizontal coordinate increases as the vertical coordinate decreases. A negative rise divided by a positive run gives a negative slope.

3. What is the slope of the line through (−5, 4) and (8, 4)?
   - A. 4
   - B. 0
   - C. 13
   - D. Undefined

   Correct answer: B. 0
   Both points have y = 4, so the rise is 0. The run is 13, and 0 divided by 13 is 0.

4. What is the slope of the line through (6, −3) and (6, 11)?
   - A. 14
   - B. 0
   - C. 6
   - D. Undefined

   Correct answer: D. Undefined
   The y-values differ by 14, while the x-values are the same. The run is 0, so calculating the slope would require division by zero.

5. What is the slope of the line $y = 7 - 2x$?

A. 2
B. −2
C. 7
D. −7

Correct answer: B. −2
The equation can be written as $y = -2x + 7$. In slope-intercept form, the coefficient of x is the slope.

6. A line passes through (−4, 7) and (2, −2). What is its slope?

A. −3/2
B. 3/2
C. −2/3
D. −9/2

Correct answer: A. −3/2
From the first point to the second, y changes by $-2 - 7 = -9$ and x changes by $2 - (-4) = 6$. The slope is −9/6, or −3/2.

7. Three rows of a linear table give (x, y) pairs (1, −4), (3, 1), and (7, 11). What slope do the rows show?

A. −5/2
B. 5
C. 2/5
D. 5/2

Correct answer: D. 5/2
The first interval has a change of 5 in y over a change of 2 in x. The second has a change of 10 over 4. Both ratios simplify to 5/2.

8. A printer uses a steady amount of ink per page. It has 113 mL left after 12 pages and 108 mL left after 32 pages. What is the slope of ink remaining versus pages printed?

A. −4 mL per page
B. 0.25 mL per page
C. −0.25 mL per page
D. −5 mL per page

Correct answer: C. −0.25 mL per page
The ink remaining changes by −5 mL over 20 pages. Dividing −5 by 20 gives −0.25 mL per page.

9. Which equation represents a different line parallel to y = (2/5)x + 1?

A. 2x − 5y = 15
B. 5x + 2y = 10
C. 2x + 5y = 5
D. 2x − 5y = −5

Correct answer: A. 2x − 5y = 15
Solving 2x − 5y = 15 for y gives y = (2/5)x − 3. The slope matches, and the y-intercept differs. The equation 2x − 5y = −5 describes the original line.

10. A nonvertical line has slope −4/7. What is the slope of a line perpendicular to it?

A. −4/7
B. −7/4
C. 4/7
D. 7/4

Correct answer: D. 7/4
The slopes are negative reciprocals. The product of −4/7 and 7/4 is −1, so 7/4 gives a perpendicular line.

11. A line has slope 5/4 and passes through (−2, 3) and (6, b). What is b?

A. −7
B. 10
C. 13
D. 8

Correct answer: C. 13
The run from −2 to 6 is 8. A slope of 5/4 gives a rise of 8 × 5/4 = 10, so b is 3 + 10 = 13.

12. A station's (minutes, packets packed) readings are (0, 5), (4, 17), (10, 41), and (13, 56). Over which interval was its average packing rate highest?

A. Minutes 4 to 10
B. Minutes 10 to 13
C. Minutes 0 to 4
D. The average rates match on all three intervals.

Correct answer: B. Minutes 10 to 13
The three average rates are 12/4 = 3, 24/6 = 4, and 15/3 = 5 packets per minute. The last interval has the highest rate even though it adds fewer packets than the middle interval.

13. Line A passes through (1, −2) and (7, 1). Which equation describes a line through (3, 4) perpendicular to line A?

A. y = (1/2)x + 5/2
B. y = −2x + 4
C. y = 2x − 2
D. y = −2x + 10

Correct answer: D. y = −2x + 10
Line A has slope 3/6 = 1/2, so the perpendicular slope is −2. When x = 3, the equation y = −2x + 10 gives y = 4.

14. Dispenser A loses 4.8 meters of tape per hour. Dispenser B loses 6 centimeters per minute. With both graphs showing meters left versus hours, whose slope is more negative, and by how much?

A. A, by 1.2 meters per hour
B. B, by 1.2 meters per hour
C. A, by 4.2 meters per hour
D. The slopes are equal.

Correct answer: A. A, by 1.2 meters per hour
Six centimeters per minute is 360 centimeters per hour, or 3.6 meters per hour. The slopes are −4.8 and −3.6 meters per hour, so A's slope is 1.2 meters per hour more negative.

15. Studio plan A costs $18 for 2 hours and $34 for 6 hours. Plan B costs $24 for 2 hours and $32 for 6 hours. Each plan has a constant hourly rate and a fixed fee. When do the total costs match, and at what price?

A. 5 hours at $28
B. 4 hours at $26
C. 5 hours at $30
D. 6 hours at $34

Correct answer: C. 5 hours at $30
Plan A rises by $16 over 4 hours, so its rate is $4 per hour. Plan B rises by $8 over 4 hours, or $2 per hour. At 2 hours A is $6 cheaper, and it closes that gap by $2 per hour. Three hours later, both cost $30 for 5 hours.