Name _____ Class _____ Date _____

5-1 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. **Fences Painted**

Hours	Fences
3	1
6	2
9	3
12	4

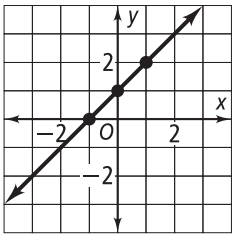
$\frac{0.33 \text{ fences}}{1 \text{ hour}}$; One-third of a fence is painted each hour.

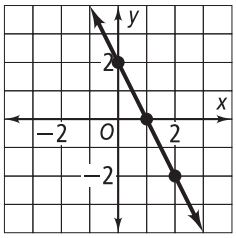
2. **Miles Per Hour**

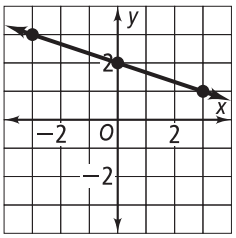
Hours	Miles
2	70
4	140
6	210
8	280

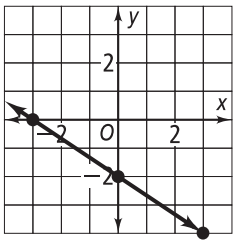
$\frac{35 \text{ miles}}{1 \text{ hour}}$; They are travelling at 35 miles per hour.

Find the slope of each line.

3.  1

4.  −2

5.  $-\frac{1}{3}$

6.  $-\frac{2}{3}$

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

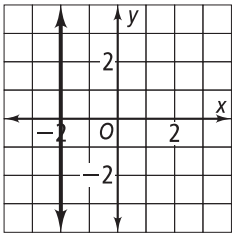
7. $(-4, 5), (1, 1)$ $-\frac{4}{5}$

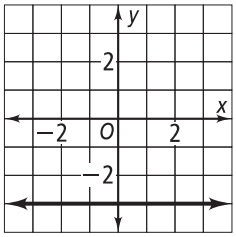
8. $(0, 0), (-1, 3)$ −3

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

10. $(5, 3), (-2, -4)$ 1

Find the slope of each line.

11.  undefined

12.  0

Name _____ Class _____ Date _____

5-1 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; $\frac{22.50}{1}$

14. An employee earns \$28.50 after 3 hours and \$237.50 after 25 hours. positive; $\frac{9.50}{1}$

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: gallons of milk; dependent: cost; rate of change = $\frac{2.95 \text{ dollars}}{1 \text{ gallon}}$

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

independent: minutes; dependent: envelopes stuffed; rate of change = $\frac{10 \text{ envelopes}}{1 \text{ minute}}$

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

17. $(7, -1), (7, 1)$ undefined

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

19. $\left(\frac{1}{3}, \frac{2}{5}\right), \left(-\frac{1}{3}, \frac{3}{5}\right)$ $-\frac{3}{10}$

20. $\left(-\frac{3}{4}, \frac{2}{3}\right), \left(-\frac{3}{4}, \frac{5}{3}\right)$ undefined

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

The slope is always undefined because any two points will have the same *x*-coordinates which means the run will always be zero. Since the denominator is zero, the slope is undefined.

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

Answers may vary. Sample: Plot a point at the origin. Since the slope is $\frac{3}{5}$, move up 3 units and to the right 5 units and plot a point. From this point, go up 3 units and to the right 5 units and plot another point. Draw a line through these 3 points.

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

23. $(2, 2), (5, y)$; slope $= 2$ 8

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