

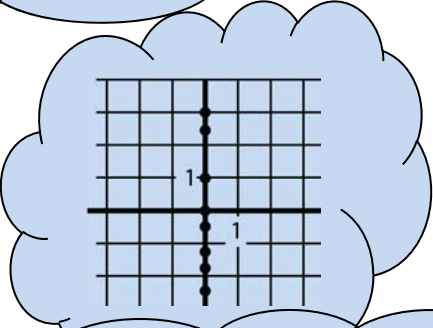
Elementary Algebra

Class Notes

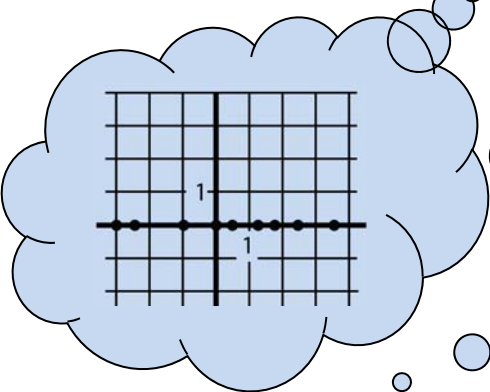
Finding  $x$  and  $y$  Intercepts (section 10.3)

Finding  $x$  and  $y$  intercepts will follow you throughout algebra so try to understand the procedure.

What is true of every point on the  $y$ -axis?



What is true of every point on the  $x$ -axis?



$y$ -intercept: where graph crosses  $y$ -axis  
 $x$ -intercept: where graph crosses  $x$ -axis

How would you find them algebraically?

expl 1: Find the  $x$  and  $y$  intercepts of the line  $3x - 2y = 12$ .

$x$	$y$
0	
	0

Combine what you learned above and the equation you're given.

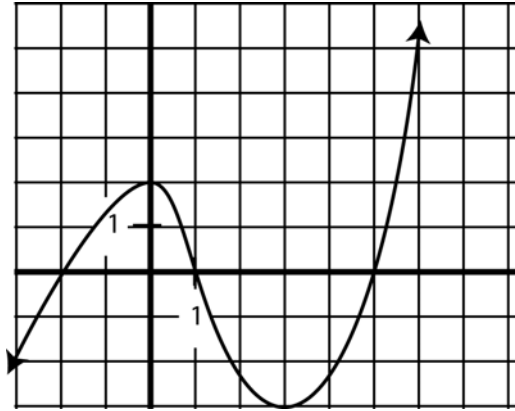
expl 2: Use the intercepts and a third point to graph the line  $3x - 2y = 12$ . Draw a neat  $xy$ -plane with evenly spaced tick marks.

The third point is just a check. It is not needed per se but is a good idea.

expl 3: Use the intercepts and a third point to graph the line  $y = \frac{2}{3}x - 6$ . Draw a neat  $xy$ -plane with evenly spaced tick marks.

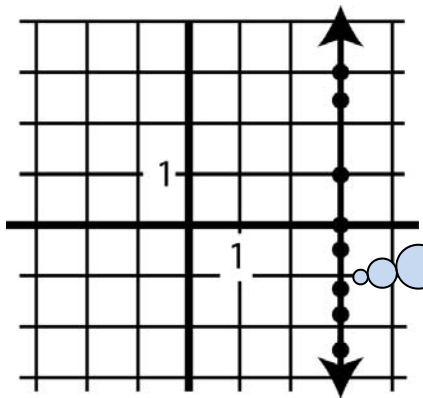
Later, we will learn an easier way to graph this type of line.

expl 4: Identify the intercepts of the graph below. Write them in ordered pair notation.

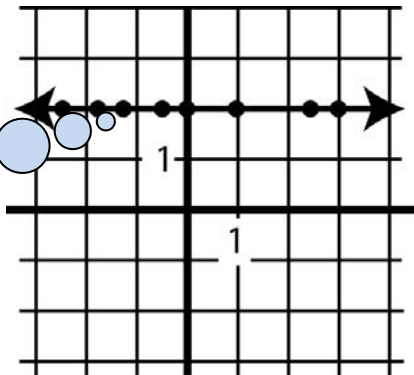


**Horizontal and Vertical Lines:**

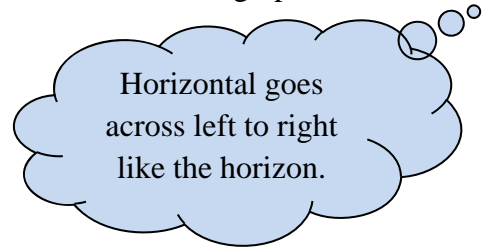
Recall a line's equation tells you what is true of every point on the line. What equations would you use to describe these lines?



What do the points on each line have in common?

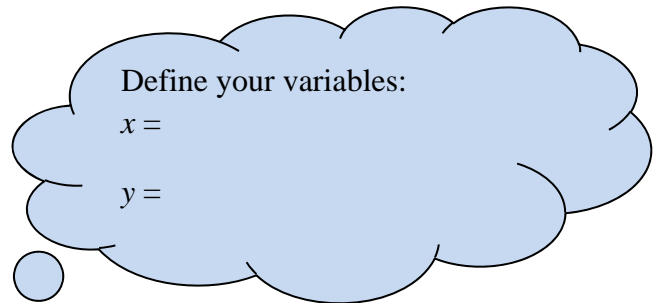


expl 5: Draw a simple  $xy$ -plane with five tick marks in each direction. Then graph the horizontal line  $y = -3$  and the vertical line  $x = 4$ .



expl 6: The price of a movie has been steadily increasing. The price of a movie ticket  $y$  (in dollars) is given by the equation  $y = .2x + 5.42$ , where  $x$  is the number of years after 2000.

a.) Find the  $x$ -intercept of this equation.



b.) What does this  $x$ -intercept mean?

c.) Use part  $b$  to comment on the limitation of using equations to model real world data.

### Worksheet: Relationship between $x$ and $y$ :

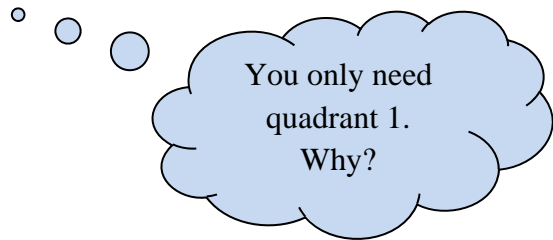
This worksheet helps you to understand what a linear equation tells us about the variables  $x$  and  $y$ . It also discusses intercepts.

expl 7: The production team at Acme Furniture Supply has determined that it takes 3 hours to make an office chair and 6 hours to make a desk. A total of 1200 hours is available to make a shipment of chairs and desks. The linear equation that models this situation is  $3x + 6y = 1200$  where  $x$  is the number of chairs and  $y$  is the number of desks.

a.) Complete the ordered pair  $(0, \underline{\quad})$  for this equation. Describe the manufacturing situation that corresponds to this point.

b.) Complete the ordered pair  $(\underline{\quad}, 0)$  for this equation. Describe the manufacturing situation that corresponds to this point.

c.) Use the ordered pairs from parts  $a$  and  $b$  to graph  $3x + 6y = 1200$ . Label your axes.



d.) If 50 desks are manufactured, algebraically find the greatest number of chairs that can also be made. Then return to your graph and, as best you can, highlight the point that corresponds to this situation.