

Pre-Content/content Post-Content	Learning outcomes/Objectives	
<u>Pre-Content</u> Recall - Quadratic Polynomial and linear equations <u>Content</u> ✓ Introduction to Quadratic equations ✓ Standard form of quadratic equations ✓ Solution of a quadratic equation ✓ Factorisation method • Nature of roots <u>Post-content</u> • To work out extra practice questions	Students will be able to ✓ recall the concept of quadratic polynomial and linear equations ✓ understand the concept of equations ✓ express the given equation in standard form ✓ solve quadratic equations ✓ factorize a quadratic polynomial ✓ find the nature of roots ✓ to apply the methods of solving quadratic equations in practical problems	Students will be able to ✓ recall and define quadratic polynomial and linear equations ✓ explain and define quadratic equations ✓ express the quadratic equation in standard form ✓ solve quadratic equations by different methods ✓ factorize and solve a quadratic polynomial by middle term splitting ✓ calculate discriminant and thus find the nature of roots ✓ acquire problem Solving skills to perform the required calculations to solve problems

Home Work /Assignments

NCERT exercise/solved examples given as home task.

Questions from sample papers to solve.

Selected questions from NCERT Exemplar.

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will ask questions to recall their previous knowledge in the interactive session based on the concept of quadratic polynomial and linear equations introduce the concept of quadratic equations based on their previous knowledge of quadratic polynomial teach them to write a quadratic equation in standard form introduce different methods to find solution to a quadratic equation help them to recall the method of splitting of middle term and explain method of completion of squares via an activity (Annexure 4) explain the third method of solving i.e discriminant method and hence the nature of roots give different problems to find solution to a quadratic equation	Students will recall the concepts learnt in previous classes related to linear equations and quadratic polynomial define Quadratic equation and relate it with the concept of quadratic polynomial express the quadratic equation in standard form and write down the coefficients learn different methods to find solution to a quadratic equation factorize a quadratic equation by middle term splitting and perform the activity as per the instructions given (Annexure 4) find solution using the discriminant and comment on the roots try to solve these problems using appropriate methods	Teacher will write his/her observations after the completion of the topic.

Teaching Aids: Smart board, Text book, Graph paper, Worksheets, Internet

Methodology/Innovative Methods: Digital technology, Interactive, Lecturing, Note giving, Questioning, Discussion

Interdisciplinary Links: Chemistry, Nature (golden ratio)

HOD

Coordinator

Vice- Principal

Principal

ACTIVITY NO. - 4

Subject	Mathematics
Class	X
Chapter/Unit	Quadratic Equations
Topic	Solution of Quadratic Equations
Time	40 minutes
Nature of Activity	Individual

What will I learn (Learning Outcome)?

Finding the roots of a Quadratic Equation.

Skills: Applying, Analyzing and Creativity

What I have to do?

To convert a given quadratic equation to the form $(x + a)^2 - b^2 = 0$ and find its roots.

What do I require?

Graph sheets/ coloured paper, sketch pens, geometry box, glue stick, a pair of scissors

What do I need to know?

Finding the roots of Quadratic equation using the method of completion of squares.

➤ **Teacher's Activity**

Teacher will ask students about their knowledge on factorization and the method of completion of squares.

How will I proceed?

➤ **Student's Activity**

- 1) Consider a Quadratic equation $x^2 + 6x + 5 = 0$
- 2) Take $x = 5$ units, to represent x^2 cut a square of side 5 units. Cut 6 rectangles of dimensions 5 unit $\times$ 1 unit and 5 squares of side 1 unit each.
- 3) Arrange the cut outs as shown.
- 4) Arrange 5 small squares in left out area and complete the square by pasting 4 more squares each of side 1 unit.

- 5) As 4 extra squares each of side 1 unit are added to make a complete square, the same need to be removed to have the equation unaltered. This means

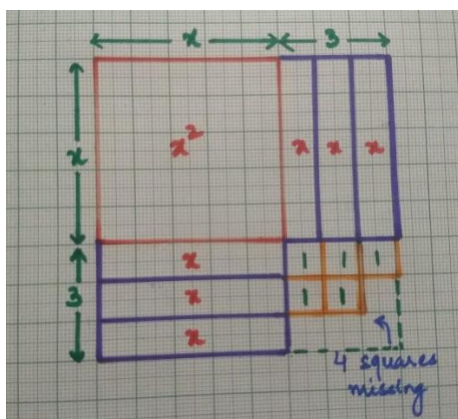
$$x^2 + 6x + 5 = 0$$

$$(x + 3)^2 - 4 = 0$$

$$(x + 3)^2 - 2^2 = 0$$

What have I observed?

The given Quadratic Equation $x^2 + 6x + 5 = 0$ can be written as _____



What have I learnt?

The roots of the given quadratic equation represented geometrically above are ____ and ____

What am I curious to learn?

Repeat the same steps and hence represent $x^2 + 4x + 3 = 0$ in the form $(x + a)^2 - b^2 = 0$.

Let me evaluate myself

- 1) Solve the quadratic equation : $x^2 - 8x + 16 = 0$

- 2) The sum of ages (in years) of a son and his father is 35 and the product of their ages is 150. Find their ages.

3) Solve for x: $\frac{x}{x+1} + \frac{x+1}{x} = \frac{41}{20}; x \neq 0, x \neq -1$
