

## PRACTICE WORKBOOK

CLASS 10

# Mathematics Standard

Multi-step applications, justification and error checks across the shared Class X mathematics topics. Six selected-skill units for CBSE 2026–27; not a full mock paper.

**6 practice units****36 tasks with answer guidance**

Name / नाम: \_\_\_\_\_

Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

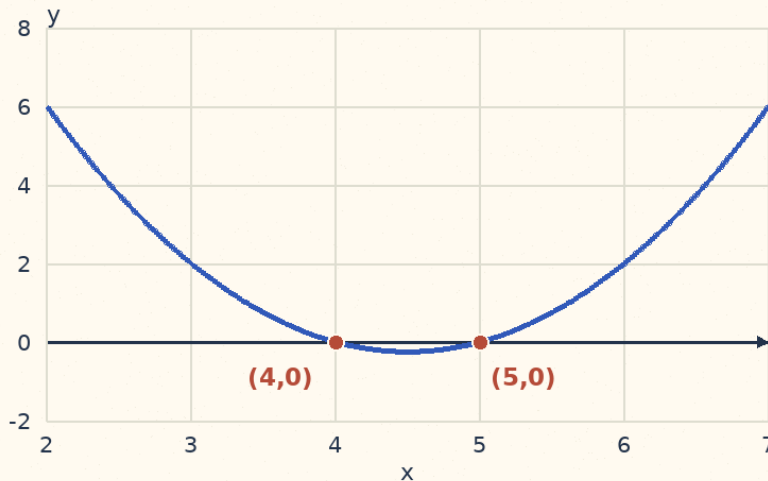
CBSE course 041 · 2026–27 · Selected practice, not a complete syllabus or official examination paper.

UNIT 01 · LOOK & EXPLAIN

## Factor structure and quadratic reasoning

### Two zeros on a quadratic graph

Worked example:  $y = x^2 - 9x + 20$



#### Factor the polynomial

$$y = (x - 4)(x - 5)$$

Zeros: 4 and 5

$$\text{Sum: } 4 + 5 = 9$$

$$\text{Product: } 4 \times 5 = 20$$

The graph crosses the x-axis at each zero; the plotted window shows both crossings.

Use the labels and worked example to explain the idea. The diagram is schematic unless a scale is given.

### Look, annotate and explain

Identify the parts or values that matter. Add a label or annotation to show a connection. Explain how the diagram supports the worked example, then use it with the practice on the next page.

UNIT 01 · APPLY & EXPLAIN

## Factor structure and quadratic reasoning

4. Find the zeros of  $2x^2 - 7x + 3$  and verify their sum and product. [3 marks]

---

---

5. A monic quadratic has zeros  $\alpha$  and  $\beta$  with  $\alpha + \beta = -2$  and  $\alpha\beta = -15$ . Form it and find the zeros. [2 marks]

---

---

6. Explain why  $2 + \sqrt{3}$  is irrational. [2 marks]

---

---

Show your thinking with a drawing, diagram or explanation.

### Pause & reflect

What can I explain now? What will I try again?

☐ I tried   ☐ I explained   ☐ I checked



## UNIT 01 · ANSWER GUIDANCE

## Factor structure and quadratic reasoning

1.  $84 = 2^2 \times 3 \times 7$  and  $126 = 2 \times 3^2 \times 7$ . HCF = 42, LCM = 252. Both products equal 10584.
2.  $a \times b = \text{HCF} \times \text{LCM}$ , so  $b = 12 \times 180/36 = 60$ .  $\text{HCF}(36, 60) = 12$  and  $\text{LCM} = 180$ .
3. Suppose  $\sqrt{3} = p/q$  in lowest terms,  $q$  nonzero. Then  $p^2 = 3q^2$ , so 3 divides  $p$ . Write  $p = 3k$ :  $q^2 = 3k^2$ , so 3 also divides  $q$ . This contradicts coprimality. Hence  $\sqrt{3}$  is irrational.
4.  $(2x - 1)(x - 3) = 0$  gives  $1/2$  and 3. Sum =  $7/2 = -b/a$ ; product =  $3/2 = c/a$ .
5.  $x^2 + 2x - 15 = (x + 5)(x - 3)$ . Zeros are  $-5$  and 3.
6. If  $2 + \sqrt{3}$  were rational, subtracting rational 2 would make  $\sqrt{3}$  rational, contradicting its irrationality. Therefore  $2 + \sqrt{3}$  is irrational.

**Teaching note**

A proof must expose the contradiction, not merely assert that a square root is irrational.

Curriculum reference: [https://cbseacademic.nic.in/web\\_material/CurriculumMain27/SecPart1/Maths\\_SecP1X\\_2026-27.pdf](https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart1/Maths_SecP1X_2026-27.pdf)  
Selected units; outcomes are publisher-defined. Practical, project and prescribed literature requirements must also be studied through school.