

Name: _____

Date: _____

Notes

Algebra Section 4.3

Pages 225-232



Goal: "Identify x and y intercepts"

Vocabulary

x intercept: The x coordinate of a point where the line crosses the x axis.

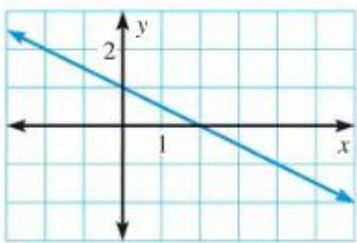
y intercept: The y coordinate of a point where the line crosses the y axis.

Finding the x and y intercepts on a graph.

Example:

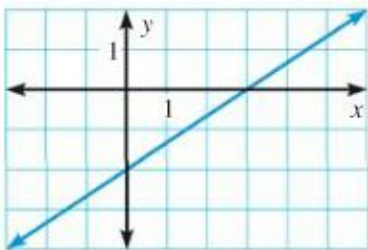
x intercept: 2

y intercept: 1



Try These:

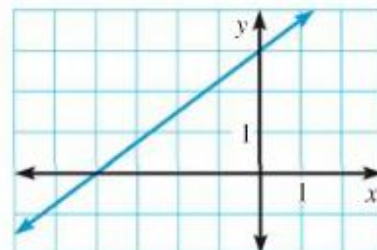
1)



x -intercept: 3

y -intercept: -2

2)



x -intercept: -4

y -intercept: 3

Finding the x intercept:

$$2x + 7y = 28$$

Plug 0 in for y .

$$2x + 7(0) = 28$$

$$x = 14$$

Coordinate: (14,0)

Finding the y intercept:

$$2x + 7y = 28$$

Plug 0 in for x

$$2(0) + 7y = 28$$

$$y = 4$$

Coordinate: (0,4)

Using intercepts to graph an equation:

Example: Graph the equation $x + 2y = 4$

Step 1: Find the intercepts

x intercept:

$$x=4$$

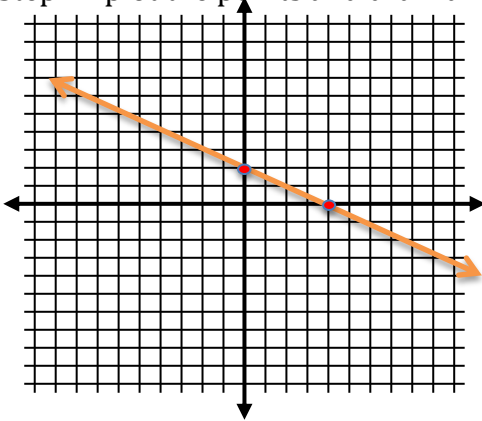
Coordinate: $(4,0)$

y intercept:

$$y=2$$

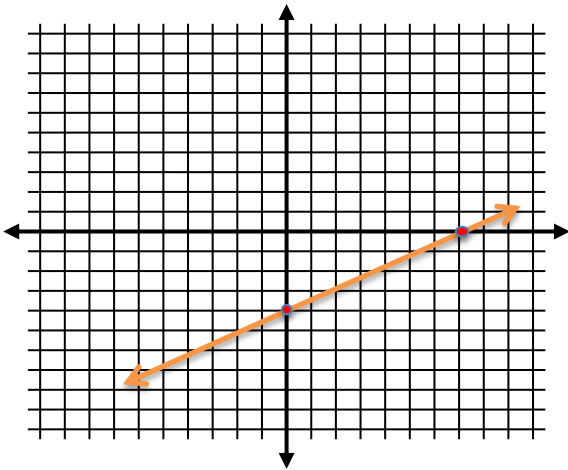
Coordinate: $(0,2)$

Step 2: plot the points and draw a line through the points

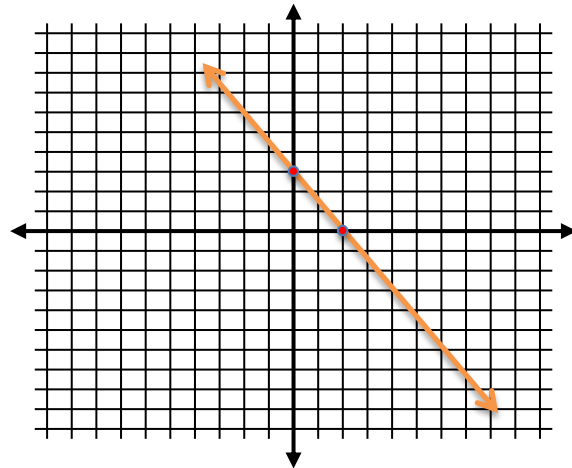


Try These:

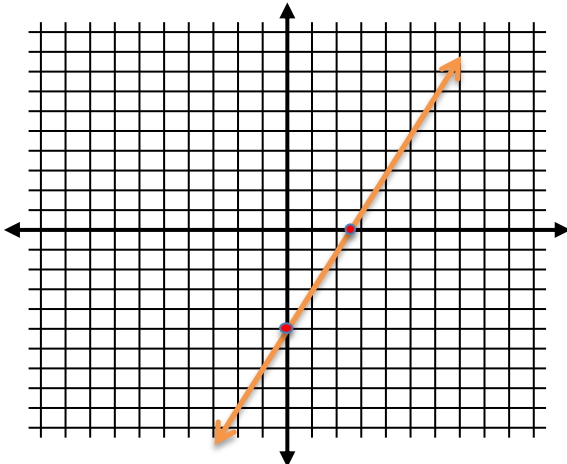
1) $4x - 7y = 28$



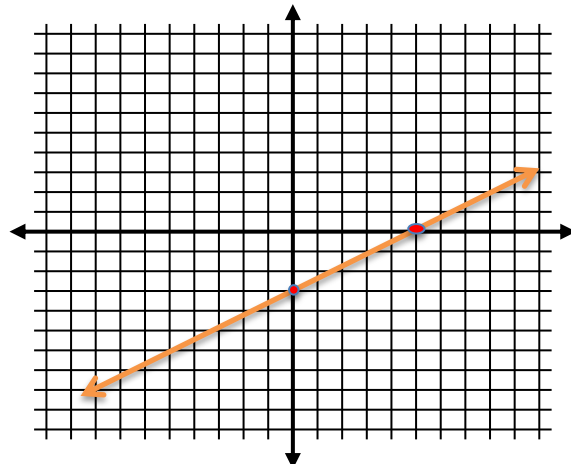
2) $3x + 2y = 6$



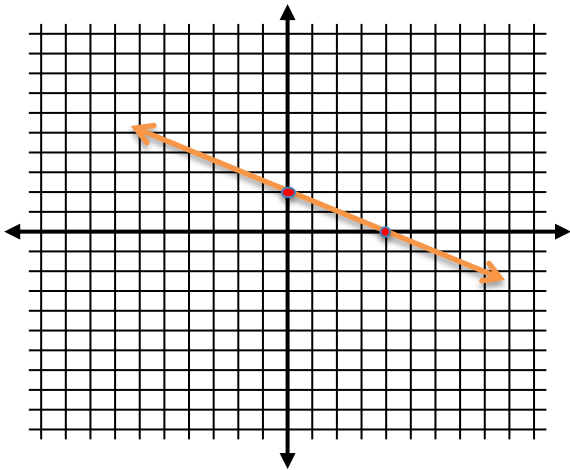
3) $4x - 2y = 10$



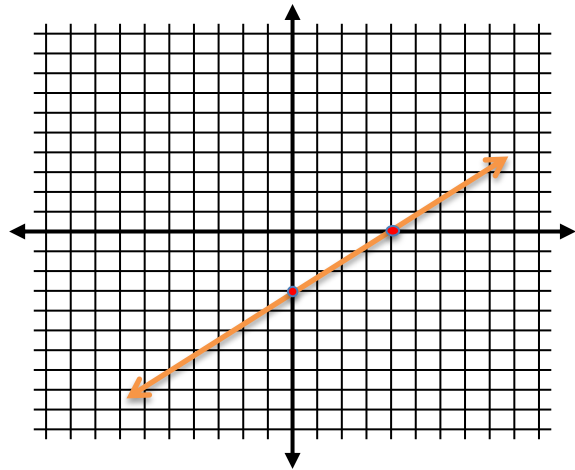
4) $-3x + 5y = -15$



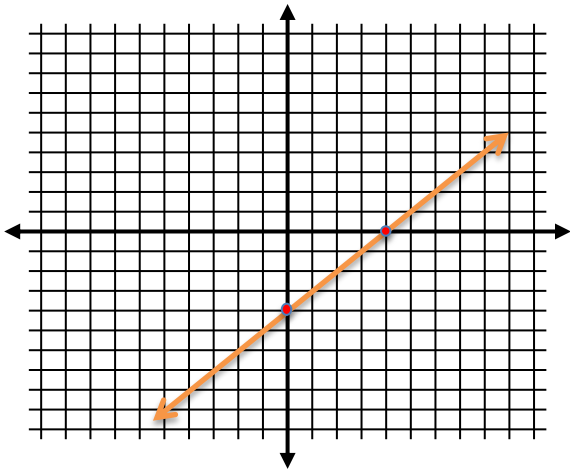
5) $x + 2y = 4$



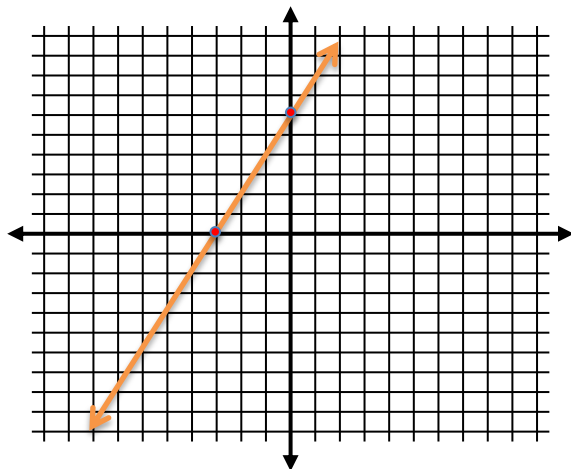
6) $3x - 4y = 12$



7) $y = x - 4$



8) $y = 2x + 6$



Word Problems:

1) You are helping plan an awards banquet for your school and you need to rent tables to seat 180 people. Tables come in two sizes. Small tables seat 4 people and large tables seat 6 people.

a) Let x equal the number of small tables and y equal the number of large tables. Write an equation to represent the situation.

$4x + 6y = 180$

b) Graph the equation.

c) What do the intercepts mean?

If using 0 small tables, then needs 30 large

If using 0 large tables, then need 45 small

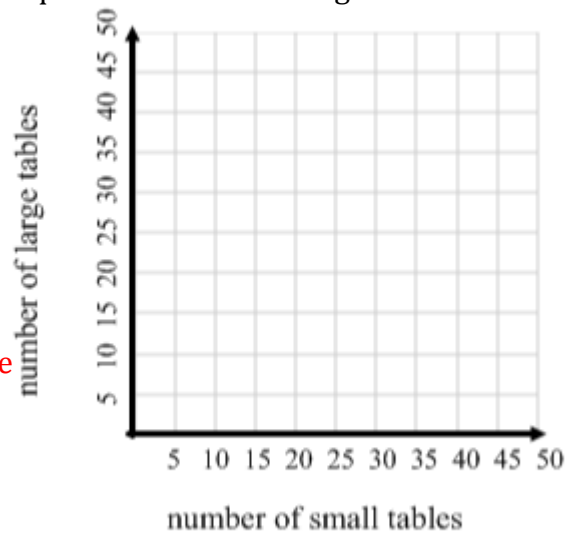
d) Give 4 possible combinations of small and large tables you could use. Look at the graph for easily identifiable points on the graph

30 large, 0 small

45 small, 0 large

30 small, 10 large

15 small, 20 large



Ex: You make and sell decorative bows. You sell small bows for \$3 and large bows for \$5. You want to earn \$60. Write an equation to represent the situation. Graph your equation. Give two possible combinations of small and large bows you could sell.

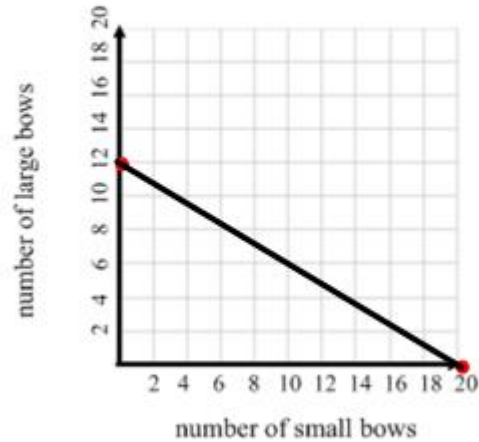
$$3x + 5y = 60$$

x-int: 20, y-int: 12

10 small, 6 large

20 small, 0 large

0 small, 12 large



Ex: A submersible is designed to explore the ocean floor at $-13,000$ feet. The submersible ascends to the surface at a rate of 60 feet/minute. The equation:

$$e = 650t - 13000$$

models this situation, where e is elevation and t is time (in minutes) since it began to ascend.

a) Graph the equation.

b) Explain the meaning of the x and y intercepts.

When time is 0 (start of ascent) the depth is -13000 feet.
When elevation is 0, the time is 20 minutes. So it takes 20 minutes to reach the surface of the water

c) Identify the domain and range.

$$0 \leq t \leq 20$$

$$-13000 \leq e \leq 0$$

