

Algebra I
Lesson 5.2 – Using Intercepts
Mrs. Snow, Instructor

The last problem in lesson 5.1 notes was about a hot-air balloon. It ended with the question: What is significant of the ordered pair (0, 12)? The significance of the ordered pair is that these values are the **initial conditions** of the problem. The elevation of the hot-air balloon at launch time, 0 seconds, is 12 feet. We see this value on the linear graph where the line modeling the equation crosses the **y-axis**.

Vocabulary:

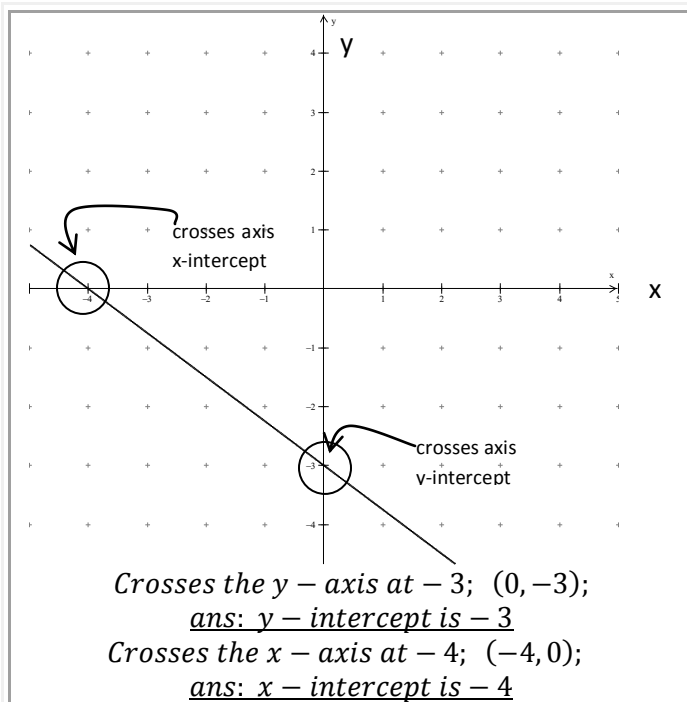
y-intercept – is the point where the graph intersects the y-axis. It is the y – coordinate. *The ordered pair may be recognized in that x is always zero – (0, y).*

x-intercept – is the point where the graph intersects the x-axis. It is the x – coordinate. *The ordered pair may be recognized in that the y is always zero – (x, 0)*

How do we find our intercepts????

Graph: Finding the intercepts is visual. Where does the line or curve intersect the x or y axis?

Equation: To find the x-intercept, replace y with 0 and solve for x. To find the y-intercept, replace the x with 0 and solve for y.



- y-intercept:**
1. Determine where the graph intersects the y-axis
 2. Write the ordered pair.
 3. State the y-intercept.
- x-intercept:**
1. Determine where the graph intersects the x-axis
 2. Write the ordered pair.
 3. State the x-intercept.

$$5x - 3y = 15$$

$$5(0) - 3y = 15$$

$$\left(-\frac{1}{3}\right)(-3)y = \left(-\frac{1}{3}\right)15$$

$$y = -5$$

ans: y – intercept is -5

$$5x - 3y = 15$$

$$5x - 3(0) = 15$$

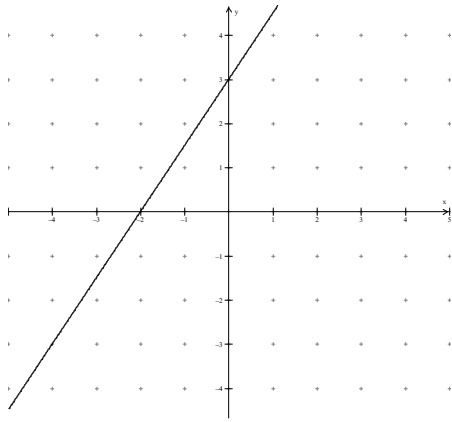
$$\left(\frac{1}{5}\right)5x = \left(\frac{1}{5}\right)15$$

$$x = 3$$

ans: x – intercept is 3

- y-intercept:**
1. Replace x with 0 and solve for y.
 2. State the y-intercept.
- x-intercept:**
1. Replace y with 0 and solve for x.
 2. State the x-intercept.

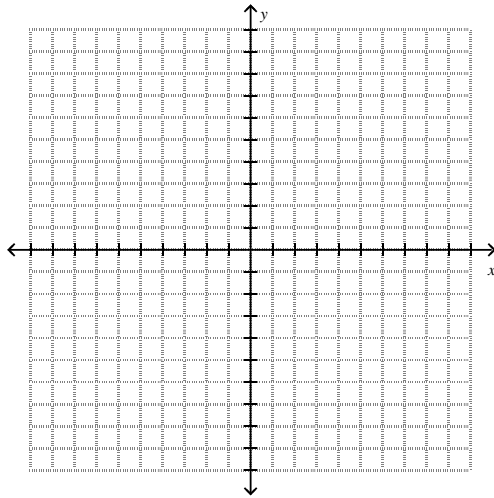
Find the x- and y-intercepts:



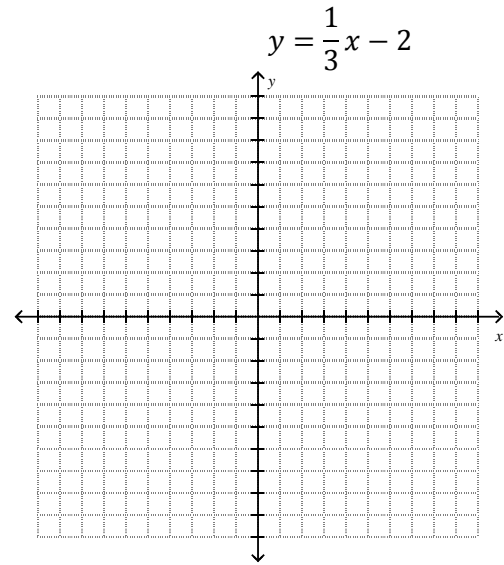
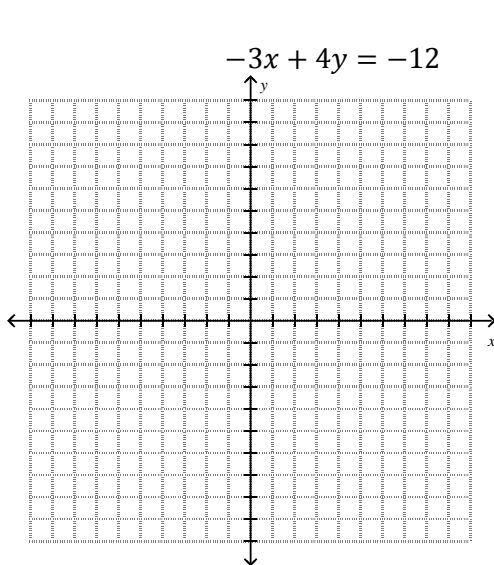
$$-3x + 5y = 30$$

$$4x + 2y = 16$$

The school sells pens for \$2.00 and notebooks for \$3.00. The equation $2x + 3y = 60$ describes the number of pens and y notebooks that you can buy for \$60. Graph and find the intercepts. What do the intercepts represent?



Use intercepts to graph each equation.



what do you notice about the y-intercept and the equation?