

# 0-1 Guided Notes

## Sets

### Objectives:

1. Use set notation to denote elements, subsets, and complements.
2. Find intersections and unions of sets

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## SET NOTATION

A SET is a collection of objects.

Each object in a set is called an ELEMENT.

A set is named using a capital letter and is written with its elements listed within braces { }.

### Examples of Sets:

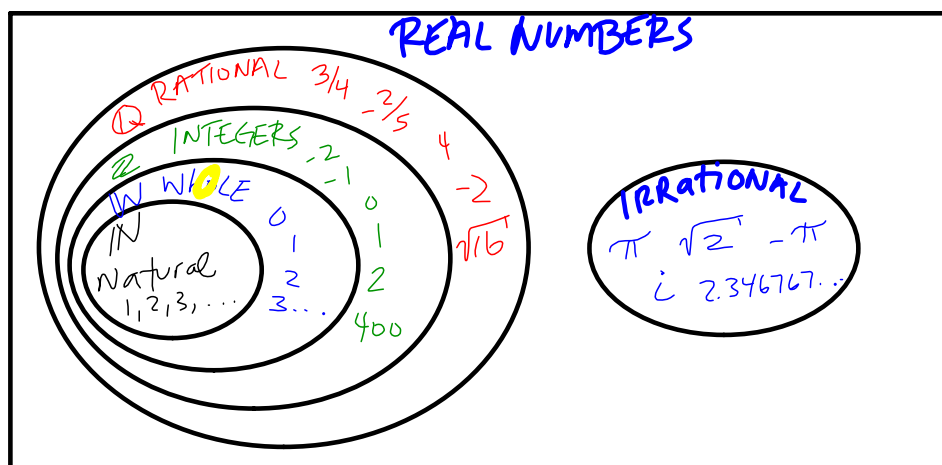
$$E = \{2, 4, 6, 8, \dots\}$$

$$F = \text{boys who play fball} = \{ \text{Ryan, Carter, Ryan, Josh, Luke, Eli, Jordy} \}$$

$$G = \{ \text{Kurri, A Leah} \}$$

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# THE REAL NUMBER SYSTEM



ex  $\frac{7}{8}, -2, 0$   
 $\sqrt{7}$

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## USING SET NOTATION

**Example 1:** Use set notation to write the elements of each set. Then determine whether the statement about the set is true or false.

- a.)  $N$  is the set of whole numbers greater than 10 and less than 16.  $12 \in N$ ?

$$N = \{11, 12, 13, 14, 15\}; \text{ true}$$

$\in$  element of  
 $\notin$

- b.)  $V$  is the set of vowels.  $t \in V$ ?

$$V = \{a, e, i, o, u\}; \text{ false}$$

- c.)  $M$  is the set of months that begin with the letter J. April  $\in M$ ?

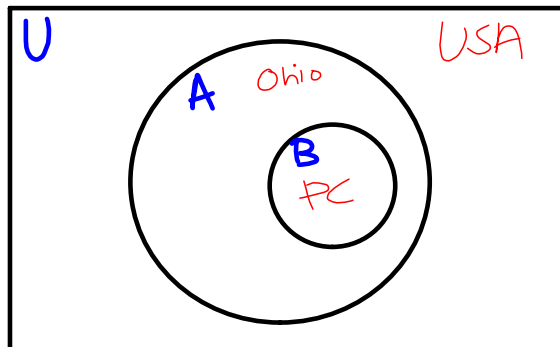
$$M = \{\text{Jan, Jun, July}\}; \text{ false}$$

- d.)  $X$  is the set of numbers on a die.  $12 \in X$ ?

$$\neq X = \{1, 2, 3, 4, 5, 6\}; \text{ false}$$

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If every element of set B is also contained in set A, then B is called a SUBSET of A, and is written as  $B \subset A$ . The UNIVERSAL SET U is the set of all possible elements for a situation. All other sets in this situation are subsets of the universal set.



COMPLEMENT

everyone  
 $B' = \text{not in PC}$   
 $\overline{A'} = \text{not in Ohio}$   
 $\overline{U} = \text{not in US}$

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**EXAMPLE**

Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ,  $A = \{1, 4, 7, 8, 9\}$ ,  $B = \{2, 4\}$ ,  $D = \{3, 9\}$ , and  $E = \{9, 2\}$ .  
 $C = \{1, 5, 7, 8\}$

a.) State whether  $B \subset A$  is true or false.

true

b.) State whether  $E \subset A$  is true or false.

true

d.) Find  $C'$

$C' = \{2, 3, 4, 6, 9\}$

e.) Find  $A'$

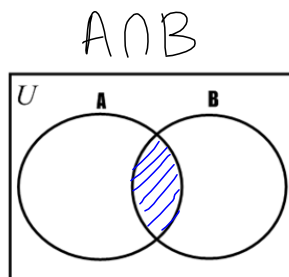
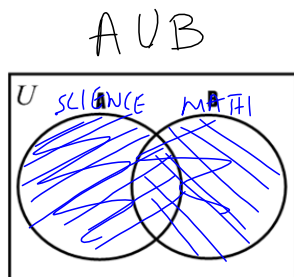
$A' = \{3, 5, 6\}$

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**UNIONS and INTERSECTIONS**

The UNION of sets A and B, is written  $A \cup B$ , is a new set of elements that are either in A OR B. OR

The INTERSECTION of sets A and B, written  $A \cap B$ , is a new set found in both A AND B. AND



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**Homework:**

pg P5 #1-8 odd, 9, 11, 17-23 odd, 25

P5 1-27 odd

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