Symbols Used to Represent Sets

Subset: a set contained in another set. It is denoted with the symbol $\subset$ Any given set can have multiple subsets

Ex 1) The set A= { alex, billy, casey } has the subsets:

{alex} {billy} {casey} {alex, billy} {alex, casey} {billy, casey}

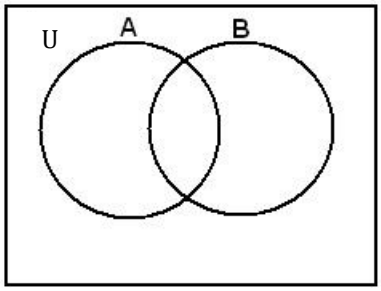
And the empty set, which is denoted {} or $\varnothing$

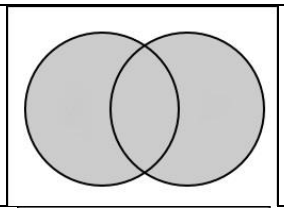
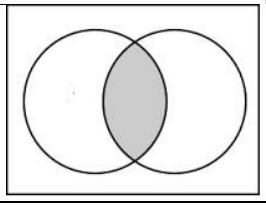
**When asked to list ALL of the subsets, you want to create every possible arrangement of the elements. Order does not matter. (ex. {alex, billy} is the same as {billy, alex} you do not need to write both of these versions, only one.)

Ex 2) List all of the subsets of the set $B = \{5, 6, 7, 8\}$

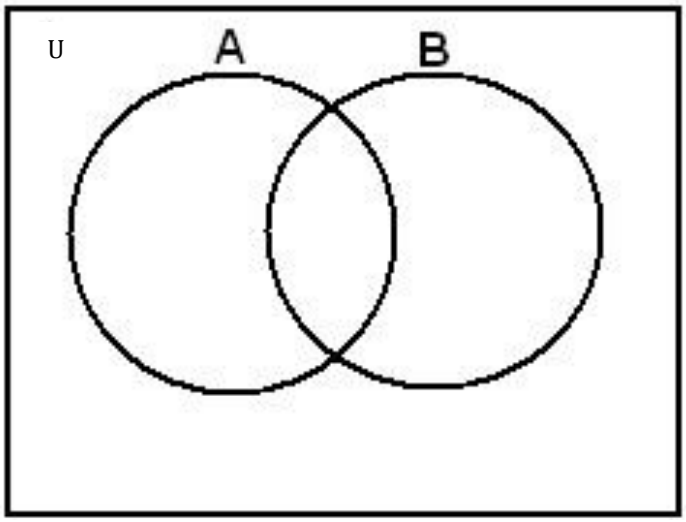
Example using the sets : A= {1,2,3,4} B= {1,2,3,4,5,6}

Venn diagram showing these sets →



Symbol	Name	Definition	Example
{}	Set	Collection of elements	A and B are both sets
$\in$	Is an element of	An element of a specific set	$5 \in \{1,2,3,4,5,6\}$ OR $5 \in B$ ["5 is included in set B (is an element of set B)"]
$\notin$	Is not an element of	An element that is not included in a specific set	$7 \notin \{1,2,3,4\}$ OR $7 \notin A$ ["7 is NOT included in set A (is NOT an element of set A)"]
$\subset$	Is a subset of	A set whose elements are all contained in another set	$A \subset B$
$\cup$	Union	Every element in BOTH sets (all together)	$A \cup B = 1,2,3,4,5,6$ 
$\cap$	Intersection	All of the elements that both sets have in common	$A \cap B = 1,2,3,4$ 
$\varnothing$	Empty set	A set containing no elements	Examples to follow
U	Universal Set	The set containing all objects or elements. All other labeled sets are subsets of the universal set.	$U = 1,2,3,4,5,6$

Ex 1)



a) $A \cup B =$ b) $A \cap B =$

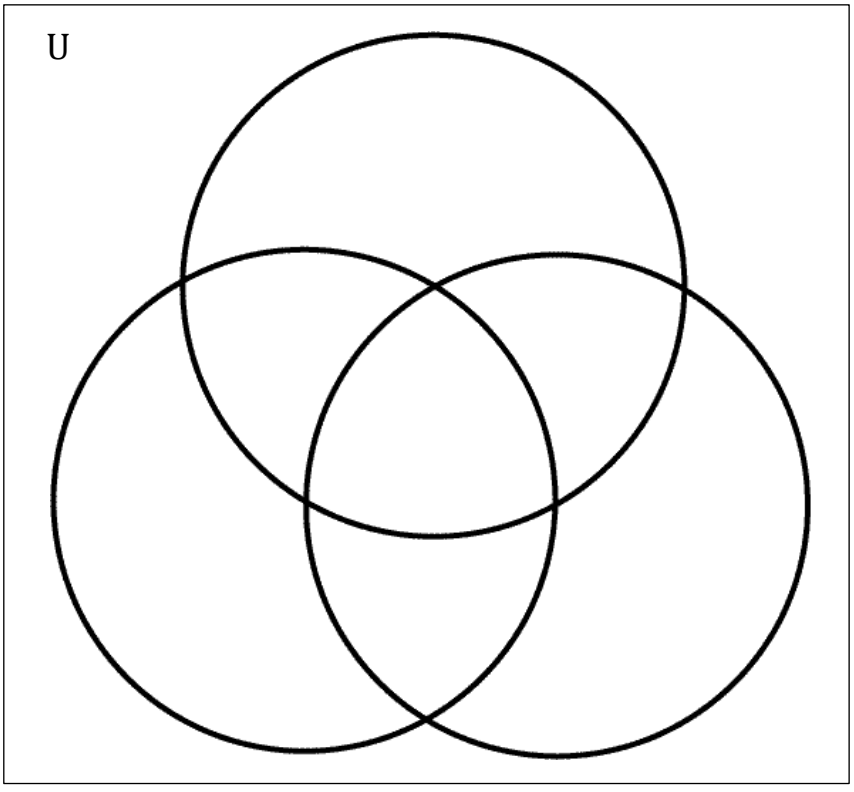
c) Is $A \subset B$? Why or why not?

d) Is $B \subset A$? Why or why not?

e) List 3 elements of set A and 3 elements of set B using the element notation $\in$.

f) List 3 things that are not elements of set B

Ex 2) $A=\{1, 2, 3, 4, 5, 7, 8\}$ $B=\{2, 4, 6, 7, 10\}$ $C=\{2, 4, 6, 8, 9\}$



Find the following:

a) $A \cup B =$

b) $A \cup C =$

c) $B \cap C =$

d) $A \cap B \cap C =$

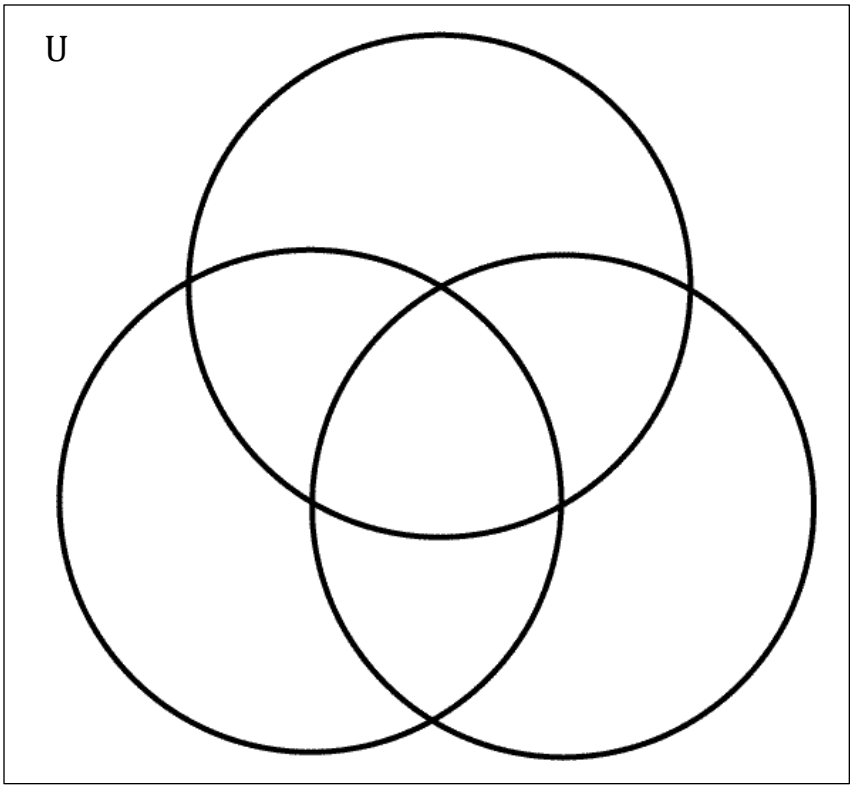
e) $(A \cup B) \cap C =$

f) $(A \cap C) \cup (B \cap C) =$

Word Problems

Use the following information to answer the questions below. Label and fill out the Venn diagram to make it easier!

- Drew plays soccer, tennis, **and** volleyball
- Jade plays tennis and Volleyball
- Alex and Hunter play soccer, but don't play tennis or volleyball
- Laura plays soccer and tennis



How many students play Soccer ∩ Volleyball? Who are these students?

(How many play both Soccer and Volleyball?)

How many students play Soccer ∪ Tennis? Who are these students?

(How many students play soccer or tennis or both?)