

Math 1332
Chapter 2 Notes

Section 1

Set: collection of objects whose contents can be clearly defined

Elements or Members: objects in the set

How to represent a set

1. Roster \rightarrow List
2. Use words
3. Set builder Notation

Empty Set: Null Set: $\{ \}$: ϕ

\in : element of

\notin : not an element of

Natural Numbers: N : $\{1, 2, 3, 4, \dots\}$: counting numbers

Cardinal Number: cardinality: $n(A)$ = number of elements in A.

Finite Set: set that we can count its elements. The set stops.

Infinite Set: set that is not a finite set. A set that goes on forever.

Equality of set: elements in both sets are identical and $n(A) = n(B)$: $A = B$

Equivalent Sets: sets that have equal number of elements: $n(A) = n(B)$: $A \equiv B$

Section 2

Universal Set: general set that contains all the elements that pertain to the problem.

Venn diagrams: diagram to show relationship between sets.

Complement : A' : elements of the universe not in A.

Subset: $A \subseteq B$, every element in A is also in B.

Proper Subset: $A \subset B$: A is a subset of B, but $A \neq B$.

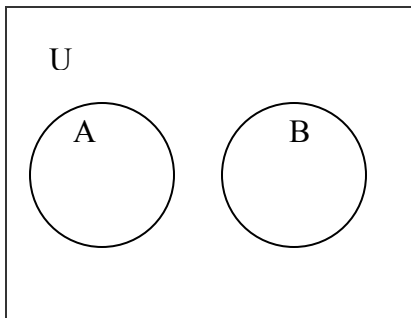
Rules of Empty Set and Subsets

1. $\phi \subseteq B$
2. $\phi \subset B, \phi \neq B$

Number of Subsets: 2^n : n = number of elements in set.

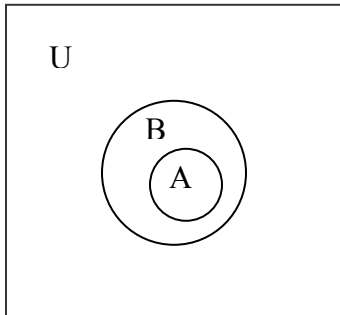
Number or Proper Subsets: $2^n - 1$; all the subsets, but remove the actual set.

Section 3



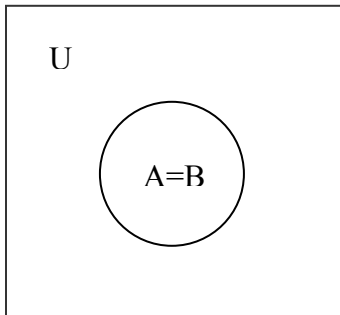
Disjoint Sets

No Elements in Common



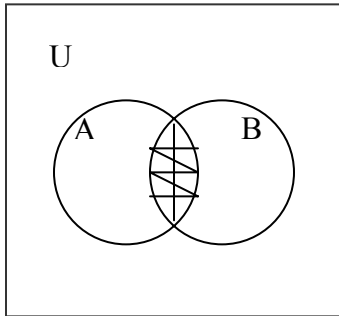
Proper Subsets

$$A \subset B$$



Equal Sets

$$A = B$$



Sets with Common Elements

Intersection of Sets: $A \cap B$: Elements are in BOTH A and B.

Union of Sets: $A \cup B$: Elements of A or B; combine together

Empty Set with Intersection and Union Rules

1. $A \cap \phi = \phi$
2. $A \cup \phi = A$

Section 5

Cardinality of a Union: $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

How to do survey problems

1. Define the sets in question
2. Draw the Venn Diagram
3. Determine cardinality of each, start with smallest part inside and work your way out.
4. Complete the Venn Diagram