

# What are Sets?

## Worksheet

A set is a collection of distinct elements with no particular order, written with curly braces like  $A = \{1, 2, 3\}$ . Sets can be combined using union, intersection, and difference operations.

### Questions

1. If  $A = \{1, 2, 3\}$  and  $B = \{2, 3, 4\}$ , what is  $A \cap B$ ?

- A)  $\{1, 2, 3, 4\}$
- B)  $\{2, 3\}$
- C)  $\{1, 4\}$
- D)  $\{\}$

2. If  $|A| = 5$ ,  $|B| = 7$ , and  $|A \cap B| = 2$ , what is  $|A \cup B|$ ?

- A) 12
- B) 10
- C) 14
- D) 9

3. What symbol represents the empty set?

- A)  $\{ \}$
- B)  $\emptyset$
- C)  $\{ \}$
- D)  $\{ \}$

4. If every element of  $A$  is also in  $B$ , what is the relationship?

- A)  $A = B$
- B)  $A \subset B$
- C)  $A \supset B$
- D)  $A \cap B = \emptyset$

5. Let  $A = \{1, 2, 3, 4\}$  and  $B = \{3, 4, 5\}$ . Find  $A \cap B$  and  $A \cup B$ .

6. In a class of 50 students, 30 study Math and 25 study Science, with 10 studying both. How many study at least one of the two?

7. Let  $A = \{2, 4, 6\}$  and  $B = \{1, 3, 5\}$ . Are  $A$  and  $B$  disjoint? Find  $|A \cap B|$ .

8. Define: What is a set?

9. Define: What is the union of two sets ( $A \cup B$ )?

10. Define: What is the intersection of two sets ( $A \cap B$ )?

## Answer Key

1. B)  $\{2,3\}$  - The intersection keeps only shared elements: 2 and 3.
2. B)  $10 - |A \cap B| = 5 + 7 - 2 = 10$ .
3. C) -  $\{\}$  denotes a set with no elements.
4. C)  $A \subset B$  - This is the definition of A being a subset of B.
5. A  $\cup$  B combines all elements:  $\{1, 2, 3, 4, 5\}$  A  $\cap$  B keeps only shared elements:  $\{3, 4\}$   $|A \cap B| = 4 + 3 - 2 = 5$ , which matches the listed union
6.  $|Math| = 30$ ,  $|Science| = 25$ ,  $|Math \cap Science| = 10$   $|Math \cup Science| = 30 + 25 - 10 = 45$  So 45 students study at least one subject
7.  $A \cap B = \{\}$  (no shared elements) disjoint sets  $|A \cup B| = |A| + |B|$   $|A \cup B| = 3 + 3 - 0 = 6$
8. A well-defined collection of distinct objects, called elements, e.g.  $A = \{1, 2, 3\}$ .
9. The set of all elements that are in A, in B, or in both.
10. The set of elements that are in both A and B.

### Bounlu

All cards, step-by-step solutions and an AI tutor are in the Notek app.  
Promy turns exam dates into automatic reminders.