



Laying the foundation of lifelong success

CHAPTER 4

Quadratic Equations

(Previous Years' Questions)

5 – Markers

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1. (A) A faster train takes one hour less than a slower train for a journey of 200 km. If the speed of the slower train is 10 km/hr less than that of the faster train, find the speeds of the two trains.

OR

- (B) The sum of the areas of two squares is 640 m^2 . If the difference in their perimeters is 64 m, find the sides of the two squares. **(2026)**

2. (a) A person on a tour has ₹ 4,200 for expenses. If he extends his tour for 8 days, he has to cut down his daily expenses by ₹ 70. Find the original duration of the tour.

OR

- (b) The area of a right-angled triangle is 600 cm^2 . If the base of the triangle exceeds the altitude by 10 cm, find all the three dimensions of the triangle. **(2026)**

3. By selling an article for ₹ 48, a trader loses as much percent as half of the cost price of the article. Calculate the cost price and loss amount of the article.

(2026)

4. (a) The denominator of a fraction is 2 more than the

numerator. If 2 is added to both its numerator and denominator, then the sum of the new fraction and the original fraction is $\frac{46}{35}$. Find the original fraction.

OR

- (b) At present, Sourav's age is 3 years more than the square of his son Ravi's age. When Ravi grows to his father's present age, Sourav's age would be 6 years less than 13 times the present age of Ravi. Find present ages of Ravi and Sourav.

(Comptt., 2025)

5. (a) The perimeter of a right triangle is 60 cm and its hypotenuse is 25 cm. Find the lengths of other two sides of the triangle.

OR

- (b) A train travels a distance of 480 km at a uniform speed. If the speed had been 8 km/h less, then it would have taken 3 hours more to cover the same distance. Find the speed of the train. **(2025)**

6. (a) A two-digit number is such that the product of its digits is 12. When 36 is added to this number, the digits interchange their places. Find the number.

OR

- (b) A student scored a total of 32 marks in class tests in Mathematics and Science. Had he scored 2 marks less in Science and 4 marks more in Mathematics, the product of his marks would have been 253. Find his marks in the two subjects.

(2025)

7. (a) The sum of the areas of two squares is 52 cm^2 and difference of their perimeters is 8 cm. Find the lengths of the sides of the two squares.

OR

- (b) The time taken by a person to travel an upward distance of 150 km was $2\frac{1}{2}$ hours more than the time taken in the downward return journey. If he returned at a speed of 10 km/h more than the speed while going up, find the speeds in each direction.

(2025)

8. (a) The numerator of a fraction is 3 less than its denominator. If 2 is added to both numerator and denominator, then the sum of the new fraction and the original fraction is $1\frac{9}{20}$. Find the original fraction.

OR

- (b) A train travelling at a uniform speed for 360 km would have taken 48 minutes less to travel the same distance if its speed were 5 km/h more. Find the original speed of the train. **(2025)**

9. (A) The sides of a right triangle are such that the longest side is 4 m more than the shortest side and the third side is 2 m less than the longest side. Find the length of each side of the triangle. Also, find the difference between the numerical values of the area and the perimeter of the given triangle.

OR

- (B) Express the equation $\frac{(x-2)}{(x-3)} + \frac{(x-4)}{(x-5)} = \frac{10}{3}$; ($x \neq 3, 5$) as a quadratic equation in standard form.

Hence, find the roots of the equation so formed.

(2025)

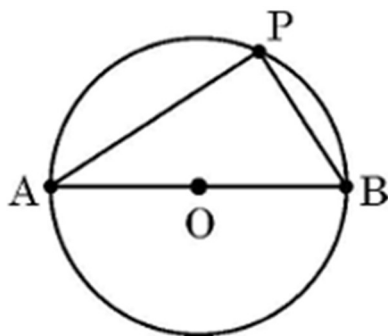
10. (a) A 2-digit number is seven times the sum of its digits and two (2) more than 5 times the product of its digits. Find the number.

OR

- (b) Find the value(s) of p for which the quadratic equation given as $(p + 4)x^2 + (p + 1)x + 1 = 0$

has real and equal roots. Also, find the roots of the equation(s) so obtained. **(2025)**

11. (a) There is a circular park of diameter 65 m as shown in the following figure, where AB is a diameter.



An entry gate is to be constructed at a point P on the boundary of the park such that distance of P from A is 35 m more than the distance of P from B. Find distance of point P from A and B respectively.

OR

- (b) Find the smallest value of p for which the quadratic equation $x^2 - 2(p + 1)x + p^2 = 0$ has real roots. Hence, find the roots of the equation so obtained.

(2025)

12. (a) If Nidhi were 7 years younger than what she actually is, then the square of her age (in years) would be 1 more than 5 times her actual age. What is her present age?

OR

- (b) A shopkeeper buys a number of books for ₹ 1,800. If he had bought 15 more books for the same amount, then each book would have cost him ₹ 20 less. Find how many books he bought initially.

(Comptt., 2024)

13. (a) In a flight of 2800 km, an aircraft was slowed down due to bad weather. Its average speed is reduced by 100 km/h and by doing so, the time of flight is increased by 30 minutes. Find the original duration of the flight.

OR

- (b) The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its reciprocal is $2\frac{16}{21}$, find the fraction. (2024)
14. (a) A train travels a distance of 90 km at a constant speed. Had the speed been 15 km/h more, it would have taken 30 minutes less for the journey. Find the original speed of the train.

OR

- (b) Find the value of 'c' for which the quadratic equation $(c + 1)x^2 - 6(c + 1)x + 3(c + 9) = 0$; $c \neq -1$ has real and equal roots. (2024)

15. (a) Find the value of ' k ' for which the quadratic equation $(k + 1)x^2 - 2(3k + 1)x + (8k + 1) = 0$ has real and equal roots.

OR

- (b) A 2-digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number. **(2024)**

16. (a) Find the value of ' k ' for which the quadratic equation $(k + 1)x^2 - 6(k + 1)x + 3(k + 9) = 0, k \neq -1$ has real and equal roots.

OR

- (b) The age of a man is twice the square of the age of his son. Eight years hence, the age of the man will be 4 years more than three times the age of his son. Find their present ages. **(2024)**

17. (a) A 2-digit number is such that the product of the digits is 14. When 45 is added to the number, the digits are reversed. Find the number.

OR

- (b) The side of a square exceeds the side of another square by 4 cm and the sum of the areas of the

two squares is 400 cm^2 . Find the sides of the squares. (2024)

18. (a) A train travels at a certain average speed for a distance of 54 km and then travels a distance of 63 km at an average speed of 6 km/h more than the first speed. If it takes 3 hours to complete the journey, what was its first average speed?

OR

- (b) Two pipes together can fill a tank in $\frac{15}{8}$ hours. The pipe with larger diameter takes 2 hours less than the pipe with smaller diameter to fill the tank separately. Find the time in which each pipe can fill the tank separately. (2023)

