Today's Plan:

Learning Target (standard): I will describe the union and intersection of sets using the roster method & set builder notation.

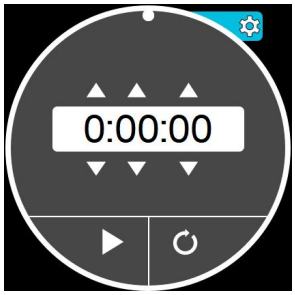
Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Bell Ringer:



Simplify each expression. Show ALL steps!

1) $2\frac{3}{4} - 5\frac{1}{3} = \frac{11}{4} - \frac{16}{3} = \frac{33}{12} - \frac{64}{12} = \frac{-31}{12}$

2) $-3\frac{1}{3} \cdot 4\frac{3}{4} = -\frac{10}{3} \cdot \frac{19}{4} = -\frac{95}{6}$

3) $\frac{11}{4} \div \frac{7}{8} = \frac{11}{4} \cdot \frac{8}{7} = \frac{22}{7}$

Graph the linear inequality.

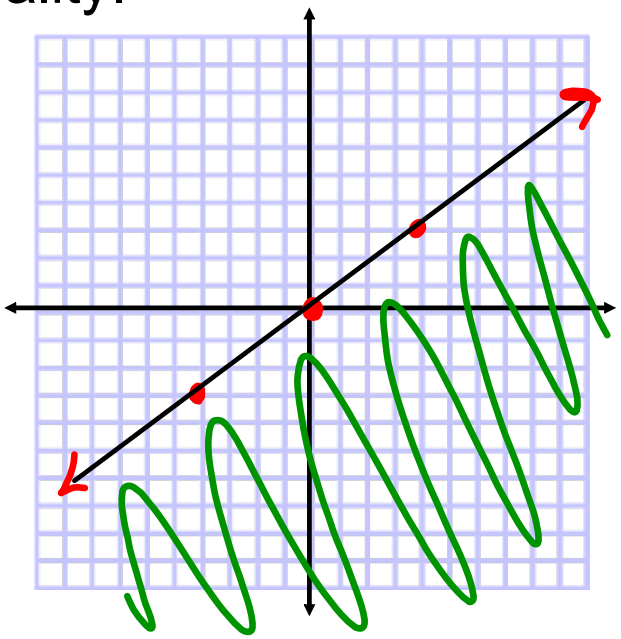
$$3x - 4y \geq 0$$

$-4y \geq -3x$

$y \leq \frac{3}{4}x$

$m = \frac{3}{4}$

$I_y: (0,0)$



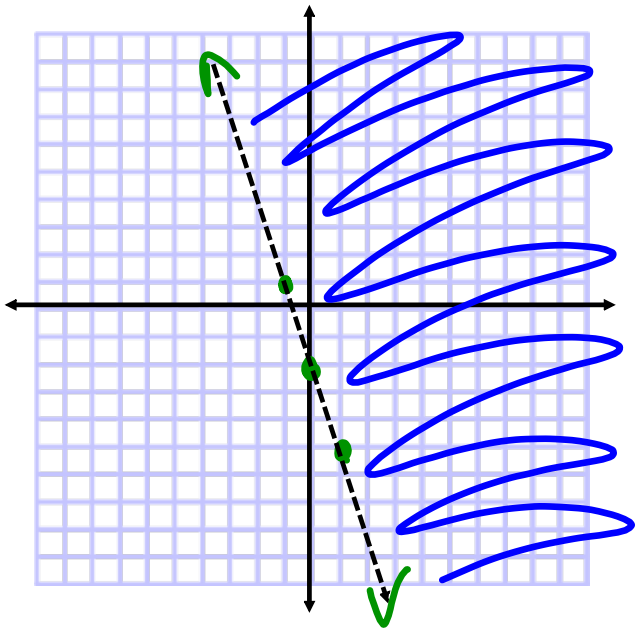
Graph the linear inequality.

$$3x + y > -2$$

$y > -3x - 2$

$m = -3$

$I_y: (0,-2)$



Sets:

- A set is a collection of objects that typically have something in common
- The objects in a set are called the elements of the set
- There are two different methods for writing the elements of a set:
  - the roster method lists all of the elements of a set in order, usually numerically
  - the set builder notation uses symbols to write the elements of the set

The Roster Method:

- Write the set of integers greater than 5, but less than 15

$\{6, 7, 8, 9, 10, 11, 12, 13, 14\}$

- Write the set of integers greater than or equal to -3, but less than 7

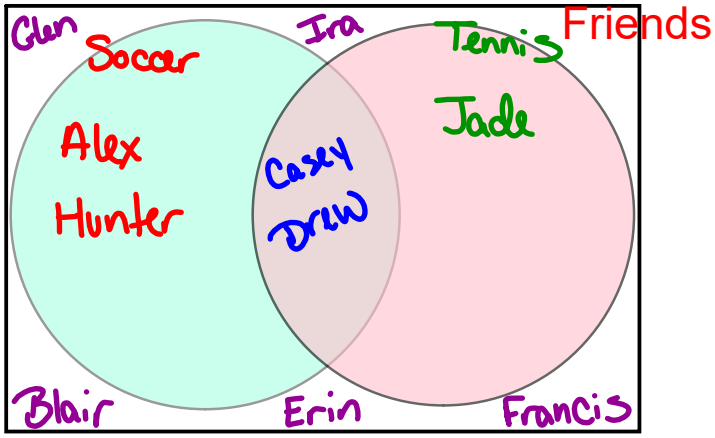
$\{-3, -2, -1, 0, 1, 2, 3, 4, 5, 6\}$

- Write the set of real numbers greater than -1, but less than 25

set builder notation

Venn Diagrams:

a diagram representing mathematical or logical sets as circles within an enclosing rectangle (the universal set), common elements of the sets being represented by the areas of overlap among the circles.



Friends={alex, blair, casey, drew, erin, francis, glen, hunter, ira, jade}

Soccer = {alex, casey, drew, hunter}

Tennis = {casey, drew, jade}

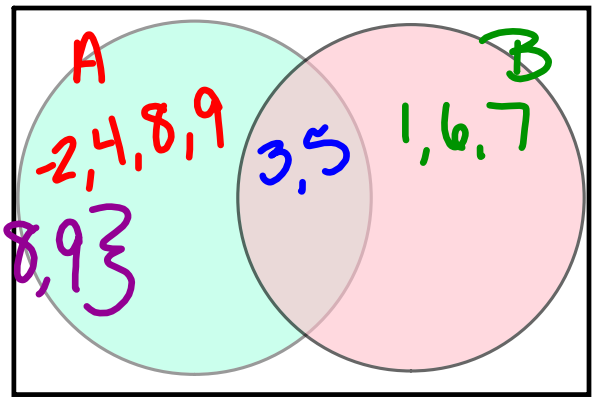
Operations on Sets:

"Together"

- The union of two or more sets is the set of elements in either set A or set B or both

$A = \{-2, 3, 4, 5, 8, 9\}$

$B = \{1, 3, 5, 6, 7\}$



$A \cup B = \{-2, 1, 3, 4, 5, 6, 7, 8, 9\}$

Operations on Sets:

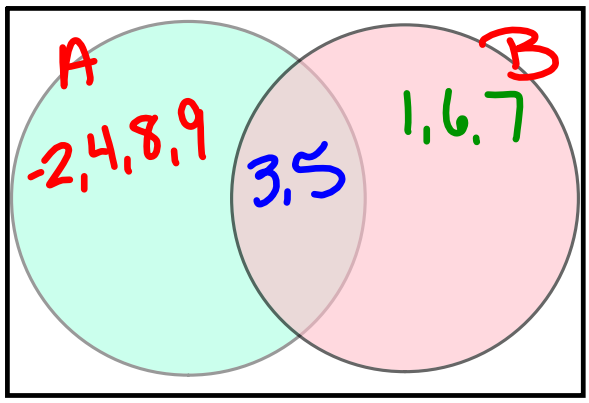
"same"

- The intersection of two or more sets is the set of elements in both set A and set B

$A = \{-2, 3, 4, 5, 8, 9\}$

$B = \{1, 3, 5, 6, 7\}$

$A \cap B = \{3, 5\}$



Operations on Sets:

- The complement of a set is the set of elements that are in the sample, but not the given set
  - the symbol for the complement of set A is $\overline{A}$

$S = \{-2, 1, 3, 4, 5, 6, 7, 8, 9\}$

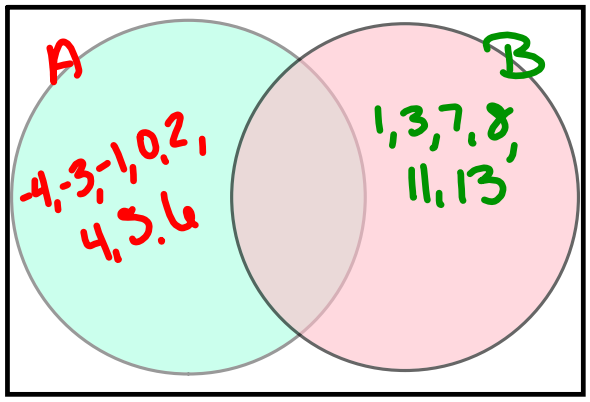
$A = \{1, 3, 5, 6, 7\}$

$\overline{A} = \{-2, 4, 8, 9\}$

Find the union and intersection of the sets.

$A = \{-4, -3, -1, 0, 2, 4, 5, 6\}$

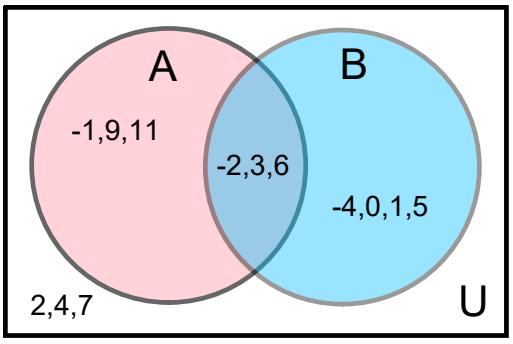
$B = \{1, 3, 7, 8, 11, 13\}$



$A \cup B = \{-4, -3, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 11, 13\}$

$A \cap B = \emptyset$

Venn Diagram:



$U = \{-4, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 9, 11\}$

$A = \{-2, -1, 3, 6, 9, 11\}$

$A - B = \{-1, 9, 11\}$

$B = \{-4, -2, 0, 1, 3, 5, 6\}$

$A \cup B = \{-4, -2, -1, 0, 1, 3, 5, 6, 9, 11\}$

$A \cap B = \{-2, 3, 6\}$

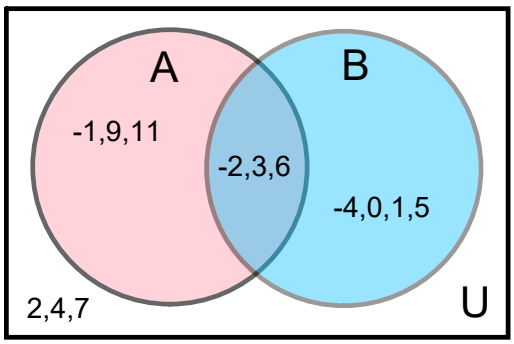
$\overline{A} = \{-4,0,1,2,4,5,7\}$

$B - A = \{-4,0,1,5\}$

$\overline{B} = \{-1,2,4,7,9,11\}$

$\overline{A \cup B} = \{2,4,7\}$

$\overline{A \cap B} = \{-4,-1,0,1,2,4,5,7,9,11\}$



Assignment:

Venn Diagrams

#1-16