CBSE CLASS 10 MATHS · CHAPTER 4 · 2026-27

Quadratic Equations Class 10 Important Questions

10 questions · 27 marks · no calculator · step-marked answers

Name _____ Date _____ Score / 27

- Original questions in the board paper's question types, from 1-mark MCQs to a case study. Try every question before you look at the answers.
- No calculator: as in the CBSE board exam, everything works by hand.
- Worked answers with step marks for 5 questions start after the questions. The other 5 open free on the chapter page with a free account (no card): the link is next to each one.
- Online, with more practice: cbsemathrevision.com/class-10/quadratic-equations

Section A · Multiple choice and assertion–reason (1 mark each)

1. 1 mark · Standard form of a quadratic equation

For which value of k is $x = 2$ a root of $kx^2 - 3x - 10 = 0$?

(a) 2 (b) 4

(c) -4 (d) 8

2. 1 mark · Nature of roots

Which statement about the roots of $9x^2 + 12x + 4 = 0$ is true?

(a) They are real and different. (b) They are real and equal.

(c) They are not real. (d) There are three roots.

3. 1 mark · Solution by factorisation

In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): The roots of $2x^2 - 7x + 3 = 0$ are 3 and $\frac{1}{2}$.

Reason (R): The roots of $ax^2 + bx + c = 0$ always add up to $\frac{b}{a}$.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

Section B · Short answer (2 marks each)

4. **2 marks · Solution by quadratic formula**

Find the roots of $x^2 - 3\sqrt{5}\,x + 10 = 0$.

5. **2 marks · Nature of roots**

Find the value of k for which $(k-1)x^2 + 4x + 1 = 0$ has two equal roots.

Section C · Short answer (3 marks each)

6. **3 marks · Solution by factorisation**

Solve for x: $\dfrac{2}{x} - \dfrac{3}{x+2} = \dfrac{1}{4}$, where $x \neq 0, -2$.

7. **3 marks · Situational problems**

A cyclist rides 48 km at a steady speed. Had the speed been 4 km/h more, the ride would have taken 1 hour less. Find the cyclist's speed.

Section D · Long answer (5 marks each)

8. **5 marks · Situational problems**

The perimeter of a rectangular field is 82 m and its area is $400\ \text{m}^2$. Form a quadratic equation and solve it to find the length and breadth of the field.

9. **5 marks · Situational problems**

Two pipes together fill a tank in 6 hours. Alone, the larger pipe fills it 5 hours faster than the smaller one. How long does each pipe take alone?

Section E · Case study (4 marks)

10. **4 marks · Situational problems**

Photo frame. A photograph measuring 20 cm by 12 cm is mounted on a card, leaving a border of the same width x cm all round. The total area of the card is $384\ \text{cm}^2$.

i. Write the area of the card in terms of x. *[1 mark]*

ii. Form a quadratic equation in x in standard form. *[1 mark]*

iii. Find the width of the border and the outer dimensions of the card. *[2 marks]*

Answers and worked solutions

Question 1

1 mark

$k(4) - 6 - 10 = 0 \Rightarrow 4k = 16 \Rightarrow k = 4$ **A1**

Correct option: (b) 4

Question 2

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/quadratic-equations#iq-2

Question 3

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/quadratic-equations#iq-3

Question 4

2 marks

Answer: $2\sqrt{5}$ and $\sqrt{5}$

$D = (3\sqrt{5})^2 - 4(1)(10) = 45 - 40 = 5$;

$x = \dfrac{3\sqrt{5} \pm \sqrt{5}}{2}$ **M1**

$x = 2\sqrt{5}$ or $x = \sqrt{5}$ **A1**

Question 5

2 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/quadratic-equations#iq-5

Question 6

3 marks

Answer: $x = 2$ or $x = -8$

$\dfrac{2(x+2) - 3x}{x(x+2)} = \dfrac{1}{4} \Rightarrow 4(4 - x) = x^2 + 2x$ **M1**

$x^2 + 6x - 16 = 0 \Rightarrow (x + 8)(x - 2) = 0$ **A1**

$x = 2$ or $x = -8$ **A1**

Question 7

3 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/quadratic-equations#iq-7

Question 8

5 marks

Answer: $25\ m$ by $16\ m$

Length + breadth $= 41$; with breadth $x\ m$, length $= (41 - x)\ m$ **M1**

$x(41 - x) = 400 \Rightarrow x^2 - 41x + 400 = 0$ **A1**

$(x - 16)(x - 25) = 0$ **M1**

$x = 16$ or $x = 25$ **A1**

Either way the sides are $25\ m$ and $16\ m$: length $25\ m$, breadth $16\ m$ **A1**

Question 9

5 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/quadratic-equations#iq-9

Question 10

4 marks

i. $(20 + 2x)(12 + 2x)\ \text{cm}^2$ **A1**

ii. $4x^2 + 64x + 240 = 384 \Rightarrow x^2 + 16x - 36 = 0$ **A1**

iii. $(x + 18)(x - 2) = 0$; width cannot be negative, so $x = 2$ cm **M1**

Card: 24 cm by 16 cm (check: $24 \times 16 = 384$) **A1**

More on this chapter, free: revision notes, a Route to 95 and practice with instant feedback at cbsemathrevision.com/class-10/quadratic-equations

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