

St. Andrews Scots Sr. Sec. School

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Session: 2025-2026 - Notes

Class: VII

Subject: Maths

Topic: Simple Equations

Notes

Introduction to Simple Equations

Variables and Expressions

Variable is a quantity that can take any value, its value is **not fixed**. It is a symbol for a number whose value is unknown yet.

Expressions are formed by performing operations like **addition**, **subtraction**, **multiplication** and **division** on the variables.

Example: $6x - 3$ is an expression in variable x .

To know more about Variable and Expressions,

Algebraic Equation

An **equation** is a **condition on a variable** such that two expressions in the variable should have **equal value**.

Example: $8x - 8 = 16$ is an equation.

The **value** of the **variable** in an equation for which the **equation is satisfied** is called the **solution of the equation**.

Example: The solution for the equation $2x - 3 = 5$ is $x = 4$.

To know more about Algebraic Equation,

More about Equations

Mathematical Operations on Expressions

- Addition of variables: $(3x + 4z) + (5y + 6)$
- Subtraction of variables: $(4x - 7y) - (6y + 5)$
- Multiplication of variables: $(5xy + 6) \times 7x$
- Division of variables: $(8xz + 5z) / (5x - 6y)$

Solving an Equation

Solving an equation involves performing the **same operations** on the expressions on **either side** of the “=” sign so that the value of the variable is found **without disturbing the balance**.

Example : Solve $2x+4=10$

Consider $2x+4=10$

$\Rightarrow 2x+4-4=10-4$ [Subtracting 4 from both LHS and RHS] $\Rightarrow 2x=6$

$\Rightarrow 2x/2=6/2$ [Dividing both LHS and RHS by 2] $\Rightarrow x=3$

Methods of Solving an Equation

Method 1: performing the **same operations** on the expressions on **either side** of the “=” sign so that the value of the variable is found **without disturbing the balance**.

Operations involve **Adding, subtracting, multiplying or dividing** on **both** sides.

Example: $x+2=6$

Subtract 2 from LHS and RHS

$\Rightarrow$ LHS: $x+2-2=x$

$\Rightarrow$ RHS: $6-2=4$

But LHS = RHS

$\Rightarrow x = 4$

Method 2: Transposing

It involves moving the terms to one side of the equation to find out the value of the variable.

When terms move from one side to another they change their sign.

Example: $x+2=6$

Transpose (+2) from LHS to RHS

$\Rightarrow x=6-2$

$\Rightarrow x=4$

Applying Equations

Forming Equation from Solution

Given a solution, many equations can be constructed.

Example: Given solution: $x = 3$

Multiply both sides by 4,

$\Rightarrow 4x=4 \times 3$

Add -5 to both sides,

$\Rightarrow 4x-5=12-5$

$\Rightarrow 4x-5=7$

Similarly, more equations can be constructed.

Applications (Word problem)

Example: Ram's father is 3 times as old as his son Ram. After 15 years, he will be twice the age of his son.

Form an equation and solve it.

Solution: Let Ram's age be x .

$\Rightarrow$ His father's age is $3x$.

After 15 years:

$$3x+15=2(x+15)$$

On solving,

$$3x+15=2x+30$$

$$3x-2x=30-15$$

$$x=15$$

$\therefore$ Ram's age is 15 and his dad's age is 45.