

1. Solve these equations:

a.  $7x + 2 = x - 16$

b.  $11x - 16 = -5x - 8$

c.  $-3(x - 16) = 12 - x$

d.  $\frac{1}{4}x - 5 = \frac{1}{3}x + 2$

e.  $2(x + 9) - x = 36$

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

g.  $4x - 3(x - 2) = 5(2x - 3) + 6x$

h.  $\frac{3}{7}(x - 14) = \frac{1}{2}(x + 4)$

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2. Solve for the indicated variable:

a.  $I = Prt$  Solve for  $t$ .

b.  $3x - 5y = 11$  Solve for  $x$ .

c.  $V = lwh$  Solve for  $w$ .

d.  $A = \frac{a+b+c+d}{4}$  Solve for  $d$ .

e.  $u = 2v + 2w$  Solve for  $v$ .

f.  $5x + 4y = 8$  Solve for  $y$ .

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3. Solve these absolute value equations:

a.  $|2x + 1| + 6 = 13$

b.  $|2y| = -4$

c.  $|3x - 2| = 10$

d.  $|3x + 4| + 3 = 10$

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4. Write an algebraic equation for each problem, then solve it:

a. If 17 is subtracted from 3 times a number, the result is 220. Find the number.

b. Five times a certain number plus 23 is 368. Find the number.

c. A rectangle has perimeter of 126 inches. The width is 15 inches less than its length. Find the length and width of the rectangle.

d. The length of a rectangle is 17 feet more than its width. The perimeter of the rectangle is 90 feet. Find the length and width of the rectangle.

e. A driver averaged 43 miles per hour and took 12 hrs to travel between cities. What is the distance between the two cities?

f. At an important meet, Hassan won the men's 100 meters in 11.27 seconds. Hassan ran at an average rate of how many meters per second?

g. One number is 39 less than another number. If the sum of the two numbers is 109, find the two numbers.

h. Jackie has a jar with dimes and quarters in it. The jar has 6 more quarters than it has dimes. If the value of the coins is \$6.05, how many quarters are in the jar?

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5. Solve and graph on the number line at the right. Give all solutions in interval notation.

a.  $x \geq -3$  \_\_\_\_\_ Interval:

b.  $x < 5$  \_\_\_\_\_ Interval:

c.  $x + 5 \geq 3$  \_\_\_\_\_ Interval:

d.  $-\frac{1}{5}x > 7$  \_\_\_\_\_ Interval:

e.  $2(1+x) - 4x > 6x + 8$  \_\_\_\_\_ Interval:

f.  $5(x+1) \leq 3(x+5)$  \_\_\_\_\_ Interval:

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6. Solve and graph these absolute value inequalities on the number line given to the right of the problem. Give all solutions in interval notation.

a.  $|3x| < 27$  \_\_\_\_\_ Interval:

b.  $|2x+1| \leq 5$  \_\_\_\_\_ Interval:

c.  $|5x-7| > 3$  \_\_\_\_\_ Interval:

d.  $|3x-2| + 5 \geq 8$  \_\_\_\_\_ Interval:

e.  $|x+4| - 6 > 5$  \_\_\_\_\_ Interval:

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7. On a piece of graph paper, set up a coordinate system for each problem, and plot the given points. Determine in which quadrant or on what axis each point lies.

a. P (-7, 5) Q (0, -6) R (5, -4) S (-4, 0)

b. K (15, 20) L (-25, -15) M (-5, 10) N (10, -20)

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8. Is the ordered pair a solution for the given equation?

a. (-8, 2),  $6x + 4y = -40$

b. (-4, -7),  $-3x - 2y = -26$

c. (3, 8),  $-2x + 7y = 62$

d. (9, -3),  $5x - 3y = 54$

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9. Complete each table with ordered pairs that are solutions.

a.  $x + 2y = 9$

X	Y
-1	
	0
1	

b.  $x - 2y = -8$

X	Y
-2	
0	
	5

c.  $y = -\frac{1}{2}x + 5$

X	Y
	6
0	
	4

10. Set up a table of values for these equations and then use **graph paper** to **graph** them:

a.  $x = 2$

b.  $y = -5$

c.  $x = -7$

d.  $y = -2x$

e.  $y = -3x + 4$

f.  $2x - y = 6$

11. Find the **x and y intercepts and** a third point for these equations and **graph** the line using **graph paper**. Give two coordinates for each point.

a.  $x - 2y = -6$

x intercept: \_\_\_\_\_ y intercept: \_\_\_\_\_

b.  $6x - 3y = -12$

x intercept: \_\_\_\_\_ y intercept: \_\_\_\_\_

c.  $y = \frac{4}{5}x$

x intercept: \_\_\_\_\_ y intercept: \_\_\_\_\_

d.  $y = -2x + 10$

x intercept: \_\_\_\_\_ y intercept: \_\_\_\_\_

12. Find the slope of the line determined by the given points. Write the equation of the lines in **Slope Intercept form** ( $y = mx + b$ ).

a.  $(6,5)$  and  $(4,2)$

b.  $(2,7)$  and  $(-5,-7)$

c.  $(6,2)$  and  $(6,-5)$

d.  $(3,4)$  and  $(2,4)$

13. Write the equation of the line in Slope Intercept form. ( $y = mx + b$ ). Graph the line.

- a. Slope = -3 ; passing through (0,4)      b. Slope = 2 ; passing through (-2, -4)
- c. Slope =  $\frac{3}{4}$  ; passing through (-4,6)      d. Slope =  $-\frac{1}{2}$  ; passing through (-6,5)
- 

14. Determine the slope and the y- intercept for these lines. Use graph paper and graph the lines.

- a.  $y = -2x - 3$       b.  $2x + 3y = 3$
- c.  $5x - 3y = 15$       d.  $-x - 3y = 9$
- 

15. Determine if the two given lines parallel, perpendicular or neither. Do not graph the equations. Use **Slope Intercept form**.

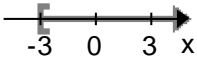
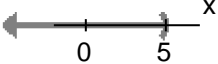
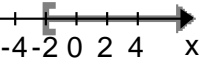
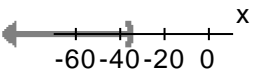
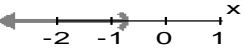
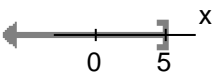
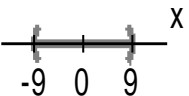
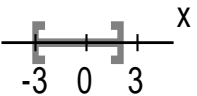
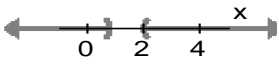
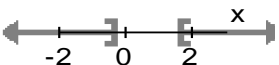
- a.  $y = \frac{2}{3}x + 7$  and  $y = -\frac{3}{2}x - 1$       b.  $5x - 2y = 6$  and  $-10x + 4y = 5$
- c.  $y = \frac{3}{4}x - 1$  and  $6x - 8y = -8$       d.  $y = -\frac{1}{5}x - 3$  and  $5x + y = 9$
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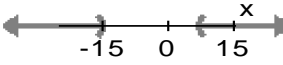
16. Use the **Point-Slope form** ( $y - y_1 = m(x - x_1)$ ) to write the equations of the lines. Write your answer in **Slope Intercept form** ( $y = mx + b$ ).

- a. The line that passes through (4,-1) and (-2,5)
- b. The line that passes through (-6,1) and is perpendicular to the line whose equation is  $x + 3y = 9$ .
- c. The line that passes through (2,-4) and is perpendicular to a line with a slope of -2.
- d. The line that passes through (-3,1) and is parallel to the line whose equation is  $y = -2x + 4$ .
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17. Use **graph paper**, and graph the solutions to these inequalities.

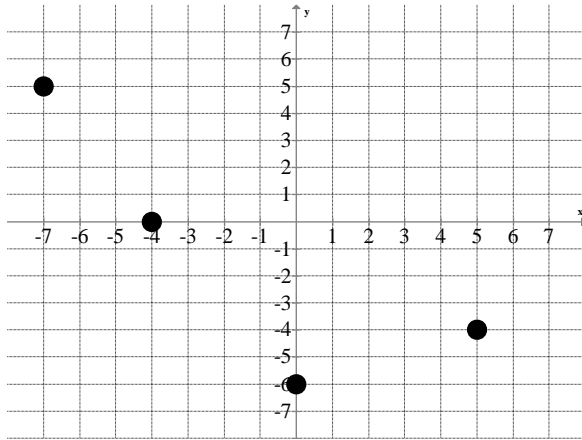
- a.  $x + 5y \leq 10$       b.  $y > -\frac{3}{4}x - 2$
- c.  $x - y \geq -4$       d.  $-3x - 2y > -8$

1.a) $x = -3$	1.b) $x = \frac{1}{2}$	1.c) $x = 18$	1.d) $x = -84$
1.e) $x = 18$	1.f) $x = -5$	1.g) $x = \frac{7}{5}$	1.h) $x = -112$
2.a) $t = \frac{I}{Pr}$	2.b) $x = \frac{5}{3}y + \frac{11}{3}$	2.c) $w = \frac{V}{lh}$	2.d) $d = 4A - a - b - c$
2.e) $v = \frac{u-2w}{2}$ or $v = \frac{u}{2} - w$	2.f) $y = -\frac{5}{4}x + 2$	3.a) $x = -4,$ $x = 3$	3.b) No Solution
3.c) $x = -\frac{8}{3},$ $x = 4$	3.d) $x = -\frac{11}{3},$ $x = 1$	4.a) $3x - 17 = 220;$ $x = 79$ 4.b) $5n + 23 = 368;$ $n = 69$	4c) $2L + 2(L - 15) = 126$ $L = 39; w = 24$ 4d) $2(w + 17) + 2w = 90$ $W = 14; L = 31$
4.e) $D = 43 \cdot 12$ $D = 516$ 4.f) $100 = 11.27R$ $R = 8.87$	4.g) $x + x - 39 = 109$ $x = 74$ and $x - 39 = 35$ 4h) $.10x + .25x(x + 6) = 6.05$ $x = 13; x + 6 = 19$	5.a) $x \geq -3; [-3, \infty)$ 	5.b) $x < 5; (-\infty, 5)$ 
5.c) $x \geq -2;$ $[-2, \infty)$ 	5.d) $x < -35;$ $(-\infty, -35)$ 	5.e) $x < -\frac{3}{4};$ $(-\infty, -\frac{3}{4})$ 	5.f) $x \leq 5;$ $(-\infty, 5]$ 
6.a) $x > -9$ and $x < 9$ $(-9, 9)$ 	6.b) $x \geq -3$ and $x \leq 2$ $[-3, 2]$ 	6.c) $x < \frac{4}{5}$ or $x > 2$ $(-\infty, \frac{4}{5}) \cup (2, \infty)$ 	6.d) $x \leq -\frac{1}{3}$ or $x \geq \frac{5}{3}$ $(-\infty, -\frac{1}{3}] \cup [\frac{5}{3}, \infty)$ 

<p>6.e) <math>x &lt; -15</math> or <math>x &gt; 7</math>  <math>(-\infty, -15) \cup (7, \infty)</math></p> 	<p>7.a) P quadrant II;                      Q on y-axis;                      R quadrant IV;                      S on x-axis</p>	<p>7.b) K quadrant I;                      L quadrant III;                      M quadrant IV;                      N quadrant II</p>	<p>8.a) Yes</p> <hr/> <p>8.b) No</p>																								
<p>8.c) No</p>	<p>9.a)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>5</td> </tr> <tr> <td>9</td> <td>0</td> </tr> <tr> <td>1</td> <td>4</td> </tr> </tbody> </table>	X	Y	-1	5	9	0	1	4	<p>9.b)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>3</td> </tr> <tr> <td>0</td> <td>4</td> </tr> <tr> <td>2</td> <td>5</td> </tr> </tbody> </table>	X	Y	-2	3	0	4	2	5	<p>9.c)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>6</td> </tr> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>2</td> <td>4</td> </tr> </tbody> </table>	X	Y	-2	6	0	5	2	4
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<p>8.d) Yes</p>	<p>10.d)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>2</td> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>-2</td> </tr> </tbody> </table>	X	Y	-1	2	0	0	1	-2	<p>10.e)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>10</td> </tr> <tr> <td>0</td> <td>4</td> </tr> <tr> <td>1</td> <td>1</td> </tr> </tbody> </table>	X	Y	-2	10	0	4	1	1	<p>10.f)</p> <table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>-8</td> </tr> <tr> <td>0</td> <td>-6</td> </tr> <tr> <td>2</td> <td>-2</td> </tr> </tbody> </table>	X	Y	-1	-8	0	-6	2	-2
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<p>10.a) Vertical line at <math>x = 2</math></p>	<p>10.b) Horizontal line at <math>y = -5</math></p>	<p>10.c) Vertical line at <math>x = -7</math>                      (See Graphs)</p>																									
<p>11.a) x intercept : <math>(-6, 0)</math>                      y intercept: <math>(0, 3)</math></p>	<p>11.b) x intercept: <math>(-2, 0)</math>                      y intercept: <math>(0, 4)</math></p>	<p>11.c) x intercept: <math>(0, 0)</math>                      y intercept: <math>(0, 0)</math></p>	<p>11.d) x intercept: <math>(5, 0)</math>                      y intercept: <math>(0, 10)</math></p>																								
<p>12.a) <math>m = \frac{3}{2}</math>  <math>y = \frac{3}{2}x - 4</math></p>	<p>12.b) <math>m = 2</math>  <math>y = 2x + 3</math></p>	<p>12.c) <math>m = \text{undefined};</math>  <math>x = 6</math></p>	<p>12.d) <math>m = 0;</math>  <math>y = 4</math></p>																								
<p>13.a) <math>y = -3x + 4</math></p>	<p>13.b) <math>y = 2x</math></p>	<p>13.c) <math>y = \frac{3}{4}x + 9</math></p>	<p>13.d) <math>y = -\frac{1}{2}x + 2</math></p>																								
<p>14.a) <math>m = -2;</math>                      y intercept: <math>(0, -3)</math></p>	<p>14.b) <math>m = -\frac{2}{3};</math>                      y intercept: <math>(0, 1)</math></p>	<p>14.c) <math>m = \frac{5}{3};</math>                      y intercept: <math>(0, -5)</math></p>	<p>14.d) <math>m = -\frac{1}{3};</math>                      y intercept: <math>(0, -3)</math></p>																								
<p>15.a) <math>m_1 = \frac{2}{3};</math>  <math>m_2 = -\frac{3}{2}</math>                      The lines are Perpendicular</p>	<p>15.b) <math>m_1 = \frac{5}{2};</math>  <math>m_2 = \frac{10}{4} = \frac{5}{2}</math> The lines are Parallel</p>	<p>15.c) <math>m_1 = \frac{3}{4};</math>  <math>m_2 = \frac{-6}{-8} = \frac{3}{4}</math>                      The lines are Parallel</p>	<p>15.d) <math>m_1 = -\frac{1}{5};</math>  <math>m_2 = -5</math>                      The lines are Neither Parallel nor Perpendicular</p>																								
<p>16.a) <math>y = -x + 3</math></p>	<p>16.b) <math>y = 3x + 19</math></p>	<p>16.c) <math>y = \frac{1}{2}x - 5</math></p>	<p>16.d) <math>y = -2x - 5</math></p>																								

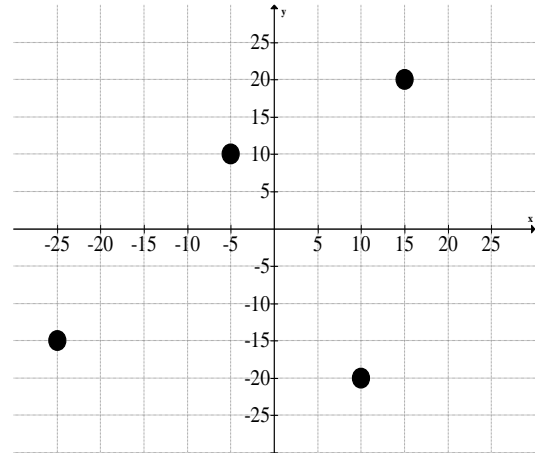
7a. Points

P(Quad II), S(x-Axis) Q(y-Axis), R (Quad 4)

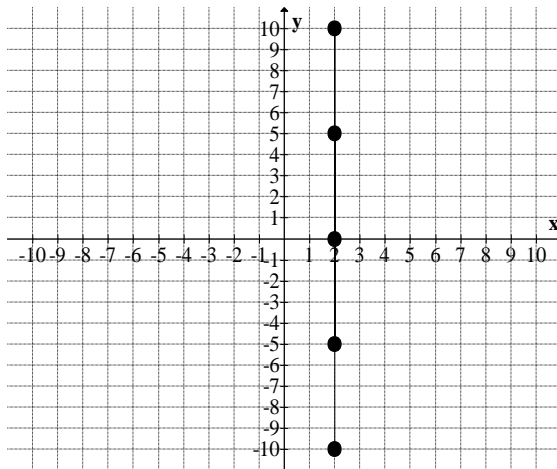


7.b. Points

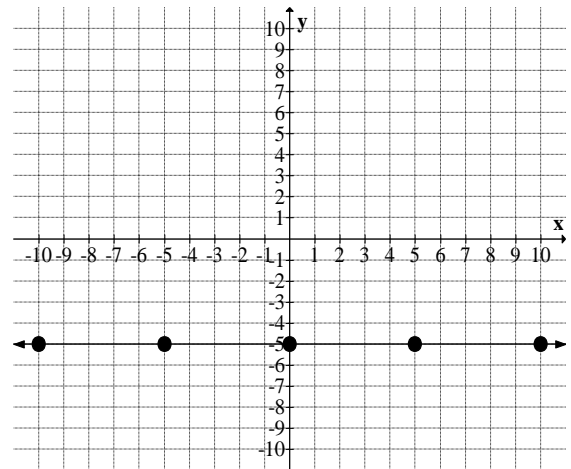
L(Quad III), M(Quad 2), N(Quad IV), K (Quad I)



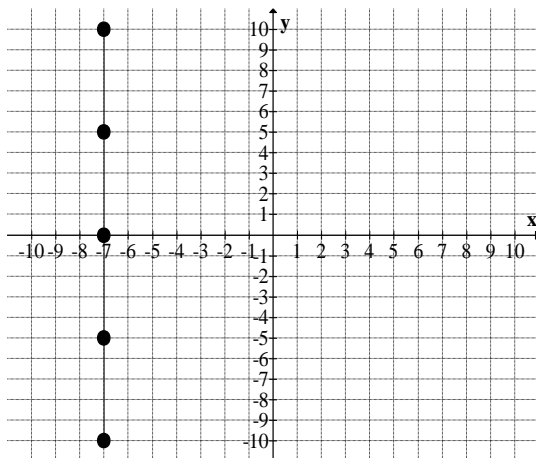
10.a.  $x = 2$



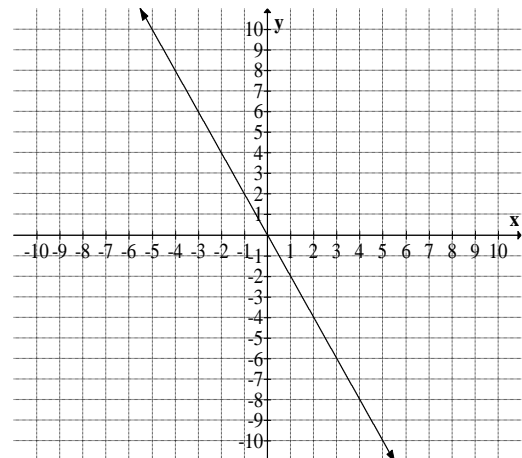
10.b.  $y = -5$



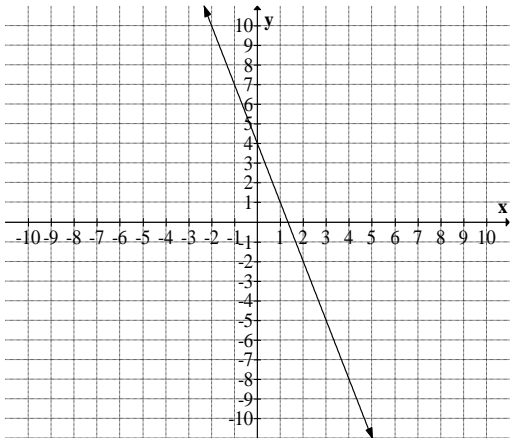
10c.  $x = -7$



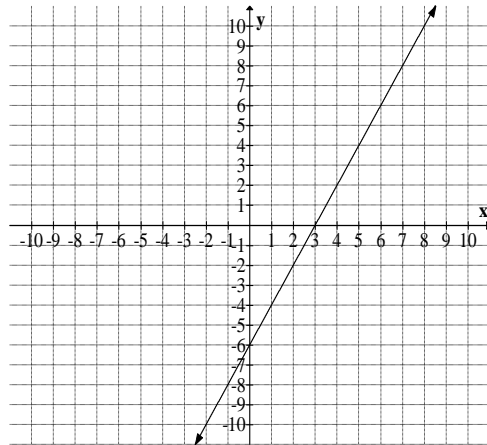
10d.  $y = -2x$



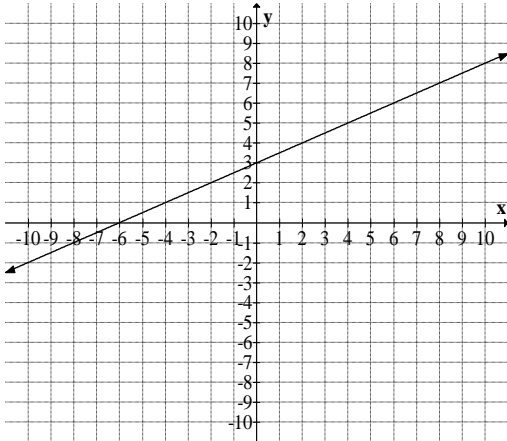
10.e.  $y = -3x + 4$



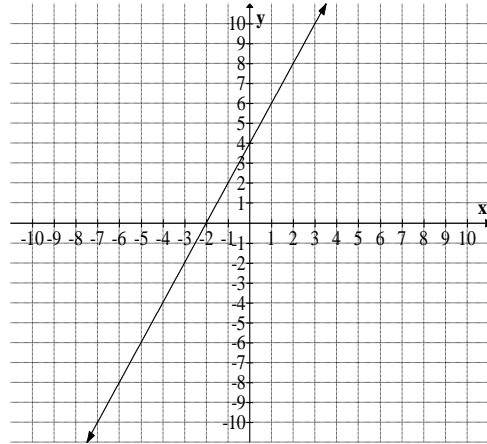
10.f.  $2x - y = 6$



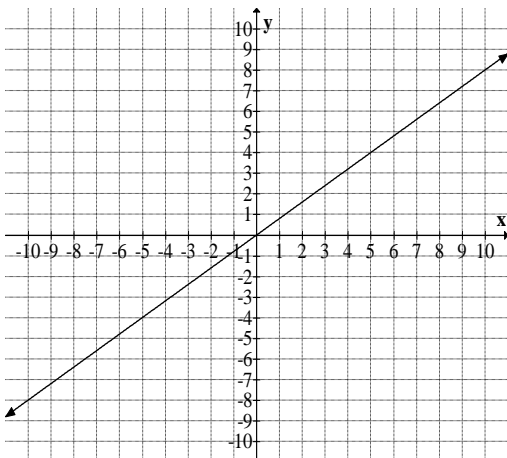
11.a.  $x - 2y = -6$



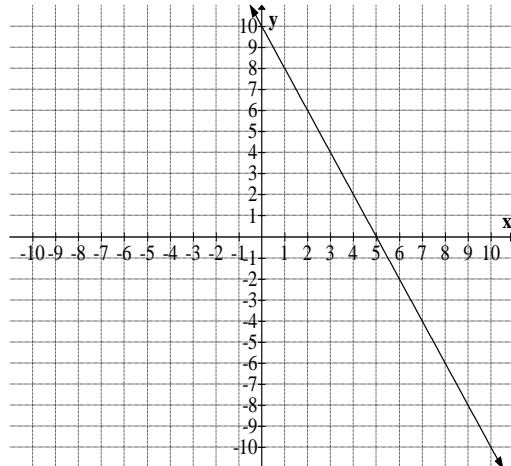
11.b.  $6x - 3y = -12$



11.c.  $y = \frac{4}{5}x$

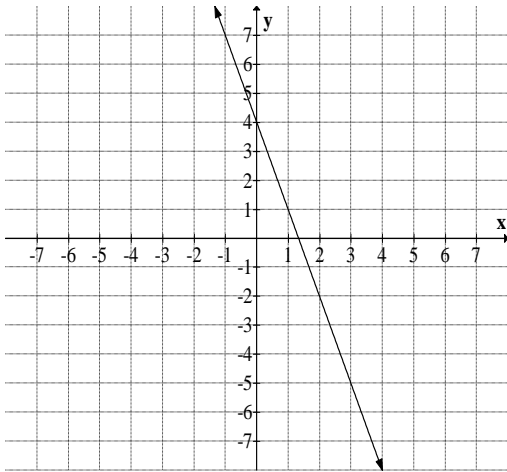


11.d.  $y = -2x + 10$

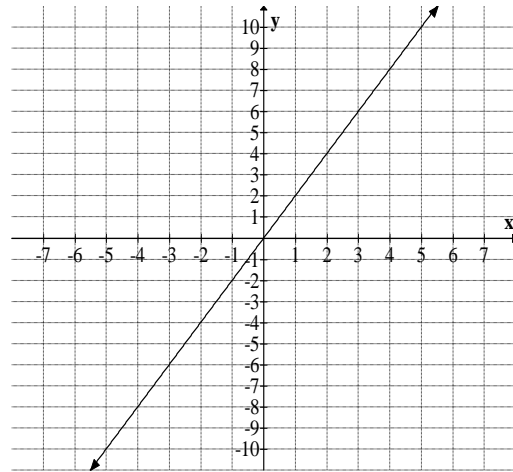




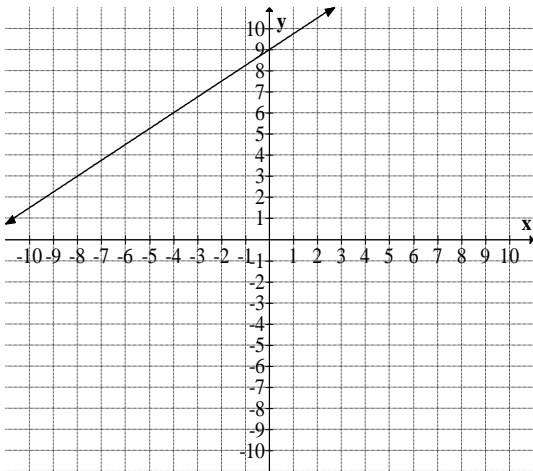
13.a.  $y = -3x + 4$



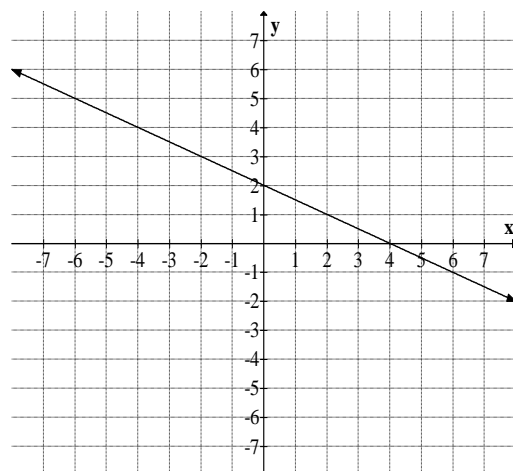
13.b.  $y = 2x$



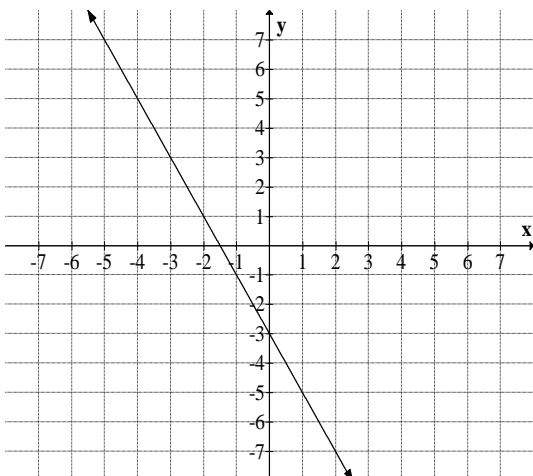
13.c.  $y = \frac{3}{4}x + 9$



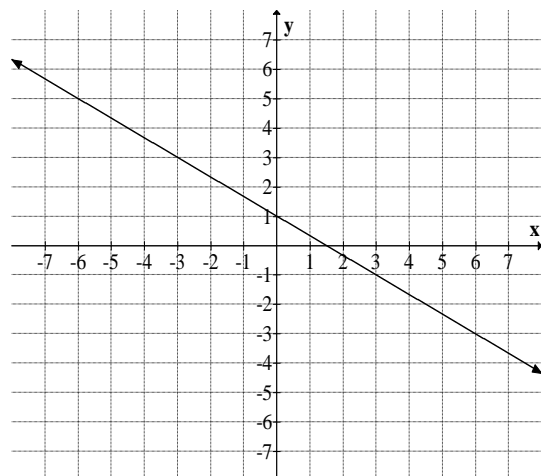
13.d.  $y = -\frac{1}{2}x + 2$



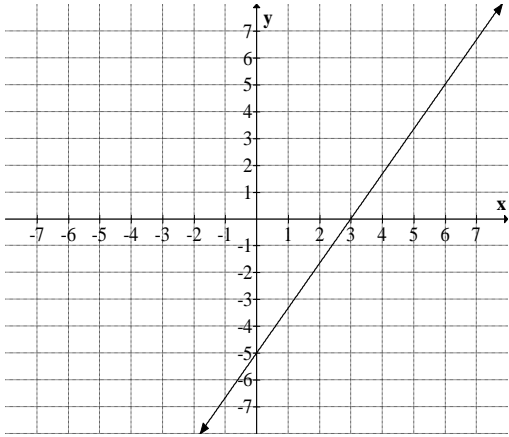
14.a.  $y = -2x - 3$



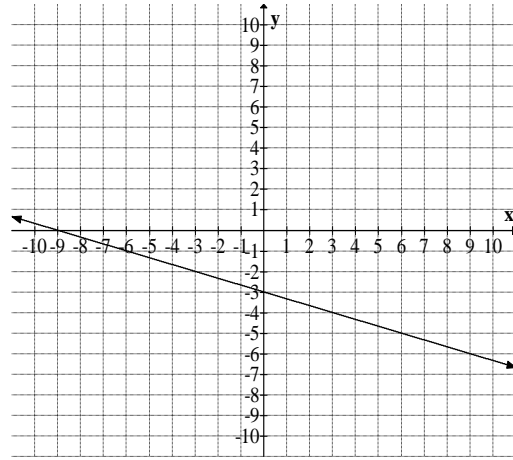
14.b.  $2x + 3y = 3$



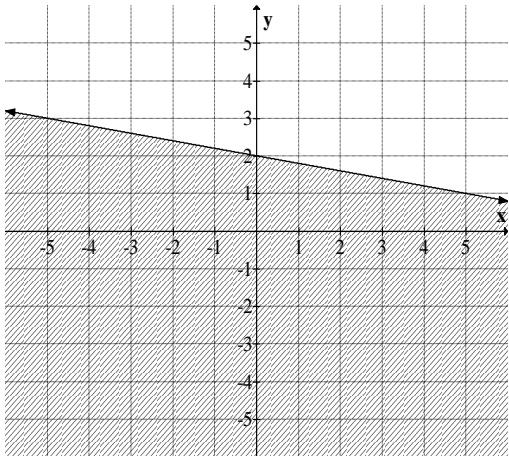
14.c.  $5x - 3y = 15$



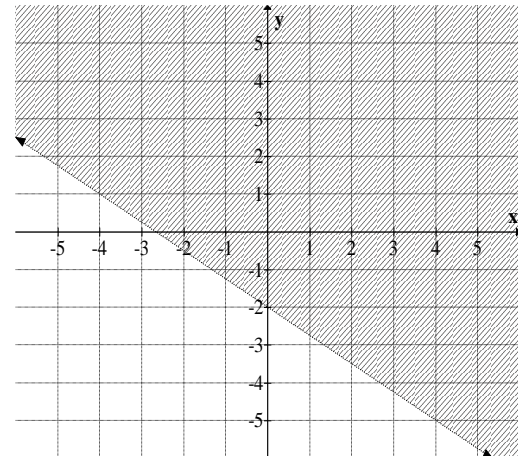
14.d.  $-x - 3y = 9$



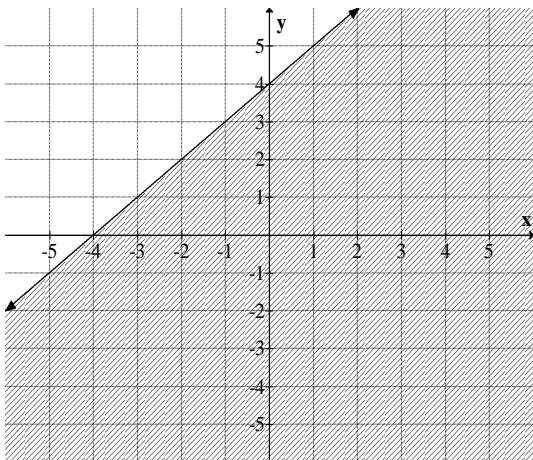
17.a.  $x + 5y \leq 10$  Solid line



17.b.  $y > -\frac{3}{4}x - 2$  Dotted line



17.c.  $x - y \geq -4$  Solid line



17.d.  $-3x - 2y > -8$  Dotted line

