

Name: _____

Date: _____

Math 9 Enriched: Section 3.3 Graphing Linear Functions

1. Indicate the slope and y-intercept for each of the following equations:

| | | | |
|---|---|--|--|
| a) $y = 3x - 4$ $m =$ _____ $b =$ _____ | b) $y = 4 + 2x$ $m =$ _____ $b =$ _____ | c) $3y = -5x + 2$ $m =$ _____ $b =$ _____ | d) $y = \frac{3x - 4}{-2}$ $m =$ _____ $b =$ _____ |
| e) $4y - 5x = -12$ $m =$ _____ $b =$ _____ | f) $5y = -4$ $m =$ _____ $b =$ _____ | g) $3x = -4y + 2$ $m =$ _____ $b =$ _____ | h) $x + y = 3x - 4y$ $m =$ _____ $b =$ _____ |
| i) $-\frac{y}{2} = \frac{-2x - 4}{3}$ $m =$ _____ $b =$ _____ | j) $4y = 2(x - 4 + 2y)$ $m =$ _____ $b =$ _____ | k) $3y = 3(3x + 2y)$ $m =$ _____ $b =$ _____ | l) $20 = 3x - 15$ $m =$ _____ $b =$ _____ |

2. Given each pair of coordinates, find the slope and y-intercept of the line:

| | | | |
|---|---|---|--|
| a) $(-2, 3) \& (4, 5)$ $m =$ _____ $b =$ _____ | b) $(-4, 6) \& (6, -4)$ $m =$ _____ $b =$ _____ | c) $(-3, 5) \& (-2, 5)$ $m =$ _____ $b =$ _____ | d) $(a + 2, b) \& (a - 2, 3b)$ $m =$ _____ $b =$ _____ |
| e) $(2a, -a) \& (-a + 1, 2a)$ $m =$ _____ $b =$ _____ | f) $(1, 1) \& (a, a^2)$ $m =$ _____ $b =$ _____ | g) $(2a + 1, a) \& (a, 2a + 1)$ $m =$ _____ $b =$ _____ | h) $(4a^2, 9) \& (36, a^2)$ $m =$ _____ $b =$ _____ |

3. Graph the following lines on the grid to the right:

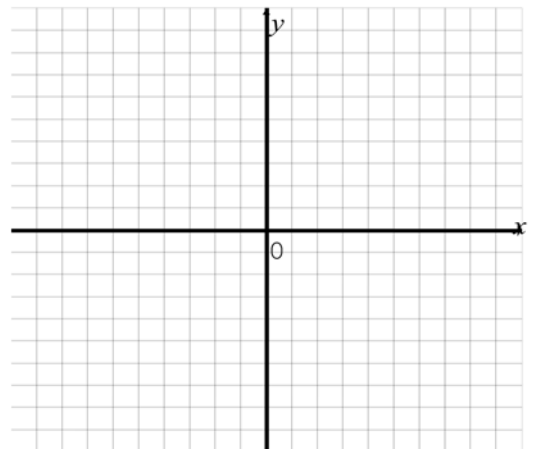
i) $y = \frac{2x - 1}{2}$

ii) $3x - 2y = 6$

iii) $3y - 4 = 2x$

iv) $3y = 4x - 2$

v) $3y = 2x - 12$



4. Find the "x" and "y" intercepts, and graph the line:

| | | | |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| a) $3x + 5y = -4$ | b) $4x = \frac{2y-1}{3}$ | c) $(-3,5) \& (-2,5)$ | d) $(a+2,b) \& (a-2,3b)$ |
| $m = \underline{\hspace{2cm}}$ | $m = \underline{\hspace{2cm}}$ | $m = \underline{\hspace{2cm}}$ | $m = \underline{\hspace{2cm}}$ |
| $b = \underline{\hspace{2cm}}$ | $b = \underline{\hspace{2cm}}$ | $b = \underline{\hspace{2cm}}$ | $b = \underline{\hspace{2cm}}$ |

5. Indicate which of the following lines have the same x-intercept? Y-intercept? Slope?

- a) $x - y + 2 = 0$ b) $3x + 6y + 5 = 0$ c) $2x - y - 8 = 0$ d) $2x + 4y - 9 = 0$ e) $4x - 3y = -6$

X-intercept: _____ Y-intercept: _____ Slope : _____

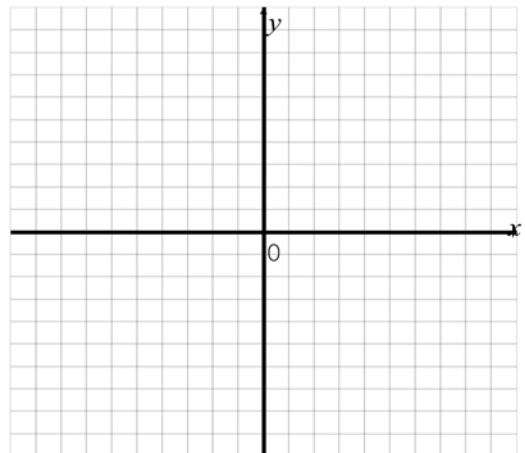
6. If $px + 2y = 7$ and $3x + qy = 5$ represent the same straight line, then what does "p-q" equal?

7. Triangle ABC has vertices A(-3,-1), B(1,1), and C(5,-5). The median is drawn from point A to the midpoint of side BC. Determine the equation of the line containing this median.

8. The lines $x = 0$, $y = 0$, and $2x + y = 4$ form a triangle. What is the number of points with integral coordinates which are inside this triangle?

9. The equations of the sides of a triangle are $2x + 3y = 18$, $5x + y + 7 = 0$, and $3x - 2y = 14$

- Graph the lines on the same grid and find the vertices
- Find the slopes of the sides
- Find the area of the triangle



10. Given that a linear equation in standard form is: $Ax + By + C = 0$, describe the graph when:

a) $A = 0, B \neq 0, C \neq 0$

b) $B = 0, A \neq 0, C \neq 0$

c) $C = 0, A \neq 0, B \neq 0$

d) $A = 0, C = 0, B \neq 0$

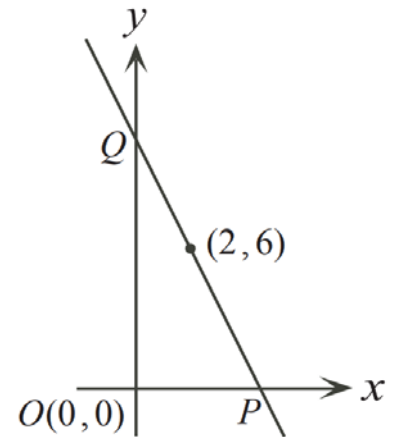
e) $B = 0, C = 0, A \neq 0$

11. The diagram shows a line crossing the point $(2,6)$. Use this info to answer the following question:

a) If the slope of the line is -3 , find the "x" and "y" intercepts

b) If the slope of the line is "m", determine the "x" and "y" intercepts in terms of "m"

c) If the slope of the line is "m", determine the two values of "m" for which the area of ΔPOQ is 25

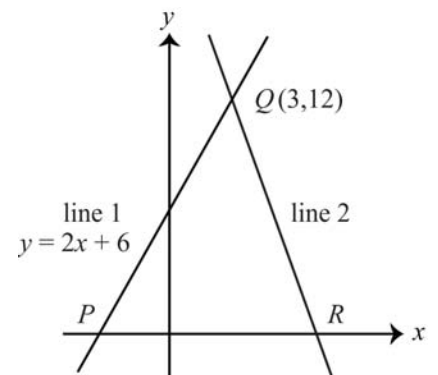


12. In the diagram, line 1 has equation $y = 2x + 6$. Use the diagram to answer the following questions:

a) What are the intercepts of line 1?

b) Line 2 has a slope of -3 and intersects line 1 at $Q(3,12)$. Find the equation of line 2

c) Determine the area of ΔPQR



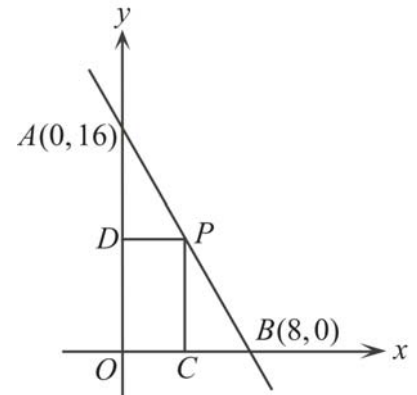
13. A square has vertices $A(0,0)$, $B(0,5)$, $C(5,5)$, and $D(5,0)$. A line passing through the point $E(0,2)$ divides the square $ABCD$ into two congruent parts. Determine the equation of the line:

14. A line is drawn with intercepts $A(0,16)$ and $B(8,0)$ as shown. Use the diagram to answer the following questions:

a) Determine the equation of line through "A" and "B"

b) Determine the coordinates of "P" so that $PDOC$ is a square

c) Determine all points of "P" so that the area of rectangle $PDOC$ is 30



15. Triangle ABC is enclosed by the lines $y = x + 2$, $y = mx + 2$, and the x -axis. If the area of $\triangle ABC$ is 37units^2 , then what are the value(s) of "m"?

16. A line crosses the points $A(10,4)$ and $B(6,11)$. The y -intercept is at point "P" and x -intercept at point "Q". What is the area of $\triangle POQ$?

17. Challenge: There are two circles, $r_1 = 3$, $r_2 = 1$ that are tangent to both axis and line L . what is the equation of Line L ?

