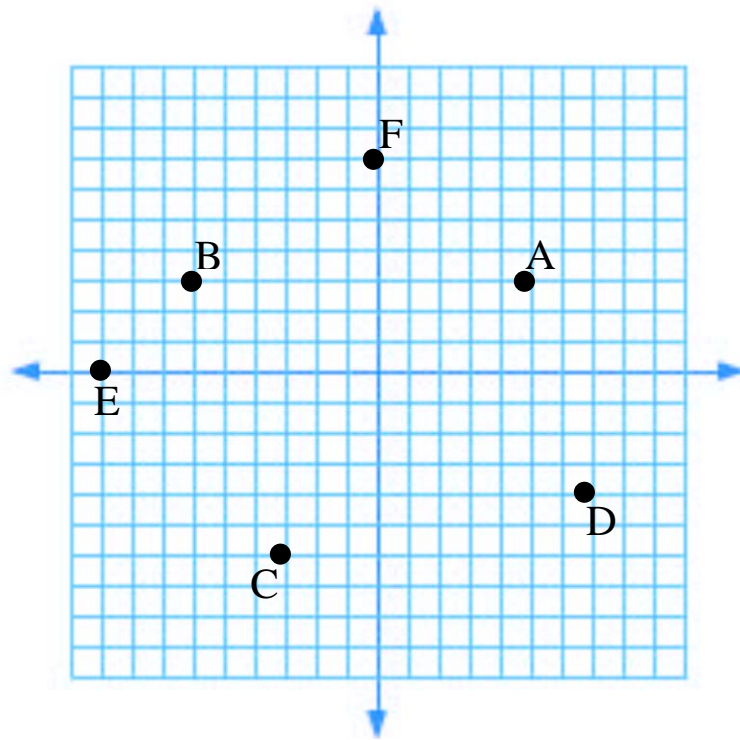


## Linear Equations, Graphs, and Applications



1. Record the coordinates and the quadrants (or axes) of the following points.

F \_\_\_\_\_

B \_\_\_\_\_

D \_\_\_\_\_

2. On the same plane above, label these additional points. Give their quadrants (or axes) below.

G (-3, -4.5) \_\_\_\_\_

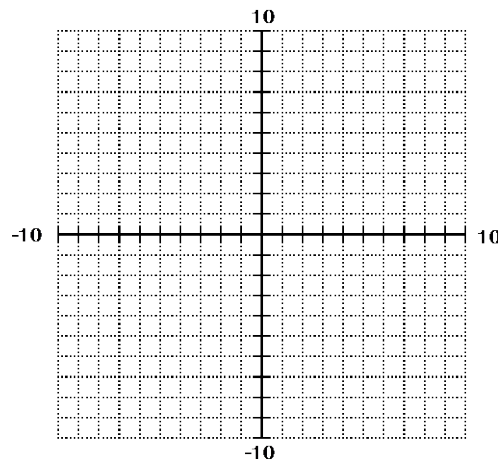
H (5, 0) \_\_\_\_\_

I (-10, 10) \_\_\_\_\_

J (2, 2) \_\_\_\_\_

3. Complete the table below, and graph the line.  
 $y = -2x$

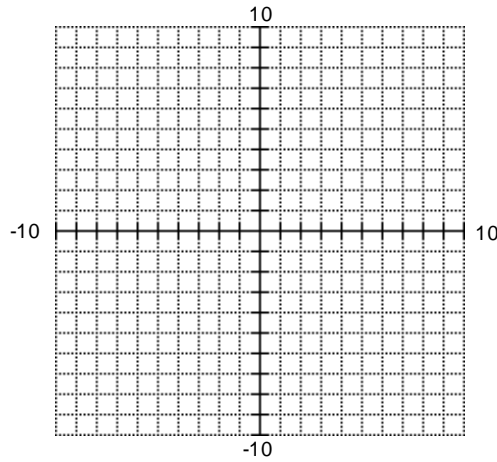
<b>x</b>	<b>y</b>
-3	
0	
	0



4. Complete the table below, and graph the line.

$$y = \frac{1}{3}x + 1$$

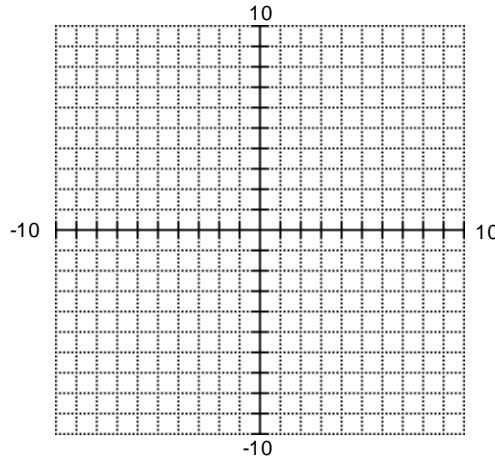
<b>x</b>	<b>y</b>
-3	
0	
3	



5. Complete the table below, and graph the line.

$$y = -x + 4$$

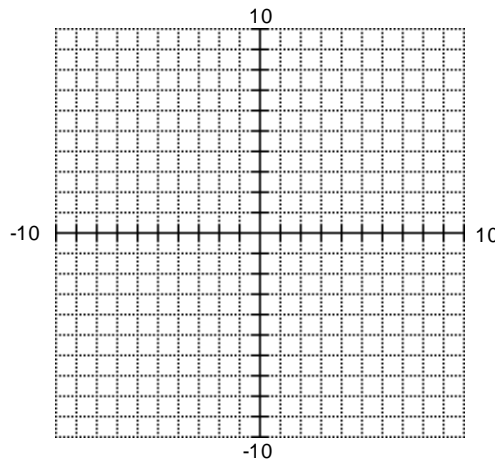
<b>x</b>	<b>y</b>
0	
1	
2	



6. Complete the table below, and graph the line.

$$y = \frac{1}{2}x - 6$$

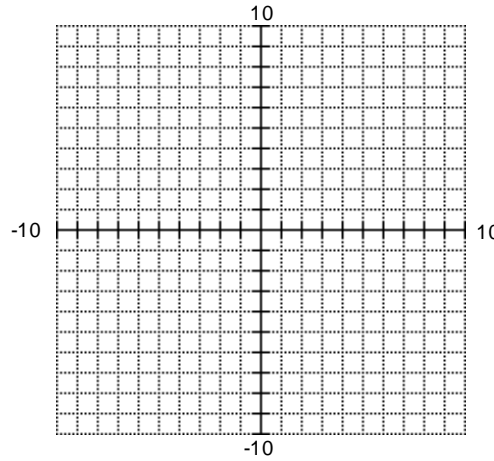
<b>x</b>	<b>y</b>
-2	
0	
2	
4	



7. Complete the table below, and graph the line.

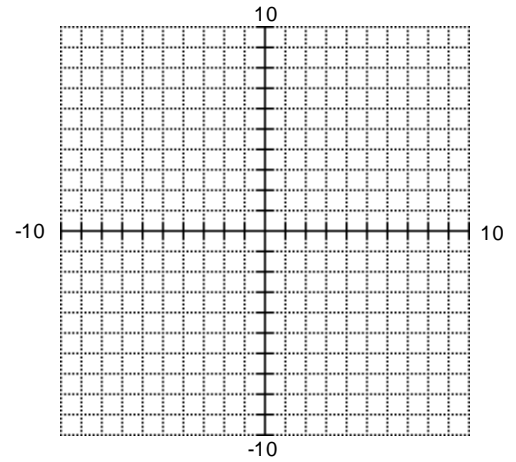
$$-4x + 2y = 8$$

<b>x</b>	<b>y</b>



8. Complete the tables below, and graph the lines.

<b>(a)</b>		<b>(b)</b>	
<b>x = 5</b>		<b>y = -2</b>	
<b>x</b>	<b>y</b>	<b>x</b>	<b>y</b>



The graph in (a) is \_\_\_\_\_ ; the graph in (b) is \_\_\_\_\_.

9. Change the linear equation  $y - 2 = 3(x + 1)$  to

(a) slope-intercept form

(b) general form

(c) What is the slope of this line? \_\_\_\_\_

(d) Give the ordered pair for any point on the line. \_\_\_\_\_

(e) Give the intercepts.

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

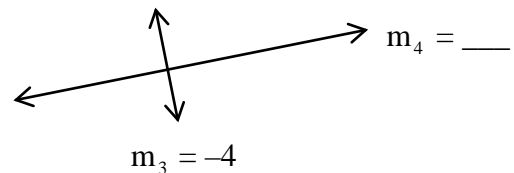
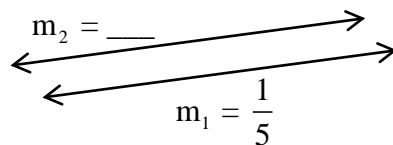
10. Complete the table for the following “special cases”.

Equation	Slope	x-intercept	y-intercept
(a) $y = -1$			
(b) $x = 7$			
(c) $y = x$			

11. For parallel lines, the slopes are \_\_\_\_\_, and the y-intercepts are different.

For perpendicular lines, the slopes are \_\_\_\_\_ and \_\_\_\_\_ . Another way to express this is the product of their slopes is \_\_\_\_\_ .

On the diagrams below put a reasonable set of slope numbers on each line.



12. An **application** involving linear functions involves the relationship between Celsius and Fahrenheit temperature measurements. A common formula (in slope-intercept form) is \_\_\_\_\_ .

Another application involves uniform motion. Write the linear formula relating distance (d) and time (t) for a fixed rate of speed,  $r = 72$  mph.

\_\_\_\_\_

Another common application involves cost structures. For example, an automobile mechanic may charge \$148 for parts and \$50 an hour for labor. Write the corresponding formula, with C for cost and t for time in hours.

\_\_\_\_\_

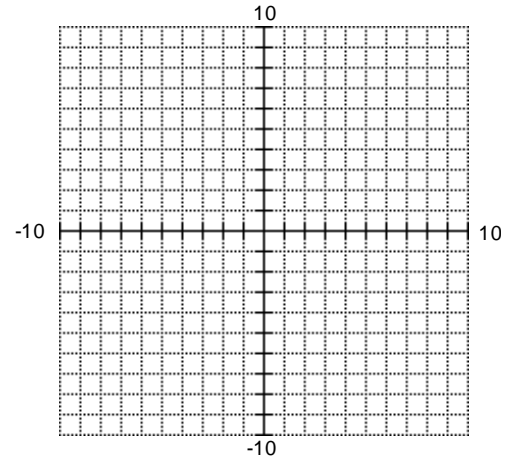
13. Determine whether the given function is linear or nonlinear. If it is linear, determine the slope.

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x	y
-3	12
0	10
3	8
6	6

14. Graph the line with slope  $-\frac{1}{4}$  that passes through the point given by  $(-4, 7)$ .

Then find its equation in slope-intercept form.



15. For the graph of  $y = -2x + 4$ , find the intercepts. Use ordered pairs.

x-intercept \_\_\_\_\_

y-intercept \_\_\_\_\_

16. For the line given by the equation  $2x - 3y = 9$ , find the

slope \_\_\_\_\_

x-intercept \_\_\_\_\_

y-intercept \_\_\_\_\_

17. Chelsea earns \$350 per week plus 2.5% of her weekly sales. For a full week of hard (but satisfying!) work, she earned a total of \$567.50. What were her sales for the week? Use a linear equation to solve this application.
18. Find the equation of the line (in slope-intercept form)
- (a) Horizontal and containing the point  $(-5, 3)$
  
  
  
  
  
  
  
  
  
  
  - (b) Perpendicular to  $y = 3x - 5$  and passing through the point  $(3, -2)$ .
  
  
  
  
  
  
  
  
  
  
  - (c) Passing through the points  $(3, 4)$  and  $(-3, 0)$

**Do your best! Rise to the challenge! Live and learn!**