Math 60, Sections 4.7 and 4.8 Notes and Practice   Name:_____
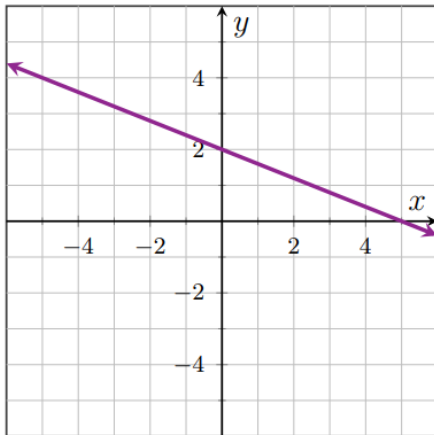
Section 4.7 Standard Form and Graphing Using Intercepts

Identifying Intercepts

The x-intercept occurs where the graph crosses the x-axis.
The y-intercept occurs where the graph crosses the y-axis.

1. Identify the x-intercept and the y-intercept for each line below.
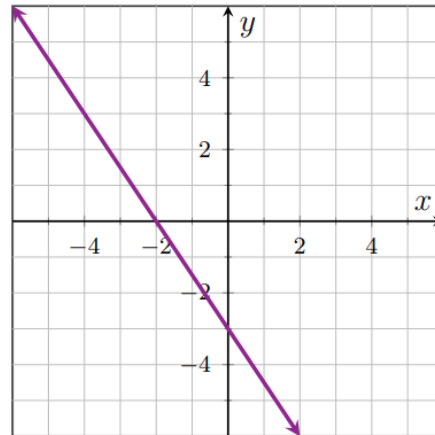
a.

x-intercept:
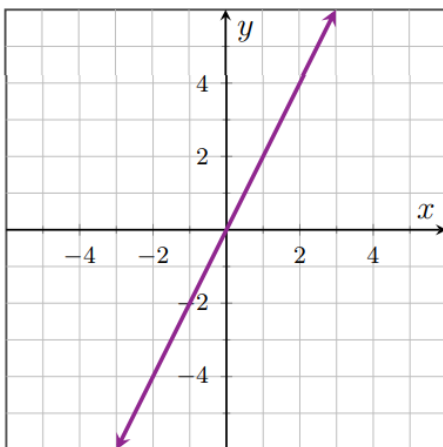
y-intercept:

b.

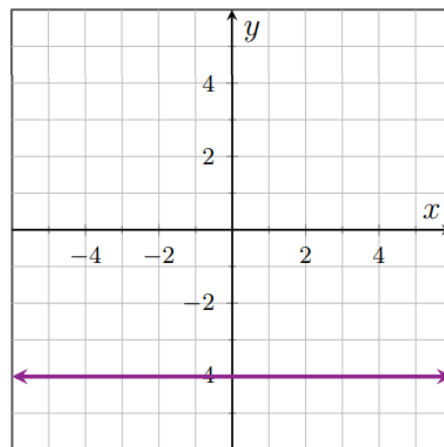x-intercept:

y-intercept:

c.

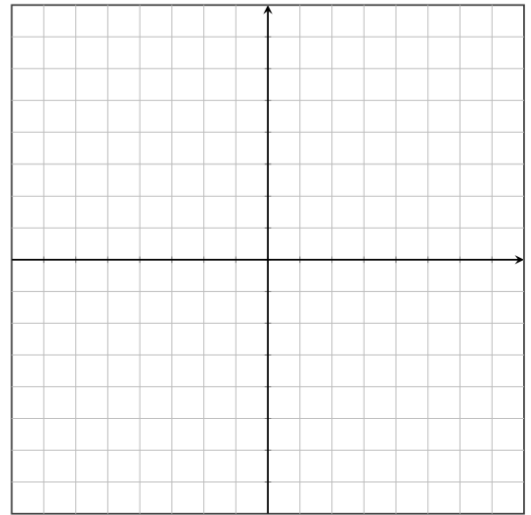x-intercept:

y-intercept:

d.

x-intercept:

y-intercept:

What do you notice about all x-intercepts?

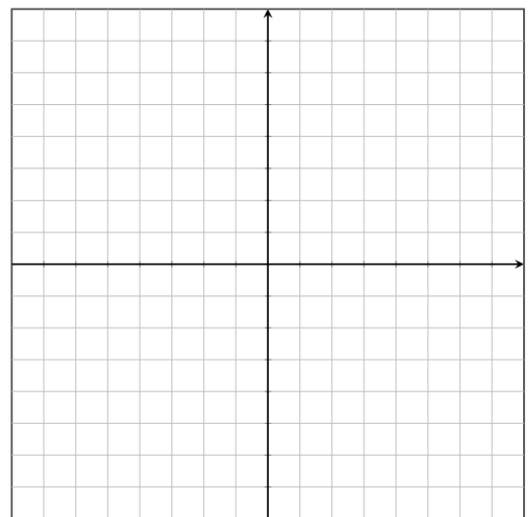What do you notice about all y-intercepts?

<u>Standard Form of a Line</u>: $Ax + By = C$

2. Find the x-intercept and y-intercept for the equation $x - y = 6$. Then graph the equation.

Rewrite the equation in slope-intercept form and check the graph.

3. Find the x-intercept and y-intercept for the equation $-x + 3y = 10$. Then graph the equation.

Rewrite the equation in slope-intercept form and check the graph.

4. Rewrite the line in slope-intercept in standard form.

a. $y = 4x - 2$

b. $y = -\dfrac{1}{2}x + 6$

5. An office manager is ordering markers and tissues. Let t be the number of tissue boxes ($2 each) and let m be the number of packages of markers ($16 each). Assuming she has a total budget of $500, the number of markers and tissue boxes she can purchase can be modeled by the equation $2t + 16m = 500$.

Use t on the horizontal axis and m on the vertical axis.

a. Find the t-intercept. What does this represent?

b. Find the m-intercept. What does it represent?

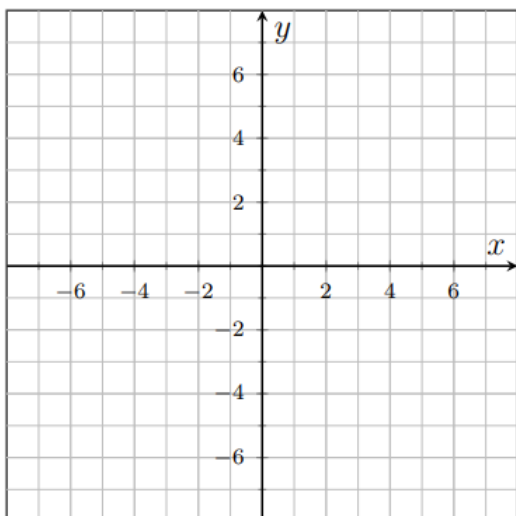c. Graph this equation using the intercepts. Label the axes and scale.
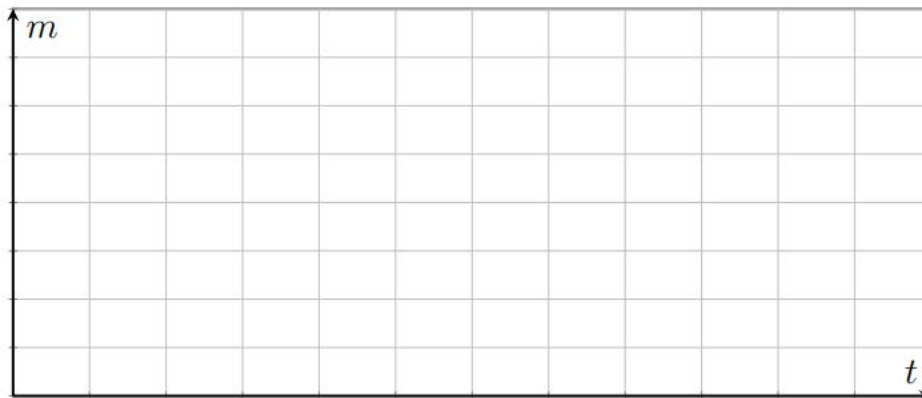
d. Solve $2t + 16m = 500$ to put it in slope-intercept form. Use this to state and interpret the slope for this equation.

Section 4.8 Horizontal, Vertical, Parallel and Perpendicular Lines

6. Graph and find the slope of the line between each pair of points. Then write the equation of each line.
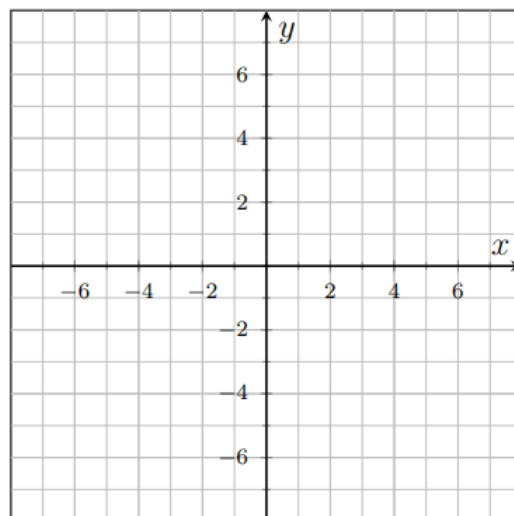
a. $(2,1)$ and $(2,7)$

Slope:

Equation:

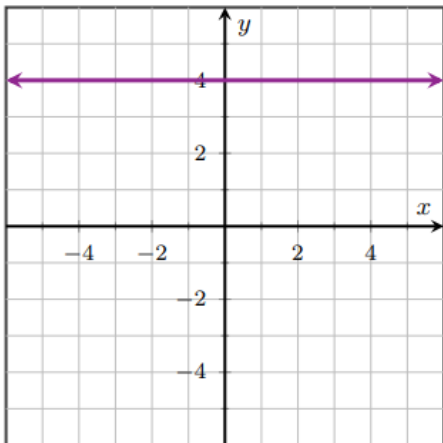b. $(6,-4)$ and $(1,-4)$

Slope:

Equation:

7. Write the equation of each line. Then identify the slope, y-intercept and x-intercept.
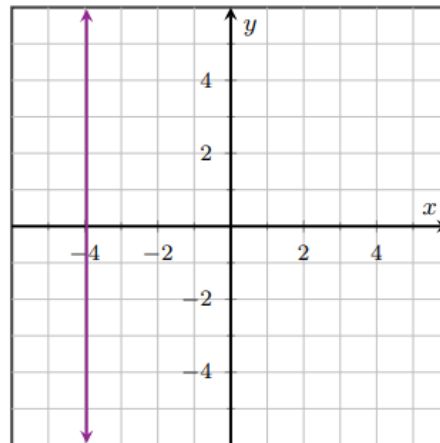
a.

Equation:

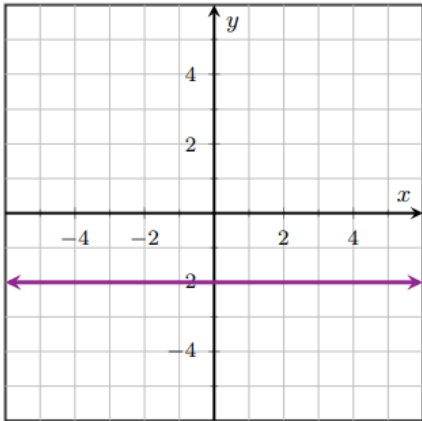Slope:

x-intercept

y-intercept

b.

Equation:

Slope:

x-intercept:

y-intercept:

8. Write the equation of each line. Then identify the slope, y-intercept and x-intercept.
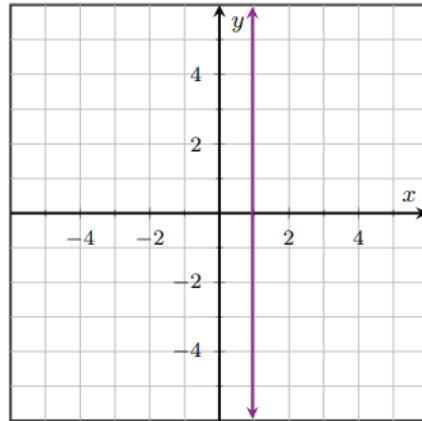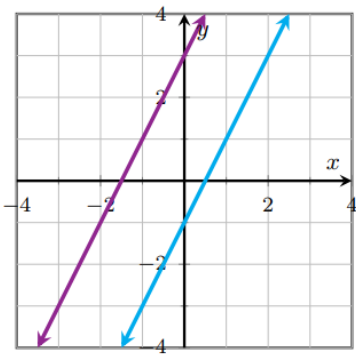
a.

Equation:

Slope:

x-intercept

y-intercept

b.

Equation:

Slope:

x-intercept:

y-intercept:

Parallel and Perpendicular Lines

9. Determine whether the lines are parallel, perpendicular or neither. Then write the slope of each line.
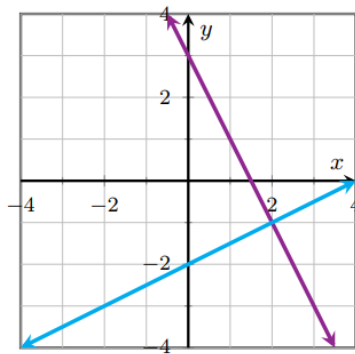
a.

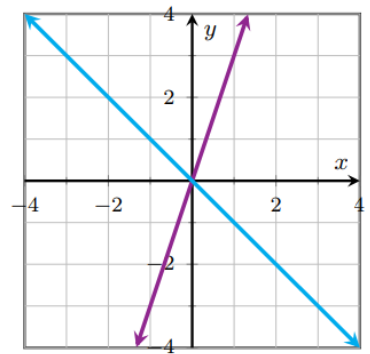Slope of line 1:

Slope of line 2:

b.

Slope of line 1:

Slope of line 2:

c.

Slope of line 1:

Slope of line 2:

What do you notice about the slopes of parallel lines?

What do you notice about the slopes of perpendicular lines?

10. Determine whether each pair of lines is parallel, perpendicular or neither.

a. $y = -5x + 1$ and $y = \frac{1}{5}x - 4$

b. $x = 2$ and $y = 3$

c. $y = 3x + 1$ and $y = -3x + 1$

d. $2x + y = 4$ and $6x + 3y = 7$

More Practice

11. A couple is planning their wedding. They want the total cost of catering (x, in dollars) and renting the venue (y, in dollars) to be $4,000. They plan to hit this limit. This can be modeled by the equation $x + y = 4000$.
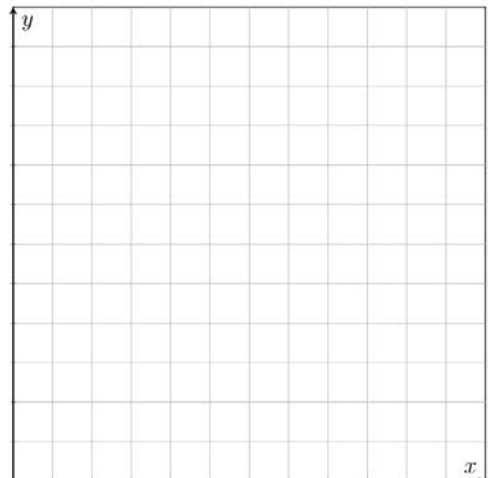
Use t on the horizontal axis and m on the vertical axis.
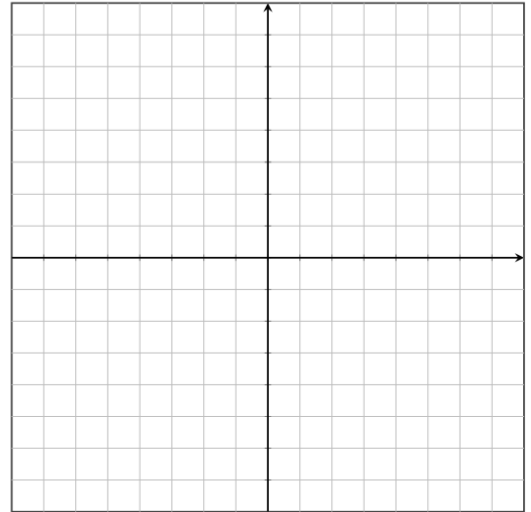
a. Find the x-intercept. What does this represent?

b. Find the y-intercept. What does it represent?

c. Graph this equation using the intercepts. Label the axes and scale.

d. Solve $x + y = 4000$ to put it in slope-intercept form. Use this to state and interpret the slope for this equation.

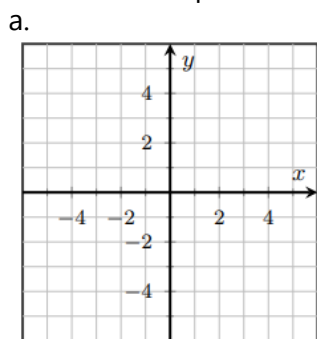12. Find the x-intercept and y-intercept for the equation $6x - 2y = 12$. Then graph the equation.

Rewrite the equation in slope-intercept form and check the graph.

13. Rewrite the line in slope-intercept in standard form.
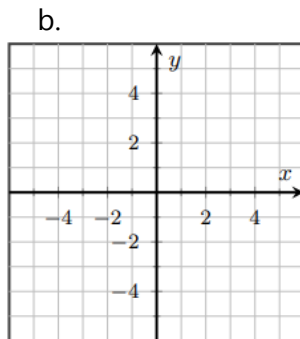
a. $y = -x + 7$

b. $y = \dfrac{2}{5}x - 1$

14. For parts a and b, graph each line and determine its slope. For parts c and d, state the equation of the line and its slope.
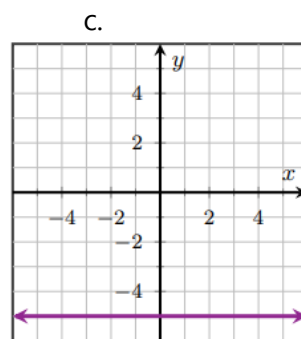
a.

b.
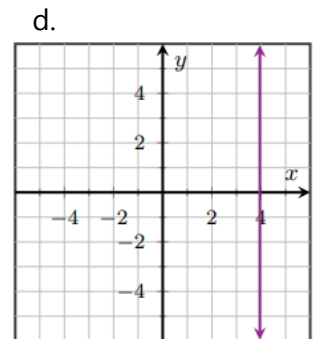

c.

d.

Equation: $y = -1$

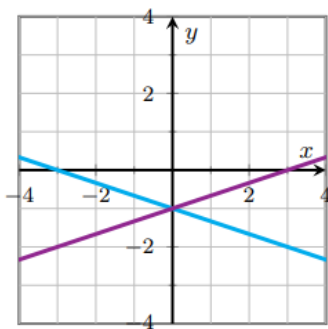Equation: $x = 5$

Equation:

Equation:

Slope:

Slope:

Slope:

Slope:

15. Determine whether the lines are parallel, perpendicular or neither. Then write the slope of each line.
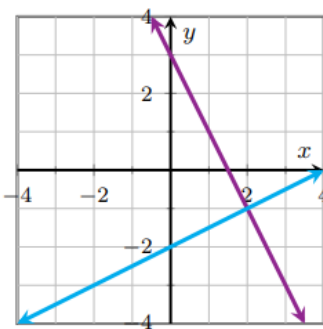
a.
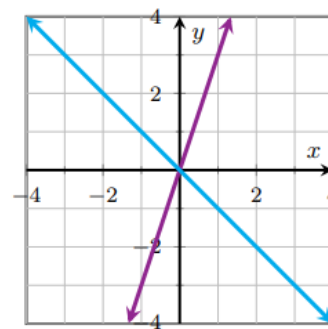

Slope of line 1:

Slope of line 2:

b.

Slope of line 1:

Slope of line 2:

c.

Slope of line 1:

Slope of line 2:

16. Determine whether each pair of lines is parallel, perpendicular or neither.

a. $y = 7x + 1$ and $y = x - 7$

b. $y = 8x + 1$ and $y = -\dfrac{1}{8} + 3$

c. $x = -5$ and $x = 4$

d. $3x + y = 4$ and $6x + 2y = 7$

e. $y = 5x - 2$ and $y = -2x - 2$

f. $x = -2$ and $y = \dfrac{1}{2}$