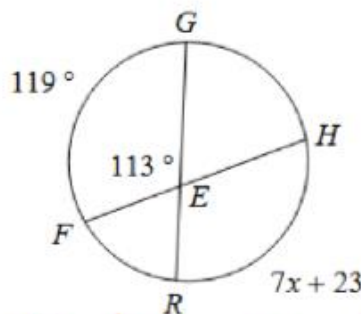
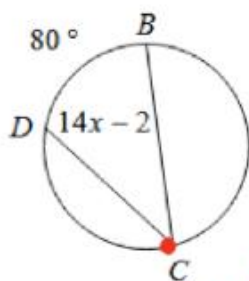


Find the value of x in each



Vertex on circle  
 $2(\angle) = \text{angle}$

$$2(14x - 2) = 80$$

$$28x - 4 = 80$$

$$28x = 84$$

$$x = 3$$

Vertex in Circle  
 $2(\angle) = \widehat{1} + \widehat{2}$

$$2(113) = 119 + 7x + 23$$

$$226 = 142 + 7x$$

$$84 = 7x$$

$$12 = x$$

Set- collection of objects, not necessarily a mathematical one.

(Order in which the set is written does not matter

each element is only counted once) { }

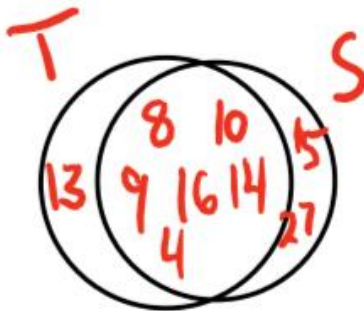
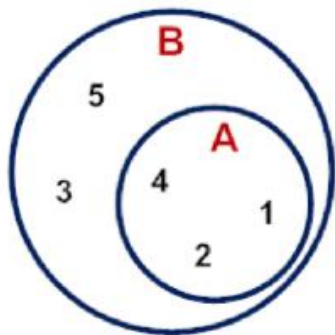
Ex. 1



Ex. 2 1, 1, 1, 4, 4, 4, 4, 4, 4, 5, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 12

{ 1, 4, 6, 7, 5, 12 }

A subset is a portion of a set



A is a subset of B  
because all the elements  
of A are in B.

Put in you Notes:

Ex.3 Is set T a subset of set S? Explain your answer

$T = \{8, 10, 9, 13, 16, 14, 4\}$      $S = \{4, 15, 16, 8, 10, 9, 16, 14, 27\}$

T is not a subset of S, because  
T has elements that are not in S.

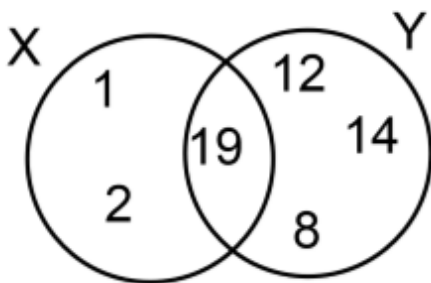
The Universal set, or parent set, is the set of all possible elements which is usually denoted by the letter U.

Any ideas for a possible Universal Set?

Shoes      Cell phones



Question: Is X a subset of Y? Is X a universal set?



No X is not a subset of Y because not all the elements of X are in Y.

X is not a universal set because it does not contain all the elements of the set.

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## Operations of sets

$X = \{ \text{red, green, blue, Teal} \}$  and  $Y = \{ \text{white, black, green, pink} \}$

Intersection: The set created from all the elements that both sets have in common. This is notated with the symbol  $\cap$  and is usually thought of as meaning "and".

$$X \cap Y = \{ \text{green} \}$$

Union: The set created from all the elements contained in either or both sets. This is notated with the symbol  $\cup$  and is usually thought of as meaning "or".

$$X \cup Y = \{ \text{red, green, blue, teal, white, black, pink} \}$$

### Example 4

$$A = \{ 11, 4, 12, 7 \} \quad B = \{ 13, 4, 12, 10, 3 \}$$

Find the intersection and union

$$A \cap B = \{ 4, 12 \}$$

$$A \cup B = \{ 11, 4, 12, 7, 13, 10, 3 \}$$

Disjoint sets are sets that have no elements in common.

Empty set is the set with no elements.

Ex.  $X = \{2, 5, 23, 4\}$  and  $Y = \{7, 8, 9\}$

a. Are these sets disjoint?

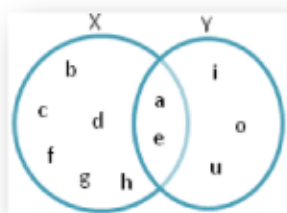
*Yes they have no elements in common.*

b. Find the union and intersection of the sets.

$$X \cup Y = \{2, 5, 23, 4, 7, 8, 9\}$$

$$X \cap Y = \{ \} \text{ or empty set}$$

Compliment of a set - is the elements that are not in the indicated set. Notation  $X^c$ ,  $\sim X$ , or  $X'$



$$X^c = \{i, o, u\}$$

$$\sim Y = \{b, c, d, f, g, h\}$$

$$(X \cap Y)' = \{b, c, d, f, g, h, i, o, u\}$$