2.1 Notes Worksheet Name: _____

Sets and Operations

Set: _____

Elements:_____

Set Notation:

$B = \{2,\ 4,\ 8,\ 16,\ 32\}$

Empty Set: The set containing no elements, denoted ____ or _____.

Universal Set: The set of all possible things (in context), denoted U.

Intersection of Sets: Denoted $A \cap B$, this new set consists of elements that are in *both* A and B simultaneously.

Example:

Mutually Exclusive: Two sets are mutually exclusive if they have *no* elements in common.

Example:

Union of Sets: Denoted $A \cup B$, this new set consists of elements that are in A or B (inclusive "or").

Example:

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1. Define the sets below if $A = \{d, a, i, s, y\}$, $B = \{s, a, y\}$, $C = \{b, e, t\}$, $D = \{y, a, s\}$, and
   $U = \{a, b, c, \ldots, z\}$.

   a) $A \cap B =$

   b) $B \cup D =$

   c) $A \cup B =$

   d) $C \cap B =$

   e) $U \cap D =$

   f) $B \cup C =$

2. Consider sets X and Y, where $n(Y) = 4$, $n(X) = 5$, and $n(X \cup Y) = 7$.
   a) Draw a Venn Diagram that illustrates this relationship, using the universal set $U = \{a, b, c, \ldots, z\}$.

   b) $n(X \cap Y) =$

<u>Cardinal Number Rule for Union/Intersection of Sets</u>:

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Complement of a Set: denoted by A'; this represents every element in the universal set that is *outside* of A.

Example:

Relationship between set theory and logic:

Set Theory		**Logic**		Common Wording
Term	**Symbol**	**Term**	**Symbol**	
				or
				and
				not
				If _____,then _____