CLASS 10 • MATHS REVISION • 2026–27

Quadratic Equations

First move every term to one side. Try factorisation when the factors are clear; otherwise the quadratic formula works for any real coefficients with a nonzero leading coefficient.

Formulas and methods

Standard form: $ax^2 + bx + c = 0$, $a \neq 0$. Discriminant $D = b^2 - 4ac$.

For $D \geq 0$, $x = (-b \pm \sqrt{D})/(2a)$. The whole numerator is divided by $2a$.

$D > 0$: two distinct real roots. $D = 0$: two equal real roots. $D < 0$: no real roots.

Worked examples

Solve $2x^2 - 7x + 3 = 0$.

Split the middle term: $2x^2 - 6x - x + 3 = (2x - 1)(x - 3)$. Hence $x = 1/2$ or 3. Both make the original expression zero.

A rectangle has width x cm, length (x + 3) cm and area 40 cm². Find its dimensions.

$x(x + 3) = 40$ gives $x^2 + 3x - 40 = 0 = (x + 8)(x - 5)$. Roots are -8 and 5. A width must be positive, so width = 5 cm and length = 8 cm.

Common mistake

Use b with its sign. Keep both algebraic roots until the context justifies rejecting one. Negative dimensions are not valid.

Quadratic Equations — practice

Try these without looking at the answers. Show substitutions and units. Difficulty labels describe these questions, not official CBSE classifications.

1. [Foundation] Solve $x^2 - 5x + 6 = 0$.

2. [Core] How many real roots does $3x^2 + 2x + 1 = 0$ have?

3. [Core] Solve $x^2 + 4x + 1 = 0$.

4. [Challenge] Find k if $x^2 - 6x + k = 0$ has equal real roots.

Quadratic Equations — answers

1. Solve $x^2 - 5x + 6 = 0$.

$(x - 2)(x - 3) = 0$, so $x = 2$ or 3.

2. How many real roots does $3x^2 + 2x + 1 = 0$ have?

$D = 4 - 12 = -8$. No real roots.

3. Solve $x^2 + 4x + 1 = 0$.

$D = 12$. $x = (-4 \pm \sqrt{12})/2 = -2 \pm \sqrt{3}$.

4. Find k if $x^2 - 6x + k = 0$ has equal real roots.

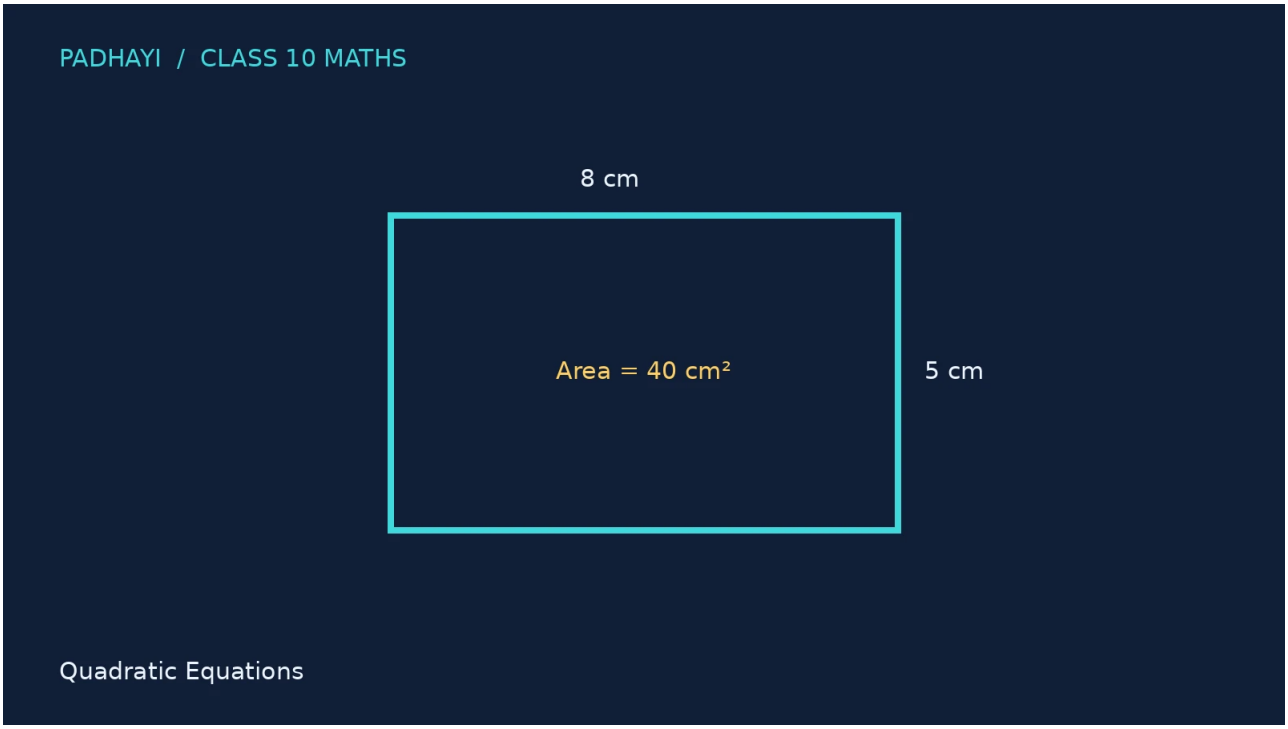
$D = 36 - 4k = 0$, so $k = 9$. The repeated root is 3.

Next step: explain one method aloud, then solve a question from your NCERT textbook without using this sheet.

Original Padhayi revision material. Independent study aid; not an official CBSE or NCERT publication. Syllabus reference: CBSE Mathematics, Class X, 2026–27.

Official CBSE syllabus | NCERT textbooks

Visual reminder



Schematic illustration; diagrams are not necessarily drawn to scale.