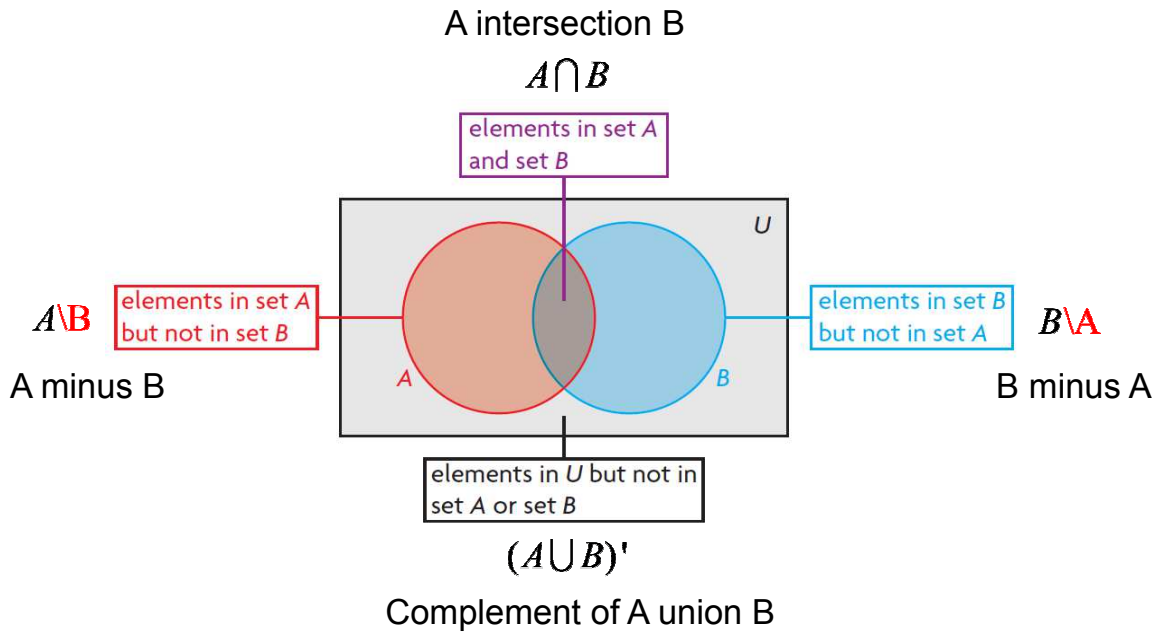SET THEORY (NEW!)

Section 1.1: Sets and Set Notation

Homework: Complete the "Set Theory Terminology" Worksheet

Investigation: How many brothers and sisters do you have?

WORKSHEET

p. 20 of text:

A intersection B

$$A \cap B$$

elements in set A
and set B

$A \backslash B$ | elements in set A but not in set B

A minus B

U

elements in set B but not in set A | $B \backslash A$

B minus A

A

B

elements in U but not in set A or set B

$$(A \cup B)'$$

Complement of A union B

→

Example 1: Finite vs. Infinite Sets

   The universal set is defined as A, the set of natural numbers, and B is the set of natural numbers from 1 to 5.

a) Can you list all the numbers in each set?

b) Which is finite and which is infinite?

c) Is one a subset of another?

d) What is the complement of B, B'?

→

Example 2:

Given the set, S = {4, 5, 6, 8, 9, 11, 15, 17, 20, 24, 30, 32}.

A is the set of multiples of 2 and B is the set of multiples of 3
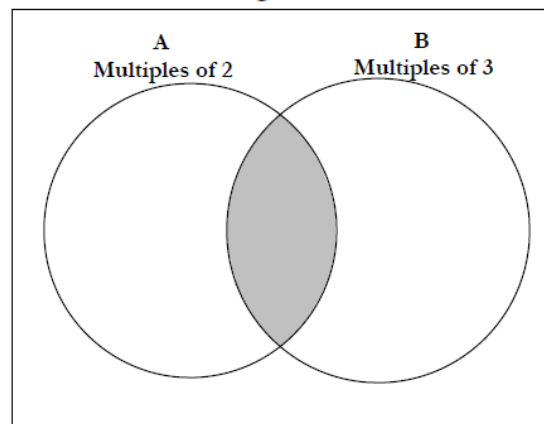
a) Place the numbers in the Venn Diagram.

b) n(S) =

c) n(A) =

d) n(B) =

e) Why is there an overlap?

f) Number of elements in the overlap?

Example 3:

Consider the following sets: Note: Set of Cards p. 15

   U = universal set of playing cards in a standard 52-card deck,

   S = the set of all 13 spades,

   B = the set of all 26 black cards (spades and clubs),

   D = the set of all 13 diamonds.

a) Which of these sets are subsets of other sets?

b) List the disjoint sets, if there are any.

c) Represent the sets using a Venn diagram.

Sets can be described using a(n):

   • written description

   • list

   • algebraic expression using set notation

   • venn diagram

Example 4: (Ex 1, p. 8)

Indicate the multiples of 5 and 10, from 1 to 500, using set notation.

Practice Questions:

p. 15 - 18, #2, 6, 7, 9, 11, 17