

1) Draw in figures 0, 4, and 5 for the following linear patterns. Then, write an equation describing it.

a) Let  $x$  be the figure number and let  $y$  be the number of sticks.



Fig. 0

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Equation: \_\_\_\_\_

b) Let  $x$  be the figure number and let  $y$  be the total number of tiles.

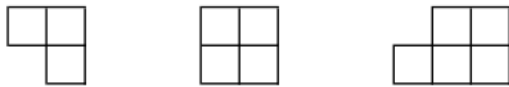


Fig. 0

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Equation: \_\_\_\_\_

2) Fill in all empty cells in the following tables.

0	-5
1	-1
2	3
3	
4	
$x$	

a)

0	
1	7
2	4
3	1
4	
$x$	

b)

0	
1	6
2	
3	
4	7
$x$	

c

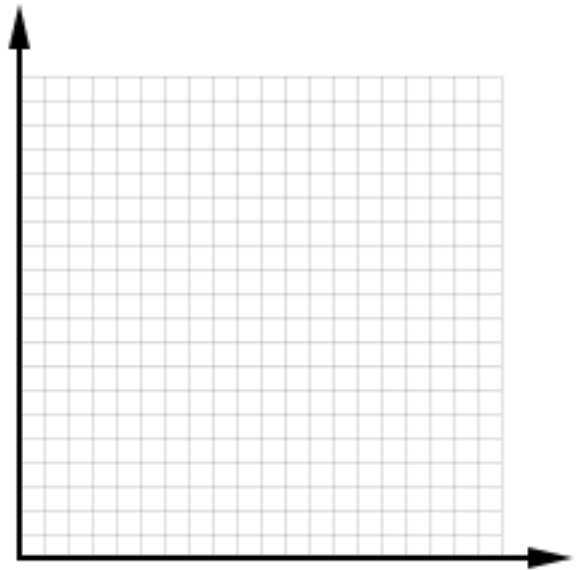
3) Analyze the following linear equations that represent tile patterns. For each one, state the starting number of tiles (at Figure 0), the "grow-by" number, and draw a pattern that might be represented by this equation, showing figures 0 through 4.

a)  $y = 3 + 2x$

b)  $y = 1 + 5x$

4) Christine bought a used car for \$1500. Every year, the value of the car is projected to decrease by \$200. Let  $x$  be the number of years that Christine has owned the car and let  $y$  be the value of the car.

- a) Write an equation relating  $x$  and  $y$ . \_\_\_\_\_  
 b) Find the  $x$  and  $y$  intercepts.



- c) Graph this equation.  
 d) Explain the meaning of each intercept.

Review:

5) Give the slope for each line. Show all work.

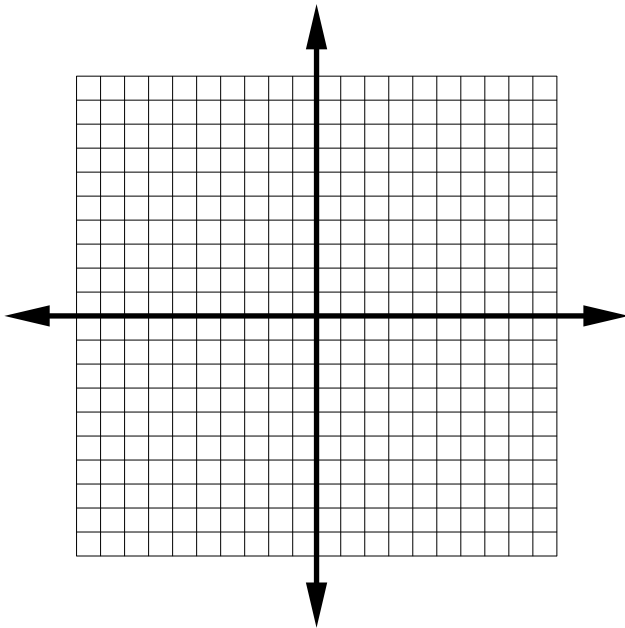
a)  $x = -3$

b)  $2x + y = 7$

c) Passes through  $(2, -4)$  and  $(-1, 2)$

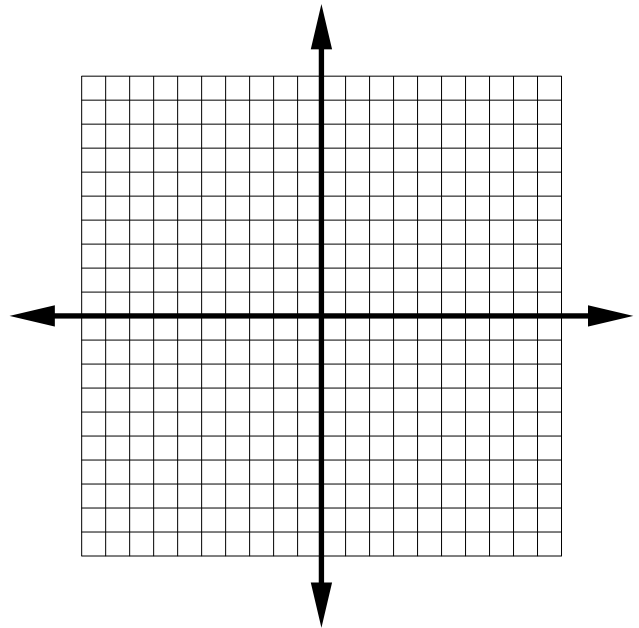
6) Graph the following lines and find their slope.

a)  $2y + 5x = 10$



Slope = \_\_\_\_\_

b)  $y = -4$



Slope = \_\_\_\_\_

- 7) Gabe was on a trip to France. He went to a bank there and exchanged \$250 for €169 (Euros).
- a) Write an equation that would help someone convert from dollars to Euros. Be sure to define  $x$  and  $y$ .
- b) Write an equation that would help someone convert from Euros to dollars. Be sure to define  $x$  and  $y$ .
- 8) Simplify the following expressions.
- a)  $5 - 4(3 - 2x)$       b)  $-3(2x - 6) - (8 - 4x)$       c)  $-8x(3x - 5) - 4(9 - x)$

Answer Key:

- |     |   |     |  |
|-----|---|-----|--|
| 1a) | $y = 2 + 6x$  | 5a) | undefined  |
| b)  | $y = 2 + x$   | b)  | -2   |
|     |   | c)  | -2   |
| 2a) | 7, 11, $-5 + 4x$  | 6a) | $-\frac{5}{2}$                                     |
| b)  | 10, -2, $10 - 2x$   | b)  | 0  |
| c)  | $5\frac{2}{3}, 6\frac{1}{3}, 6\frac{2}{3}, 5\frac{2}{3} + \frac{1}{3}x$   |     |  |
| 3a) | starting number: 3<br>grow-by number: 2   | 7a) | $y = 0.676x$ , where $y$ = Euros and $x$ = dollars |
| b)  | starting number: 1<br>grow-by number: 5   | b)  | $y = 1.48x$ , where $y$ = dollars and $x$ = Euros  |
| 4a) | $y = 1500 - 200x$   | 8a) | $-7 + 8x$  |
| b)  | (0, 1500) and (7.5, 0)  | b)  | $-2x + 10$   |
| d)  | $y$ -intercept means that the car's initial value was \$1500.<br>$x$ -intercept means that it took 7.5 years for the car to be worthless. | c)  | $-24x^2 + 44x - 36$                                |