

3-1 Practice

Form K

Rate of Change and Slope

Each rate of change is constant. Find the rate of change and explain what it represents.

1. ~~X~~ Fences Painted y

Hours	Fences
3	1
6	2
9	3
12	4

slope

$$\frac{y}{x} = \frac{1}{3}$$

2. Miles Per Hour

Hours	Miles
2	70
4	140
6	210
8	280

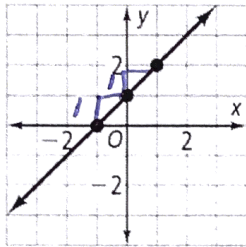
slope

$$70m = \frac{y}{x} = \frac{70}{2} = 35$$

$$m = 35$$

Find the slope of each line.

3.

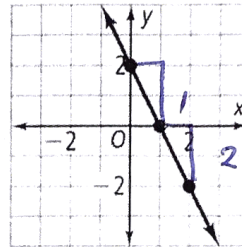


rise
run

$$\frac{1}{1} = 1$$

$$m = 1$$

4.

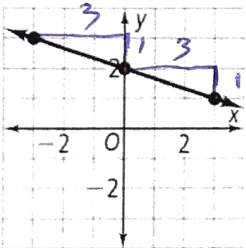


rise 2
run 1

$$\text{slope} = 2$$

$$m = -2$$

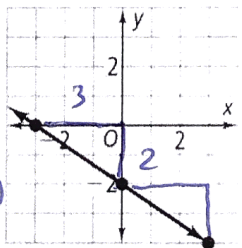
5.



rise 1
run 3

$$m = -\frac{1}{3}$$

6.



rise -2
run 1

$$m = -2$$

Names of slope.

1. slope
2. m
3. $\frac{y}{x}$
4. rate of change.
5. $\frac{\text{rise}}{\text{run}}$

Find the slope of the line that passes through each pair of points.

7. $(-4, 5), (1, 1)$

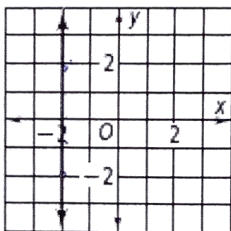
8. $(0, 0), (-1, 3)$

9. $(2, 2), (3, 4)$

10. $(5, 3), (-2, -4)$

Find the slope of each line.

11.



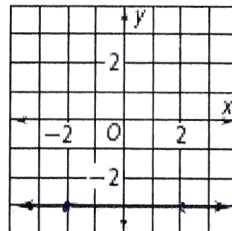
Vertical

rise
run

$$\frac{y}{0}$$

undefined.

12.



rise
run

$$\frac{0}{4} = \text{zero}$$

Horizontal.

$$7) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-4, 5) & (1, 1) \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{1 - 5}{1 - (-4)} = \frac{-4}{5}$$

$$8) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (0, 0) & (-1, 3) \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{3 - 0}{-1 - 0} = \frac{3}{-1} = -3$$

$$9) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (2, 2) & (3, 4) \end{matrix}$$

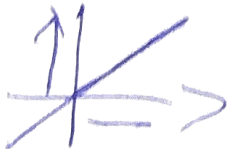
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{4 - 2}{3 - 2} = \frac{2}{1} = 2$$

$$10) (5, 3) (-2, -4)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-4 - 3}{-2 - 5} = \frac{-7}{-7} = 1$$



3-1 Practice (continued)

Form K

Rate of Change and Slope

Without graphing, tell whether the slope of a line that models each linear relationship is *positive*, *negative*, *zero*, or *undefined*. Then find the slope.

13. The cost of a pair of jeans is \$22.50 for 1 pair and \$67.50 for 3 pairs.

positive slope $\frac{y}{x} = \frac{45}{2} = 22.50$

x	y
1	22.50
3	67.50

Independent x | dependent y

x	y
3	28.50
25	237.50

14. An employee earns \$28.50 after 3 hours and \$237.50 after 25 hours.

positive slope, $m = \frac{y}{x} = \frac{209}{22} = 9.50$

State the independent variable and the dependent variable in each situation. Then find the rate of change for each situation.

15. The cost of three gallons of milk is \$8.85 and five gallons of milk is \$14.75.

Independent: number of gallons
dependent: cost

$m = 2.95$

16. Jacques filled 10 envelopes in 1 minute and 100 envelopes in 10 minutes.

Independent = minutes
dependent = envelopes stuffed

$m = \frac{y}{x} = \frac{5.90}{2} = 2.95$

Find the slope of the line that passes through each pair of points.

- 17 (7, -1), (7, 1)

- 18 (3, -2), (-2.5, 9)

- 19 $(\frac{1}{3}, \frac{2}{5}), (-\frac{1}{3}, \frac{3}{5})$

- 20 $(-\frac{3}{4}, \frac{2}{3}), (-\frac{3}{4}, \frac{5}{3})$

x	y
1	10
10	100

21. **Writing** Explain why the slope of a vertical line is always undefined.

22. **Writing** Describe how to draw a line that passes through the origin and has a slope of $\frac{3}{5}$.

Each pair of points lies on a line with the given slope. Find x or y.

23. (2, 2), (5, y); slope = 2

24. (9, 4), (x, 6); slope = $-\frac{1}{3}$

Section 3.3: Rate of Change and Slope
 Practice Worksheet
 Honors Algebra I

Name: _____

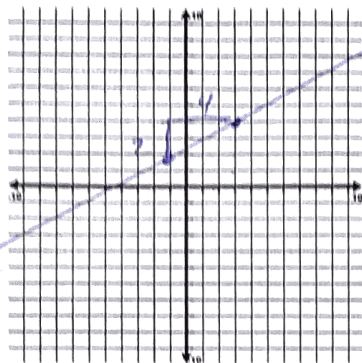
Date: _____

Part 1: Graphing

Use the given information to construct a line for each problem. Identify the slope of each line. If the line is already graphed, identify the slope.

1. $A(3,4)$ and $B(-1,2)$ $\frac{y_2 - y_1}{x_2 - x_1}$

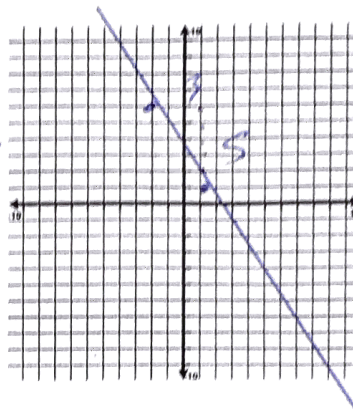
rise 2
run 4
 $\frac{1}{2}$



Slope: _____

2. $A(-2,6)$ and $B(1,1)$

rise -5
run 3
 $\frac{-5}{3}$

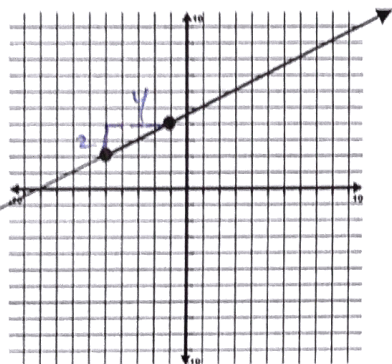


Slope: _____

rise -5
run 3
 $\frac{-5}{3}$

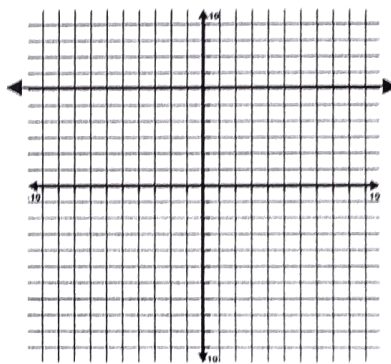
3.

rise 2
run 4
 $\frac{1}{2}$



Slope: _____

4.

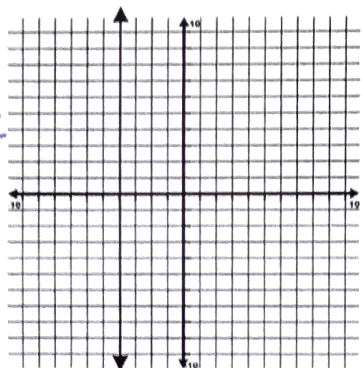


Slope: _____

rise 0
run 3
 $\frac{0}{3} = 0$

5.

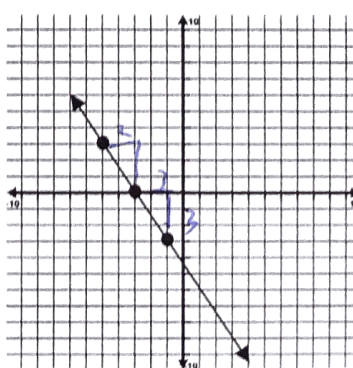
rise 3
run 0



Slope: _____

undefined

6.



Slope: _____

rise 3
run 1
 $\frac{3}{1}$

Part 2: Tables

Find the slope of each line using tables. You may want to try using the slope formula.

7.

x	y
-1	8
0	6
1	4
2	2

Handwritten annotations: vertical arrows between rows indicate a change of -2 in y for a change of 1 in x.

$$m = \frac{y}{x} = \frac{-2}{1} = \boxed{-2}$$

Slope

8.

x	y
2	0
5	3
8	6
11	9

Handwritten annotations: vertical arrows between rows indicate a change of 3 in y for a change of 3 in x.

$$m = \frac{y}{x} = \frac{3}{3} = \boxed{1}$$

Slope

9.

x	y
-3	4
-1	9
1	14
3	19

Handwritten annotations: vertical arrows between rows indicate a change of 5 in y for a change of 2 in x.

$$m = \frac{y}{x} = \frac{5}{2} = \boxed{2.5}$$

Slope

Part 2: Using the Slope Formula

Use the slope formula to find the slope between each of the given points. Remember, if you need to divide by zero, the slope is **undefined**!

10. (2,5) & (3,8)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 5}{3 - 2} = \frac{3}{1} = \boxed{3}$$

11. (-1,2) & (5,9)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 2}{5 - (-1)} = \frac{7}{6} = \boxed{\frac{7}{6}}$$

12. (1,1) & (-2,-8)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 1}{-2 - 1} = \frac{-9}{-3} = \boxed{3}$$

13. (9,0) & (0,9)

14. (3,6) & (5,6)

15. (13,9) & (13,4)

16. (4,-10) & (0,0)

17. (10,3) & (3,3)

18. (-4,-2) & (1,-7)
