CLASS 10 MATHS REVISION NOTES

Revision Notes: Class 10 Maths Chapter 4 Quadratic Equations

A fast, one-glance recap of Class 10 Maths Chapter 4 (Quadratic Equations) — for the full worked explanations, see the Solutions post.

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Revision Notes: Quadratic Equations

Standard form: $ax^2 + bx + c = 0$, where a, b, c are real numbers and $a \neq 0$

Quadratic equation: a polynomial equation of degree 2 in one variable — always check the highest power of x survives after simplification before calling something "quadratic"

Root/solution: a real number α is a root of $ax^2+bx+c=0$ if $a\alpha^2+b\alpha+c = 0$; a quadratic equation has at most two roots

Method 1 — Factorisation: split the middle term bx into two terms whose coefficients multiply to give ac and add to give b, then factor by grouping; each factor set to zero gives a root

Method 2 — Quadratic formula: $x = [-b \pm \sqrt{(b^2-4ac)}] / 2a$

Discriminant: $D = b^2 - 4ac$ — determines the nature of the roots without fully solving the equation

$D > 0 \rightarrow$ two **distinct real roots**

$D = 0 \rightarrow$ two **equal real roots** (repeated root), $x = -b/2a$

$D < 0 \rightarrow$ **no real roots**

Condition for equal roots: $b^2 = 4ac$ (used to solve for an unknown parameter k, p, m, etc. in a given equation)

Sum and product of roots (if roots are α, β): sum $\alpha+\beta = -b/a$, product $\alpha\beta = c/a$ — useful for reverse-engineering an equation from its roots: $x^2 - (\text{sum})x + (\text{product}) = 0$

Irrational/surd roots of a quadratic with rational coefficients always occur in conjugate pairs, e.g. if one root is $p+\sqrt{q}$, the other is $p-\sqrt{q}$

Word problem method: define the unknown clearly (age, speed, number, side length, etc.), translate every condition in the problem into an algebraic expression, form a single quadratic equation, solve it, and always reject roots that don't fit the real-world context (negative age, negative length, negative speed, etc.)

Common problem patterns: consecutive integers, two-part sum/product problems, age problems (present age vs. age n years ago/hence), speed–distance–time (uniform speed changed by some amount), area/perimeter of rectangles, right-triangle side relationships (Pythagoras), and cost-of-production problems

Checking a solution: always verify by substituting the found value(s) back into the original word conditions, not just the equation, to catch sign/setup errors

See also: Extra Questions (HOTS) / Formulas Handbook

Why This Chapter Matters

Quadratic Equations is one of the most exam-heavy chapters in the current 2026-27 CBSE Class 10 Maths syllabus, and questions from it appear regularly in board exams, from 1-mark objective questions to longer 3-5 mark descriptive questions.

Extra Quick-Recall Points

Reciprocal-root trick: if one root is the reciprocal of the other, their product = 1, so c/a = 1, i.e. a = c.

Know by heart: the D>0 / D=0 / D<0 classification is a near-guaranteed 1-2 mark question every year.

How to Use These Notes

These revision notes are meant for quick recall in the last few days before an exam or unit test — they are not a substitute for first reading the full chapter and working through examples in the NCERT textbook. A good routine: read the chapter once, solve the questions using the linked Solutions, then return to this page a day or two before the exam to refresh key definitions and formulas.