

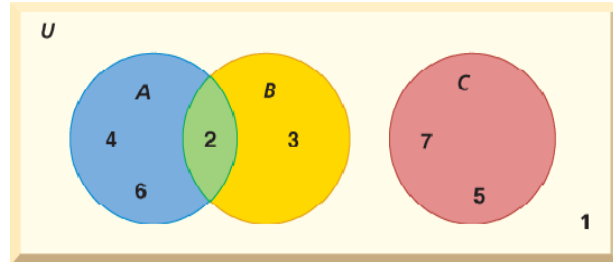
Lesson 1-3

Example 1

Refer to the diagram to find each.

Let $A = \{2, 4, 6\}$, $B = \{2, 3\}$,
and $C = \{5, 7\}$.

- C'
- $A \square B$
- $A \square B$
- $A \square C$



Solution

- C' is the set of those elements in U and *not* in C . From the diagram, $U = \{1, 2, 3, 4, 5, 6, 7\}$. So, $C' = \{1, 2, 3, 4, 6\}$
- $A \square B$ is the set of those elements that are in A , in B , or in both.
 $\{2, 4, 6\} \square \{2, 3\} = \{2, 3, 4, 6\}$
 $A \square B = \{2, 3, 4, 6\}$
- $A \square B$ is the set of elements common in A and B . The only element common to both A and B is 2.
 $\{2, 4, 6\} \square \{2, 3\} = \{2\}$
 $A \square B = \{2\}$
- $A \square C$ have no elements in common. So, $A \square C = \emptyset$.

Example 2

Using the replacement set of the real numbers, find the solution set for $x \geq -2$ and $x < 3$.

Let $A = \{x \mid x \text{ is a real number and } x \geq -2\}$

$B = \{x \mid x \text{ is a real number and } x < 3\}$

Graph $A \cap B$ on a number line.

Solution

Graph of $A: x \geq -2$



Graph of $B: x < 3$



Graph of $A \cap B: x \geq -2$ and $x < 3$



The graph of $x \geq -2$ and $x < 3$ is the intersection of the graphs of the two inequalities, $A \cap B$.

This can be written as $-2 \leq x < 3$.

The solution set is $\{x \mid x \text{ is a real number and } -2 \leq x < 3\}$.

Example 3

Using the replacement set of the real numbers, find the solution set for $x \geq 2$ or $x < -1$.

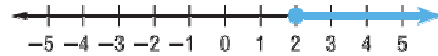
Let $A = \{x \mid x \text{ is a real number and } x \geq 2\}$

$B = \{x \mid x \text{ is a real number and } x < -1\}$

Graph $A \cup B$ on a number line.

Solution

Graph of $A: x \geq 2$



Graph of $B: x < -1$



Graph of $A \cup B: x \geq 2$ or $x < -1$

