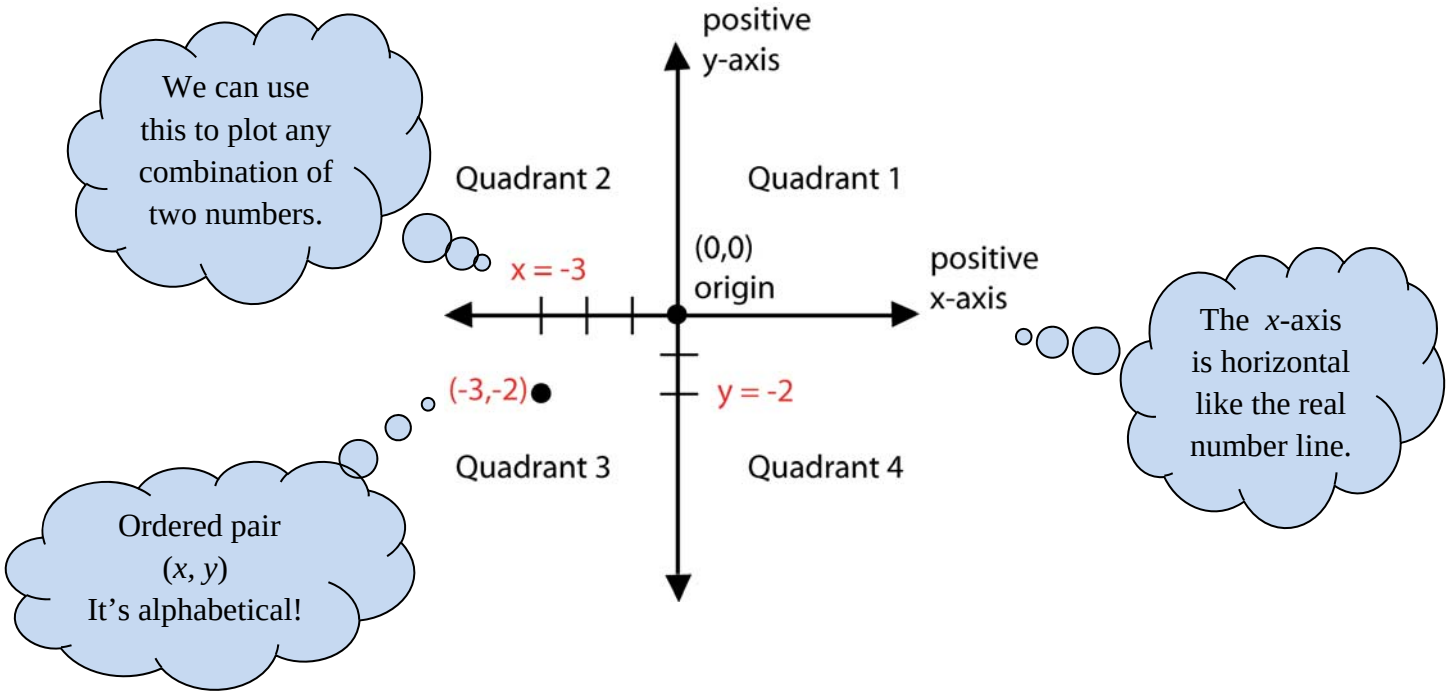
Understanding the basics of the *xy*-plane will help a lot when we start graphing equations.

Elementary algebra
Class notes
Reading Graphs and the Rectangular Coordinate System (section 10.1)

Ordered Pairs and the Cartesian Plane:

The Cartesian plane is also called the rectangular coordinate system or simply the *xy*-plane.



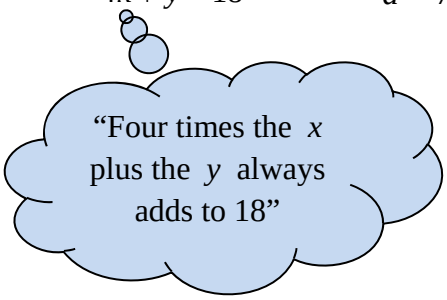
expl 1: Draw your own *xy*-plane with five, evenly-spaced ticks marks in each direction. Plot the points (2, 4), (-3, 4), (4, 0), and (0, -3).

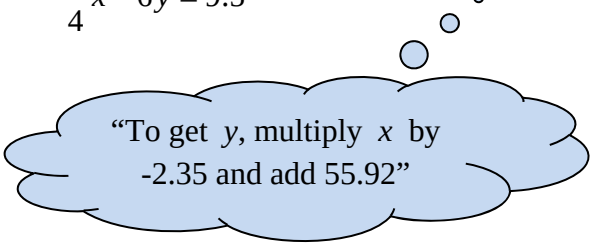
Equations with x and y:

These equations show the relationship between two variables. In other words, they show how x and y are related.

expls: $y = 2x^2 + 3x + 13$ $y = -3x - 7$ $3x^2 + 5y^2 = 15$ $3a + b = 8$

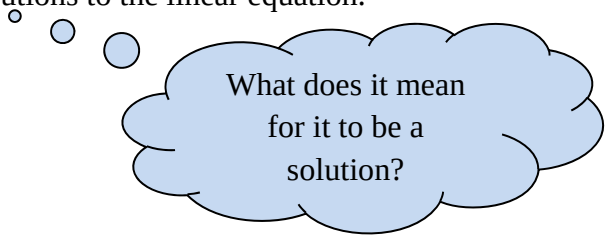
$4x + y = 18$ $d = 7.5r + 23.575$ $\frac{3}{4}x - 6y = 9.5$ $y = -2.35x + 55.92$





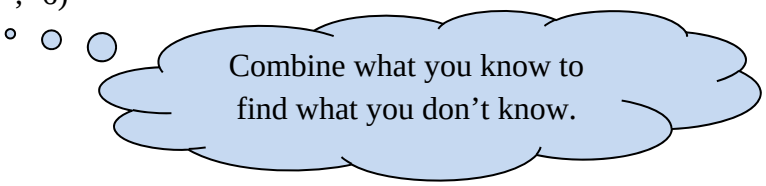
expl 2: Determine if the following ordered pairs are solutions to the linear equation.

$4x + y = 18$; (4, 2), (3, 3), (5, -2)

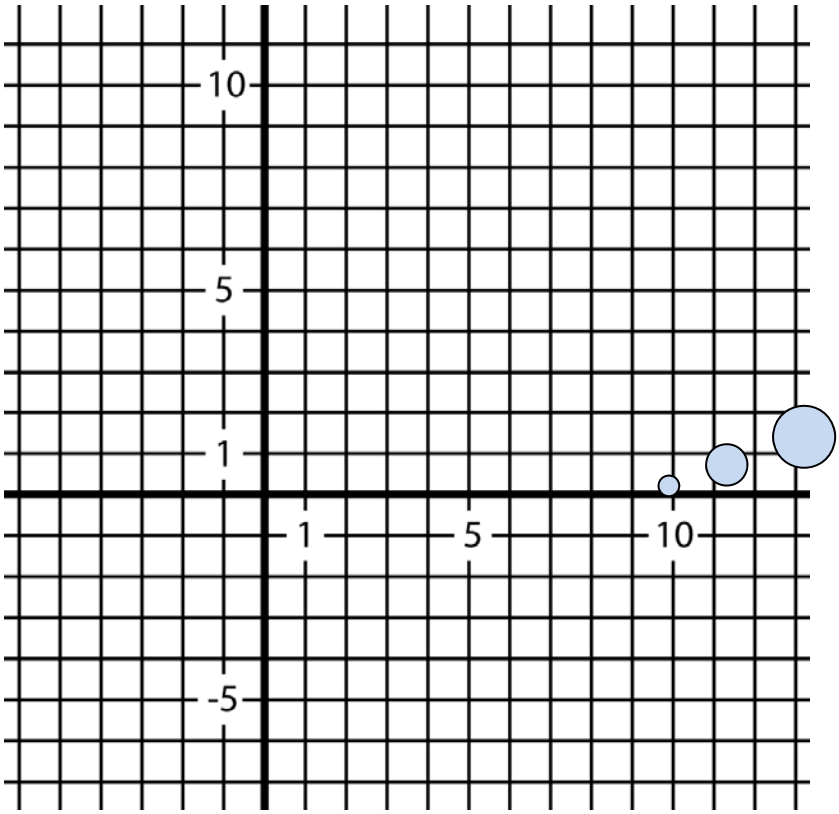


expl 3: Complete each ordered pair so it is a solution of the equation $4x + y = 18$.

(3,), (, 10), (, -6)



Use the graph below to plot your points from example 3. Draw a line (using a straight edge) through the points to complete the graph of $4x + y = 18$. Put arrows on both ends of your line.



Pick another point from your graph. Verify that it also satisfies the equation.

Worksheet: Things to know about your calculator (Texas Instruments – 82, 83, 85, 86):

A laundry list of things I have found useful over the years. Read it over and try out the stuff it talks about. If you have a TI84, use the instructions for the TI83. If you have a different brand calculator, try to figure out if your calculator has the same functionality.

Worksheet: Graphing calculator basics (TI82, 83, 84, 85, or 86):

This is a basic introduction to the calculator including home screen calculations, fraction conversion, and graphing linear functions with window tweaks. If you have a different brand calculator, try to figure out how to get your calculator to do the same stuff.

expl 4: The average amount of money y spent per person on recorded music from 2001 to 2006 is given by $y = -2.35x + 55.92$. In this equation, x represents the number of years after 2001.

a.) Complete the table.

x	1	3	5
y			

So 2004 would correspond to $x = 3$.

b.) Find the year in which yearly average amount spent per person was approximately \$46.

What do x and y represent? Which were you given and which do you want to find?

expl 5: Solve the equation for y.

$2x + 9y = 18$

Isolate y.

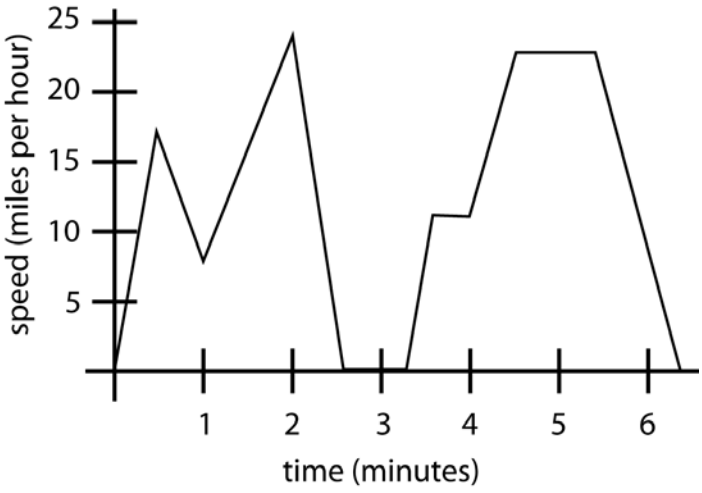
Reading Bar Graphs and Line Graphs:

expl 6: The following graph shows the speed of a car over the first several minutes of driving. Answer the questions.

a.) What is the car's speed two minutes into the drive?

b.) What happens to the speed around the 2:30 mark? What do you think the driver is doing here?

c.) How many minutes did this drive take? (Round to the nearest half-minute.)



expl 7: I found the ages of my students in a certain class, making the bar graph you see below. Answer the questions.

a.) What age occurs the most in the class? How many students are that age?

b.) Estimate the number of students who are 24.

c.) How many students are 21 or 22?

d.) How many more students are 21 than 20?