ONE PAGE SUMMARY

Academic Education GSEB › Class 12 Science › Mathematics

Relations and Functions

Mastering Relations and Functions for Mathematical Success

DEFINITION

Relations are sets of ordered pairs, while functions are special types of relations where each input has a unique output.

KEY CONCEPTS

Relation

A relation is a collection of ordered pairs, representing a relationship between two sets.

Function

A function is a relation where each input corresponds to exactly one output.

Domain

The domain of a function is the set of all possible input values.

Range

The range of a function is the set of all possible output values.

Types of Functions

Functions can be classified as one-to-one, onto, or many-to-one based on their mapping.

EXAMPLES

→ f(x) = 2x + 3 where x is any real number

→ Relation R = {(1, 2), (2, 3), (3, 4)}

→ Function f: {1, 2} → {3, 4} defined by f(1)=3, f(2)=4

MEMORY TIPS

★ Remember 'Function = Unique Output' to distinguish functions from general relations.

★ Use 'D-R' for Domain-Range to recall the key components of functions.

★ Visualize functions as machines: each input gives one specific output.

COMMON MISTAKES

✗ Confusing relations with functions by not checking for unique outputs.

✗ Forgetting to define the domain and range for a given function.

✗ Assuming all relations are functions without verifying the output uniqueness.

QUICK RECAP

Relations and functions are foundational concepts in mathematics. Remember that functions must have unique outputs for each input, and always identify the domain and range when working with them.