

## Unit 2.1 Practice Rate of Change and Slope

Period: \_\_\_\_\_

Determine whether each rate of change is constant. If it is, find the rate of change and explain what it represents.

- 1.
- Hockey Team's Offense**

Games	Goals
1	2
2	4
3	6

YES, 2, Goals per Games played

- 2.
- Miles Per Gallon**

Gallons	Miles
1	28
3	84
5	140
7	196

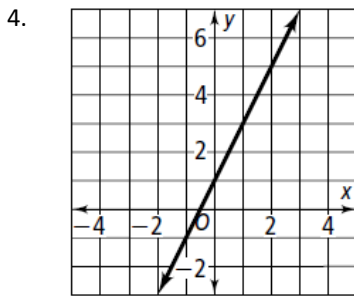
YES, 28, Miles per Gallon

- 3.
- Cars Washed**

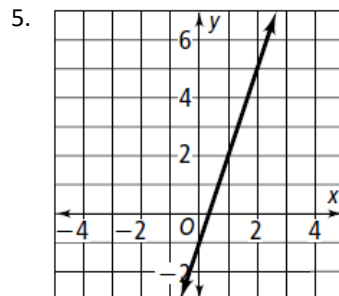
Hours	Cars
1	4
2	8
3	12
4	16

YES, 4, Cars washed per hour

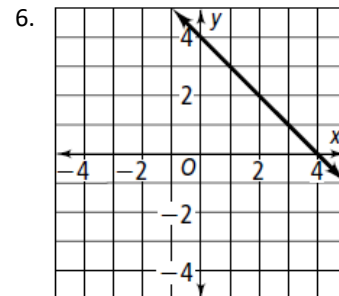
Find the slope of each line.



Slope = 2



Slope = 3



Slope = -1

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

7. (2, 1) (0, 0)

Slope =  $\frac{1}{2}$

8. (4, 5) (6, 2)

Slope =  $-\frac{3}{2}$

9. (3, 8) (7, 3)

Slope =  $-\frac{5}{4}$

10. (1, 0) (-4, 2)

Slope =  $-\frac{2}{5}$

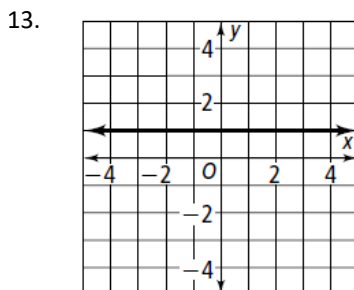
11. (8, -4) (-6, -3)

Slope =  $-\frac{1}{14}$

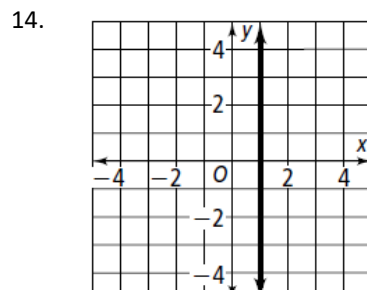
12. (-2, -3) (6, 5)

Slope = 1

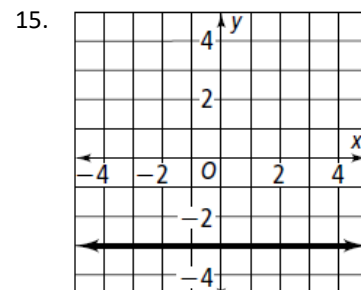
Find the slope of each line.



Slope = 0



Slope = undefined



Slope = 0

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

16. The cost of tickets to the amusement park is \$19.50 for 1 ticket and \$78 for 4 tickets. **Positive , Slope = 19.5**
17. The late fee is \$2 regardless of the number of days the movie is late. **Zero , Slope = 0**
18. On the trip, Jerry had his cruise control set at 60 mi/hr for 4 hours.  
a) Answer for if using his speed: **Zero , Slope = 0**  
b) Answer for if using distance traveled: **Positive , Slope = 60**
19. The contract states that every day past the agreed upon completion date the project is not finished, the price is reduced by \$25. **Negative , Slope = -25**

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

20. Shelly delivered 12 newspapers after 20 minutes and 36 papers after 60 minutes.  
**Independent = time; dependent = newspapers; rate of change is 0.6 papers per minute**
21. Two pounds of apples cost \$3.98. Six pounds cost \$11.94.  
**Independent = pounds; dependent = cost; rate of change is \$1.99 per pound**
22. An airplane ascended 3000 feet in 10 minutes and 4500 feet in 15 minutes.  
**Independent = time; dependent = feet; rate of change is 300 feet up per minute**

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

23.  $(-5, 0), (-5, 5)$  **Undefined**
24.  $(-2, -4), (-1.5, -1.5)$  **slope = 5**
25.  $(4.75, -3.575), (2.25, 1.425)$  **slope = -2**
26.  $(-\frac{1}{4}, \frac{3}{4}), (\frac{1}{2}, -\frac{3}{4})$  **slope = -2**
27.  $(\frac{2}{5}, \frac{3}{7}), (\frac{1}{5}, \frac{4}{7})$  **slope =  $-\frac{5}{7}$**
28.  $(-3.35, 6.5), (5.65, -3.5)$  **slope =  $-\frac{10}{9}$**
29. **Writing** Explain why the slope of a horizontal line is always zero.  
**The change in the dependent variable is zero.**

30. **Writing** Describe how to draw a line that passes through the origin and has a slope of  $-\frac{2}{3}$ .  
**Plot a point at (0, 0). From that point go down 2 units and right 3 units and point a point at that location. Draw a line through the 2 points.**

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

31.  $(7, 4), (3, y)$ ; slope =  $\frac{1}{4}$  **y = 3**
32.  $(5, y), (6, 4)$ ; slope = 0 **y = 4**
33.  $(x, 5), (-3, 6)$ ; slope = -1 **x = -2**
34.  $(-12, 9), (x, -2)$ ; slope =  $-\frac{1}{2}$  **x = 10**