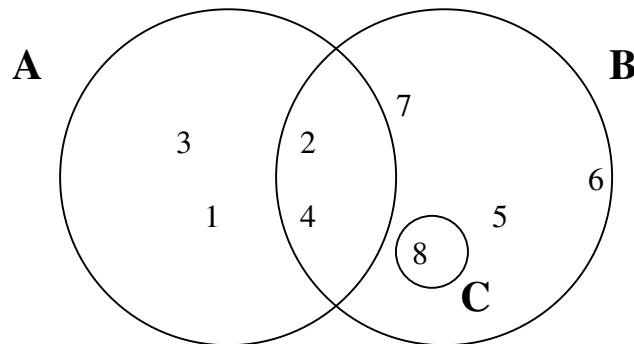


Sets and Set Notation

- An *element* is a single object contained in a set. For our purposes, this is usually a number of some sort.
- A *set* is any finite or infinite collection of elements or objects.
- Set A is a *subset* of set B if and only if every element of A is also an element of B . Example: The even numbers are a subset of the integers.
- The *union* of two or more sets, denoted by the symbol \cup , is the set obtained by combining the elements of each set.
- The *intersection* of two or more sets, denoted by the symbol \cap , is the set of elements common to all sets.
- The *complement* of a set A , denoted by A' , is the set of elements not in A .
- The *empty set* is denoted by either $\{ \}$ or \emptyset and contains no elements.
- Intersections and unions of sets can be expressed using a *Venn Diagram*. An example of a Venn Diagram is shown below.



1. $A = \{1,2,3,4\}$ and $B = \{2,4,5,6,7,8\}$. This notation is called *set notation* and each member of the sets are the elements.
2. $A \cup B = \{1,2,3,4,5,6,7,8\}$. Notice that the elements 2 and 4 are not counted twice.
3. $A \cap B = \{2,4\}$. The intersection is where the circles, and the sets, cross or intersect.
4. $A' = \{5,6,7,8\}$. This can also be viewed as B / A in this case, which is the set B “take out” A .
5. C is a subset of B , written $C \subseteq B$ because C is fully contained in B .