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Academic Education GSEB › Class 11 Commerce › Mathematics

Sets

Understanding Sets: The Foundation of Mathematical Grouping

DEFINITION

A set is a collection of distinct objects, considered as an object in its own right. Sets can contain numbers, letters, or other sets.

KEY CONCEPTS

Elements

Elements are the individual objects contained in a set, denoted by curly braces.

Subset

A subset is a set where all elements are also in another set, represented as A ⊆ B.

Union

The union of two sets combines all unique elements from both sets, denoted as A ∪ B.

Intersection

The intersection of two sets includes only the elements that are common to both sets, denoted as A ∩ B.

Complement

The complement of a set includes all elements not in the set, relative to a universal set.

EXAMPLES

→ Set A = {1, 2, 3}, Set B = {2, 3, 4}

→ Union of A and B = {1, 2, 3, 4}

→ Intersection of A and B = {2, 3}

MEMORY TIPS

★ Remember 'U' for Union as it looks like a cup combining elements.

★ Think of '∩' as a handshake, showing common elements.

★ Use the phrase 'All but' for complements to recall missing elements.

COMMON MISTAKES

✗ Confusing union with intersection.

✗ Assuming all elements are unique in a set without checking.

✗ Not recognizing that sets are unordered.

QUICK RECAP

Sets are collections of distinct objects that can interact through operations like union and intersection. Understanding these concepts is crucial for solving problems in mathematics.