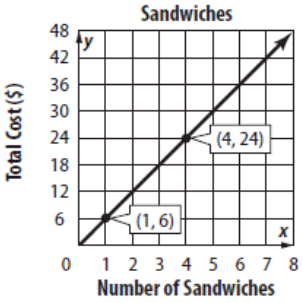
Name: _____ Class Period: _____

Score: _____

Unit 3 Test

Complete the test by neatly showing your work and choosing the best answer. You may use your graphing calculator to complete the test.

1. The total cost and the number of sandwiches ordered are in a proportional relationship. The relationship is shown in the graph. Interpret the unit rate and compare it to the slope.



a. The unit rate is $6 per sandwich, which is also the slope of the line in the graph.

b. The unit rate is $8 per sandwich, which is also the slope of the line in the graph.

c. The unit rate is $7 per sandwich, which is also the slope of the line in the graph.

d. The unit rate is $6 per sandwich, the slope of the line is 7.

2. Determine whether the relationship between the two quantities described in the table is linear. If so, determine the constant rate of change. If not, explain your reasoning.

Hours Rented (h)	Cost ($)
2	50
4	100
6	150
8	200

a. Yes; the rate of change between cost and time for each hour is a constant; $20/hour.

b. Yes; the rate of change between cost and time for each hour is a constant; $25/hour.

c. Yes; the rate of change between cost and time for each hour is a constant; $15/hour.

d. No; the rate of change is not constant.

3. Determine the constant rate of change between *x* and *y* in the table.

$time\ (hours)$	$charge\ (\$)$
1	10
2	18
3	26
4	34

a) $10 per hour

b) $18 per two hours

c) $8 per hour

d) $8 per two hours

4. Determine the constant rate of change between *x* and *y* in the table.

$time\ (hours)$	$H_2O(gallons)$
2	134
4	118
6	102
8	86

a) $-8\ gallons\ per\ hour$

b) $-16\ gallons\ per\ hour$

c) 134 gallons per hour

d) 134 gallons per two hours

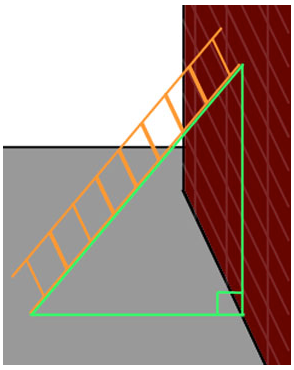
5. State the slope and *y*-intercept for the graph of the equation *y* = -2x + 7.

a. 7, -2 b. 2, 7
c. -2, 7 d. 7, 2

6. What is the slope and *y*-intercept for the graph of the equation $y = 8x - 12$?

a. slope: −8; y-intercept: 12
b. slope: 8; *y*-intercept: 12
c. slope: 8; y-intercept: -12
d. slope: −8; y-intercept: -12

7. The top of Sophie's ladder is resting against the side of her house 18 feet above the ground. If the base of the ladder is 3 feet from the house, what is the slope of the ladder?



a) $\mathrm{m} = -\frac{3}{18}$
b) $\mathrm{m} = \frac{3}{18}$
c) $\mathrm{m} = -6$
d) $\mathrm{m} = 6$

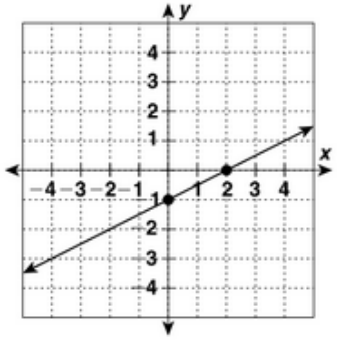
8. What is the slope, or grade, of a road that rises 7 feet for every horizontal change of 35 feet?

hint: $slope = \frac{rise}{run}$

a) $\mathrm{m} = \frac{1}{5}$
b) $\mathrm{m} = \frac{1}{7}$
c) $\mathrm{m} = -\frac{1}{5}$
d) $\mathrm{m} = -\frac{7}{35}$

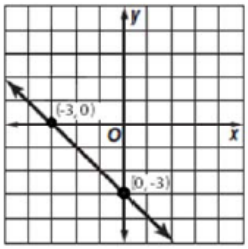
9. Find the equation for the linear function.

(hint: $y = mx + b$*)*



a) $y = \frac{1}{2}x - 1$
b) $y = -\frac{1}{2}x - \frac{1}{2}$
c) $y = \frac{1}{2}x + 1$
d) $y = 2x - 1$

10. Write an equation in slope-intercept form for the graph.

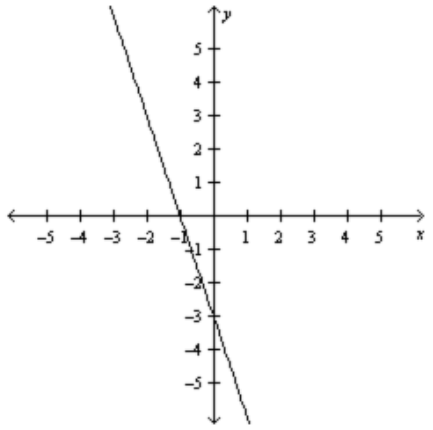


a. *y* = *x* – 3 b. *y* = *x* + 3
c. *y* = –*x* – 3 d. *y* = –*x* + 3

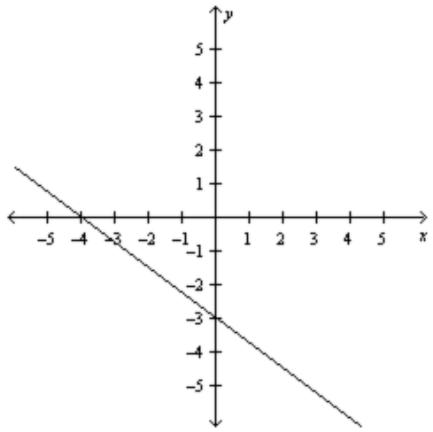
11. Graph each equation using the slope and the y-intercept.

$y = -3x - 3$

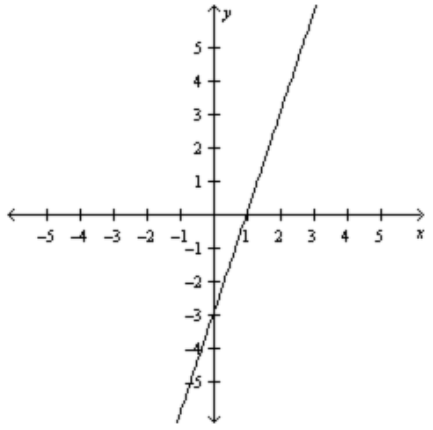
a.



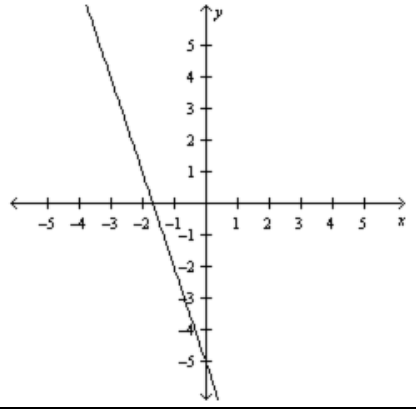
b.



c.



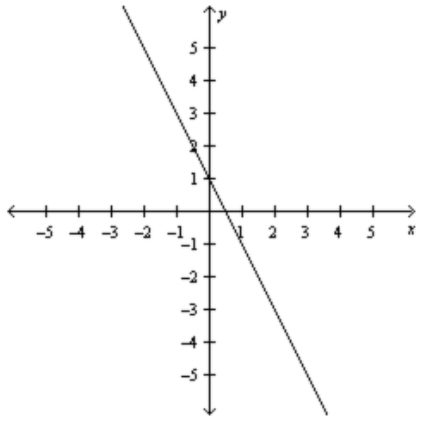
d.



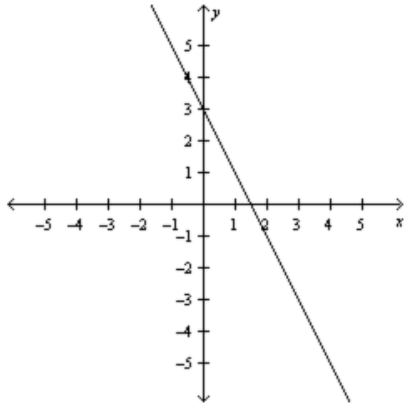
12. Graph each equation using the slope and the y-intercept.

$y = -2x + 3$

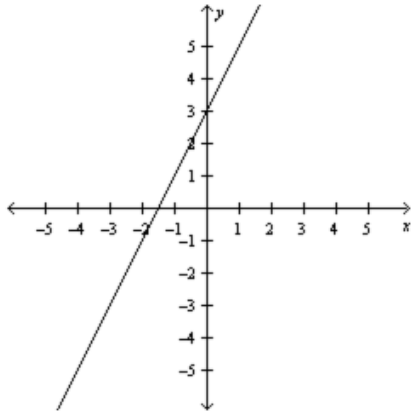
a.



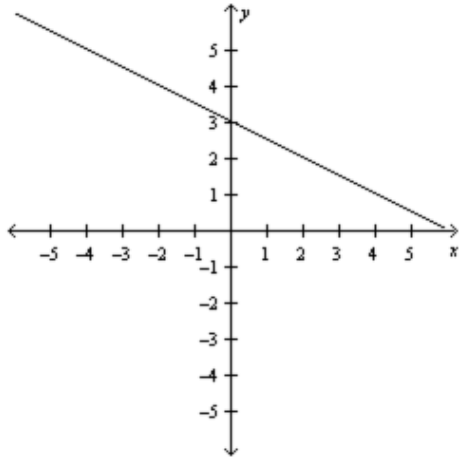
b.



c.



d.



13. A T-shirt company charge $15.00 as an initial fee plus $5.00 per T-shirt. For the month of August, the company reduces its T-shirt cost to $4.50 per T-shirt. Write an equation in slope-intercept form that represents the new cost *y* for *x* T-shirts ordered during the month of August. What is the equation?

a. $y = 15.00 - 4.50x$ b. $y = 15.00 + 4.50x$
c. $y = 15.00 - 5x$ d. $y = 15.00 + 5x$

14. Intercon Phone Company's normal rates are $10.00 as an initial fee plus $1.00 per minute for each call. For the month of June, the company reduces its call rates to $0.75 per minute. Write an equation in slope-intercept form that represents the new cost *y* for *x* minutes of calls during the month of June. What is the equation?

a. $y = 10x + 0.75$ b. $y = 10.00 + 75x$
c. $y = 10x + 75$ d. $y = 10.00 + 0.75x$

15. Hannah can complete 4 math problems per minute. Write and solve a direct variation equation to find how many math problems she can expect to complete in 15 minutes.

a. $y = 4x$; 60 problems
b. $y = 4 + x$; 19 problems
c. $y = 4x$; 62 problems
d. none of these

16. At Store A, balloons are sold individually. The cost "*y*" is equivalent to the price of individual balloons times "*x*" balloons purchased. Find the equation that represents the data in this table.

$\#\ of\ balloons\ (x)$	6	12	18	24
$\$\ cost\ (y)$	7.5	15	22.5	30

(hint: $y = mx$*)*

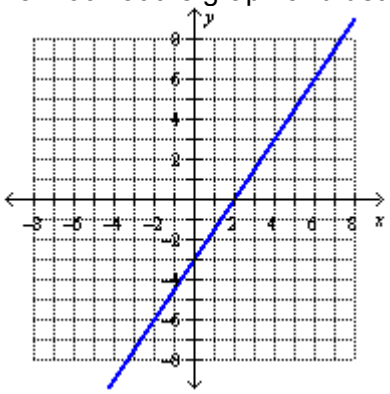
a) $y = 6x$
b) $y = 1.25x$
c) $y = 1.5x$
d) $y = 7.5x$

17. Determine the y-intercept

x	−4	−2	0	2
y	5	−1	−7	−13

a. b = 5 b. b = -1
c. b = -7 d. b = -13

18. Look at the graph and determine the y-intercept.



A. b = 2 B. b = -2 C. b = 3 D. b = -3

19. The entrance fee to the national park is $17. A campsite fee is $15 per night. The total cost *y* for the camping trip for *x* nights can be represented by what equation.

A. $y = 15x + 17$. B. $y = 17x + 15$
C. $17 = x + 15$ D. $x = 15y + 17$

20. Louise is collecting can tabs for charity. She already has 35 collected and intends to collect 4 each week. The total tabs *y* for the *x* weeks can be represented by what equation.

A. $y = 35x + 4$. B. $y = 4x + 35$
C. $4x + y = 35$ D. $x = 4y + 35$