

Name: _____

Date: _____

LINEAR FUNCTIONS REVIEW SHEET!



Part I Questions

1. Carly walks 30 feet in seven seconds. At this rate, how many minutes will it take for Carly to walk a mile if there are 5,280 feet in one mile?

- (1) 17.3 minutes
- (2) 12.8 minutes
- (3) 20.5 minutes
- (4) 27.8 minutes

$$\frac{30 \text{ ft}}{7 \text{ sec}} = \frac{5280 \text{ ft}}{x \text{ sec}}$$

2. Which of the following points lies on the graph of the line $y = 5x - 2$?

- (1) (0, 4) ✗
- (2) (2, 8) ✗
- (3) (-1, 2) ✗
- (4) (4, 10) ✗

$$\frac{30x}{30} = \frac{36960}{30} \quad x = \frac{1232}{60}$$

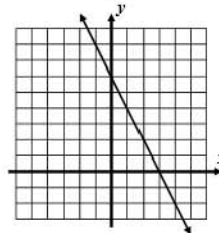
$$y = 5x - 2$$

$$8 = 5(2) - 2$$

$$8 = 10 - 2$$

3. Which of the following is the equation of the line shown graphed below?

- (1) $y = \frac{1}{2}x + 3$
- (2) $y = -3x + 4$
- (3) $y = 6x - 2$
- (4) $y = -2x + 6$



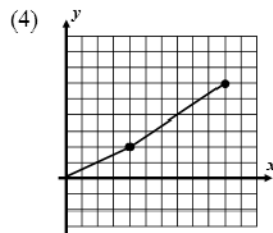
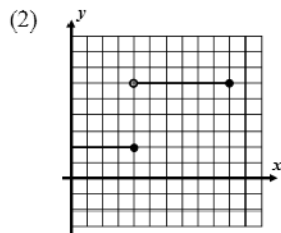
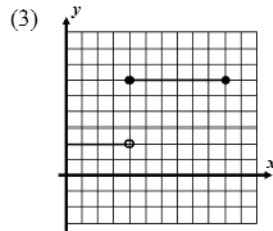
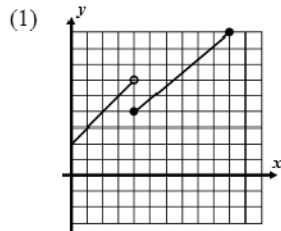
4. A cell phone plan charges a flat monthly fee of \$15.25 and an additional \$0.07 per hour spent talking on the phone. Which of the following functions gives the cost, c , of the cell phone plan as a function of the number of hours, h , spent talking?

- (1) $c = .07h + 15.25$
- (2) $c = 15.25h + .07$
- (3) $c = .07(h + 15.25)$
- (4) $c = 15.25(h + .07)$

5. Which of the following is the slope of the line that passes through the points $(-3, 5)$ and $(1, 15)$?

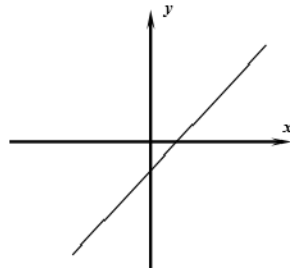
- (1) 5
- (2) -3
- (3) $\frac{7}{3}$
- (4) $\frac{5}{2}$

6. The function $f(x) = \begin{cases} 2 & 0 \leq x \leq 4 \\ 6 & 4 < x \leq 10 \end{cases}$ is shown graphed in which choice below?



7. Which equation below could describe the graph shown?

- (1) $y = 2x + 4$
- (2) $y = -5x + 3$
- (3) $y = x - 2$
- (4) $y = -\frac{1}{2}x - 1$

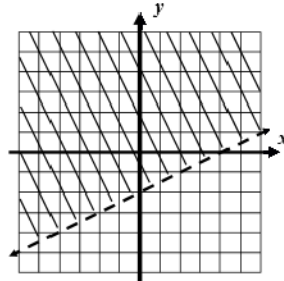


8. Which point is a solution to the system of equations shown below?

- | | | |
|------------|------------|---------------|
| (1) (3, 7) | (3) (1, 5) | $y = 4x - 5$ |
| (2) (0, 1) | (4) (2, 3) | $y = -2x + 7$ |

9. Which of the following inequalities is shown graphed below?

- (1) $y < 2x - 2$
- (2) $y > \frac{1}{2}x - 2$
- (3) $y \geq \frac{1}{2}x + 4$
- (4) $y \leq 2x + 4$



10. If $f(x) = |x - 3| + 7$, then which of the following is the value of $f(1)$?

- (1) 11
- (2) 13
- (3) 9
- (4) 17

11. A line with a slope of 5 passes through the point (3, 8). Which of the following is the value of its y-intercept?

- (1) -7
- (2) -1
- (3) 8
- (4) 15

Free Response Questions

12. Write the equation of the line, in $y = mx + b$ form, that passes through the points (-2, -15) and (5, 13). Show how you arrived at the values of m and b .

↓ ↓
↑ ↑ ↑ ↑
x y

M →

$y = mx + b$

slope = $\frac{\Delta y}{\Delta x} = \frac{-15 - 13}{-2 - 5} = \frac{-28}{-7} = 4$

$y = 4x + b$

$13 = 4(5) + b$

$13 = 20 + b$

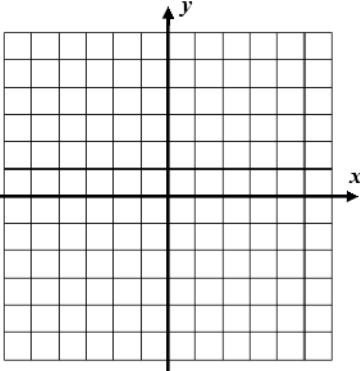
$\underline{-20} \quad \underline{-20} \quad -7 = b$

$y = 4x - 7$

13. Graph each of the following lines on the grid below. Label each with its equations.

$y = x - 2$
 $2y + 3x = 4$
 $y = -4$ *horiz.*
 $x = -2$ *vertical.*

$2y + 3x = 4$
 $-3x \quad -3x$
 $\frac{2y}{2} = \frac{-3x + 4}{2}$
 $y = -\frac{3}{2}x + 2$



14. Show that the point (4, 11) is a solution to the system shown below.

$y = x + 7$ and $y < 4x - 2$

15. People are entering a stadium at a steady rate of 32 people per minute. When the gates open, there are already 46 people in the stadium. No one leaves the stadium for the first hour after the gates have opened.

(a) How many people will be in the stadium 30 minutes after it opens? Show the calculations that lead to your answer.

$$y = mx + b$$

$$y = 32x + 46$$

$$y = 32(30) + 46$$

$$= 1,006 \text{ people}$$

(b) Write a linear equation for the number of people, n , as a function of the time in minutes, m , since the gates were opened.

$$n = 32m + 46$$

(c) After one hour, no additional people enter, but some start to leave. If it takes them a total of 4 hours to leave the stadium, what is the average rate at which they leave, in people per hour? Show the calculations that lead to your answer.

$$32(60) + 46$$

$$1,966 \text{ people}$$

$$\frac{1,966 \text{ people}}{4 \text{ hours}} = 491.5 \text{ people per hour}$$

DOMAIN

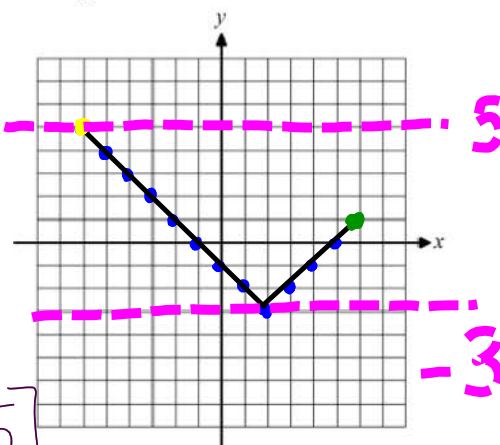
↓ ↓

16. Graph the function $f(x) = |x - 2| - 3$ on the interval $-6 \leq x \leq 6$ on the grid below.

x	y
-6	5
-5	4
-4	3
-3	2
-2	1
-1	0
0	-1
1	-2
2	-3
3	-2
4	-1

x	y
-1	0
0	-1
1	-2
2	-3
3	-2

x	y
4	-1
5	0
6	1



What is the range of this function over this domain interval?

NORMAL FLOAT AUTO REAL RADIAN MP
PRESS + FOR Δ Tb1

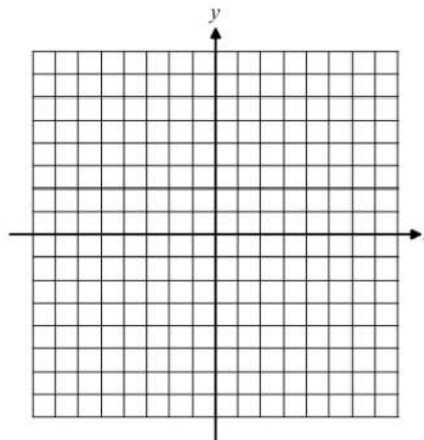
X	Y1			
-6	5			
-5	4			
-4	3			
-3	2			
-2	1			
-1	0			
0	-1			
1	-2			
2	-3			
3	-2			
4	-1			

X=-6

$$[-3, 5]$$

closed circles mean bracket!

17. Graph the linear inequality $y > 2x + 3$ on the grid below. State one point that lies in its solution set.



BONUS:

13. If a line is drawn parallel to the y -axis through the point $(4, 2)$, then its equation would be

- (1) $y = x + 2$
- (2) $y = 2$
- (3) $y = 4x + 2$
- (4) $x = 4$