

Given:  $U = \{x \mid x \in \mathbb{Z} \text{ and } 0 \leq x < 10\}$ ,  $A = \{2, 3, 4, 5\}$ ,  $B = \{2, 4, 6, 8\}$ , and  $C = \{1, 3, 5, 7, 9\}$ .

1. Write  $U$  as a set in roster notation:

$$U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

Find each of the following:

2.  $A' = \{0, 1, 6, 7, 8, 9\}$

3.  $A \cup B = \{2, 3, 4, 5, 6, 8\}$

4.  $B \cap C = \emptyset$

5.  $|C| = 5$

6.  $B - A = \{6, 8\}$

7.  $A \oplus B = \{3, 5, 6, 8\}$

True or False. If False, rewrite as a true statement.

8.  $\{2\} \in A$  False  $2 \in A$

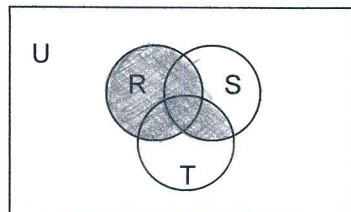
9.  $A$  and  $C$  are disjoint. False  $B$  and  $C$  are disjoint

10.  $4 \in A \cap B$  True

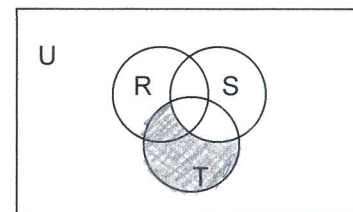
### Venn Diagrams

Shade each of the following:

11.  $R \cup (S \cap T)$



12.  $S' \cap T$



## Multiplicity

Given:  $A = \{3 \cdot a, 2 \cdot b, 5 \cdot c\}$  and  $B = \{4 \cdot a, 2 \cdot b, 1 \cdot c\}$

Find each of the following:

13.  $A \cup B = \{4 \cdot a, 2 \cdot b, 5 \cdot c\}$

14.  $A \cap B = \{3 \cdot a, 2 \cdot b, 1 \cdot c\}$

15.  $A + B = \{7 \cdot a, 4 \cdot b, 6 \cdot c\}$

16.  $A - B = \{4 \cdot c\}$

17.  $|A| = 10$

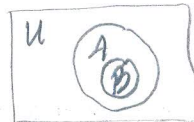
18.  $B - A = \emptyset$

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## Sets of Numbers

19. What do you know about the sets A and B if  $A \cup B = A$ ?

$$B \subseteq A \text{ OR } B = \emptyset$$



20. What can be said about sets A and B if  $A - B = A$ ?

A and B are  
disjoint or  
 $B = \emptyset$

