
(Attempt all Question)

1. Amit deposited ₹ 150 per month in a bank for 8 months under the Recurring Deposit Scheme. What will be the maturity value of his deposits, if the rate of interest is 8% per annum and interest is calculated at the end of every month?

2. Ritu has a Recurring Deposit Account in a bank and deposits Rs. 80 per month for 18 months. Find the rate of interest paid by the bank if the maturity value of account is 1,554.

3. The maturity value of a R.D. Account is ₹ 16,176. If the monthly installment is ₹ 400 and the rate of interest is 8%; find the time (period) of this R.D Account.

4. Mr. Gulati has a Recurring Deposit Account of ₹ 300 per month. If the rate of interest is 12% and the maturity value of this account is ₹ 8,100; find the time (in years) of this Recurring Deposit Account.

5. Solve the following inequation and represent the solution set on the number line:

$$-\frac{1}{3} \leq \frac{x}{2} - 1 \frac{1}{3} < 5 \frac{1}{6}; x \in R$$

6. Solve the following inequation, write the solution set and represent the solution set on number line

$$-2 \frac{2}{3} \leq -\frac{x}{3} - 1 \leq -1 \frac{1}{3}; x \in I$$

7. Solve the following inequation, write the solution set and represent the solution set on number line

$$-\frac{1}{5} \leq \frac{3x}{10} + 1 \leq \frac{2}{5}; x \in R$$

8. An integer is such that one-third of the next integer is atleast 2 more than one-fourth of the previous integer. Find the smallest value of the integer.

***Directions:**

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

Write the correct option for the following questions:

9. **Assertion:** If one root of the quadratic equation $6x^2 - x - k = 0$ is $\frac{2}{3}$, then the value of k is 2.

Reason: The quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ has almost two roots.

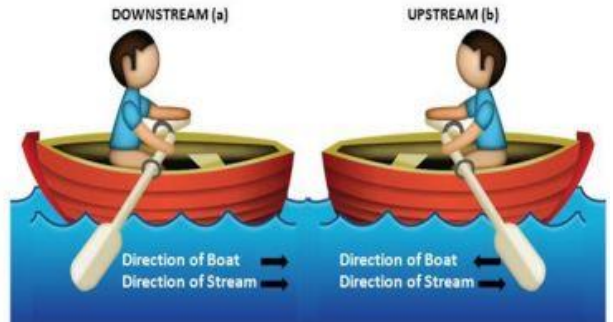
10. **Assertion (A):** The point $(-1, 6)$ divides the line segment joining the points $(-3, 10)$ and $(6, -8)$ in the ratio 2 : 7 internally.

Reason (R): Given three points, i.e. A, B, C form an equilateral triangle, then $AB = BC = AC$.

11. i) Five years ago, a woman's age was the square of her son's age. Ten years hence her age will be twice of her son's age. Find the present age of the woman.
- ii) Rs. 480 is divided equally among 'x' children. If the no. of children were 20 more then each would have got Rs.12 less. Find 'x'.

CASE STUDY:

12. The speed of a motor boat is 20 km/hr. For covering the distance of 15 km the boat took 1 hour more for upstream than downstream.



1. Let speed of the stream be x km/hr, then speed of the motorboat in upstream will be

- a) 20 km/hr b) $(20 + x)$ km/hr c) $(20 - x)$ km/hr d) 2 km/hr

2. What is the relation between speed ,distance and time?

- a) speed = (distance)/time b) distance = (speed)/time c) time = speed x distance d) speed = distance x time

3. Which is the correct quadratic equation for the speed of the current?

- a) $x^2 + 30x - 200 = 0$ b) $x^2 + 20x - 400 = 0$ c) $x^2 + 30x - 400 = 0$ d) $x^2 - 20x - 400 = 0$

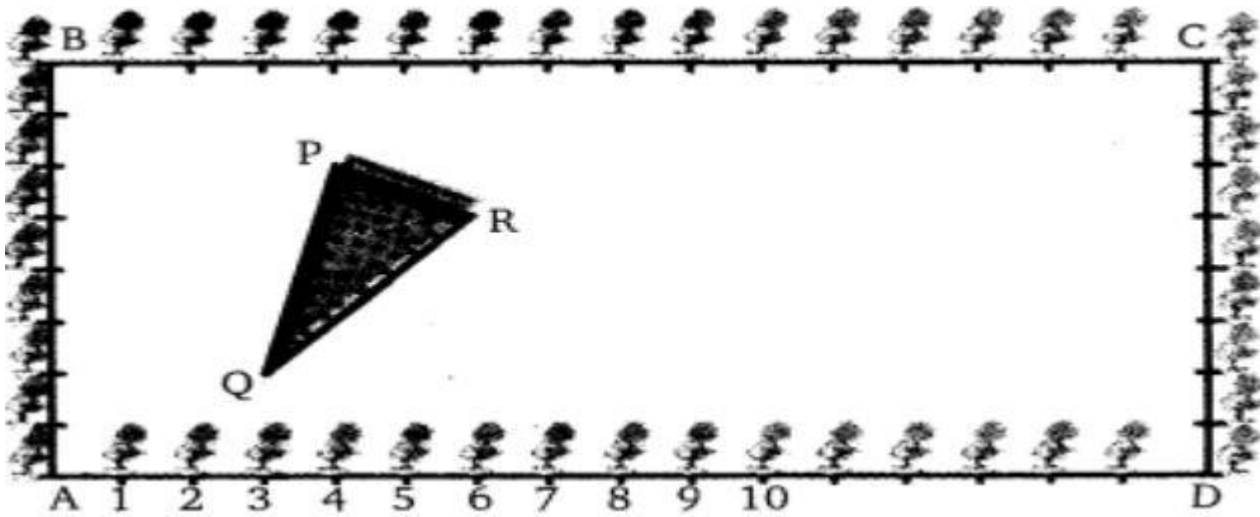
4. What is the speed of current?

- a) 20 km/hour b) 10 km/hour c) 15 km/hour d) 25 km/hour

5. How much time did the boat take in going downstream?

- a) 90 minute b) 15 minute c) 30 minute d) 45 minute

13. The class X students school in Krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1 m from each other. There is triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.



1. Taking A as origin, find the coordinates of P

- a) (4,6) b) (6,4) c) (0,6) d) (4,0)

2. What will be the coordinates of R, if C is the origin?

- a) (8,6) b) (3,10) c) (10,3) d) (0,6)

3. What will be the coordinates of Q, if C is the origin?

- a) (6,13) b) (-6,13) c) (-13,6) d) (13,6)

4. Calculate the area of the triangle, if A is the origin

- a) 4.5 b) 6 c) 8 d) 6.25

5. Calculate the area of the triangle, if C is the origin

- a) 8 b) 5 c) 6.25 d) 4.5

14. By increasing the speed of a car by 10km/hr, the time of journey for a distance of 72 km is reduced by 36 minutes, find the original speed of the car.

15. Use factor theorem to factorize the following polynomials: $4x^3 - 9x + 4x^2 - 9$

16. If $(x + 3)$ and $(x - 4)$ are factors of $x^3 + ax^2 - bx + 24$, find the value of a and b. With these values of a and b factorize the given polynomial.

17. When a polynomial $f(x)$ is divided by $(x - 1)$, the remainder is 5 and when it is divided by $(x - 2)$, the remainder is 7. Find the remainder when it is divided by $(x - 1)(x - 2)$.

18. Find the value of a, if $(x - a)$ is a factor of $x^3 - ax^2 + 2$

19. Use graph paper for these questions.

The point P (2, -4) was reflected in $x = 0$ to get the image P'. (i) Write down the coordinates of P' ii) Now, point P' is reflected in the line $y=0$, to get the image P''. Write down the coordinates of P'' iii) Name the figure PP'P'' iv) Find the area of the figure PP'P''.

20. The triangle ABC where A (1, 2), B (4, 8) and C (6, 8) is reflected in the x-axis to triangle A'B'C'. The triangle A'B'C' is reflected in the origin to triangle A''B''C''. Write down the coordinates of A''B''C''. Write down a single transformation that maps ABC onto A''B''C''.
21. (i) Plot A(3, 2) and B(5, 4) on graph paper. Take 2 cm = 1 unit on both the axes.
 ii) Reflect A and B in the x-axis to A' & B'. Plot these on the same graph paper.
 iii) Write down: a) the geometrical name of the figure ABB'A'. b) the axis of symmetry of ABB'A'.
22. If two vertices of a parallelogram are (3,2) and (-1,0) and its diagonals meet at (2,-5), find the other two vertices of the parallelogram.
23. Find the third vertex of a triangle if its two vertices are (-1,4) and (5,2) and mid-point of one side is(0,3).
24. Find the co-ordinates of the point P which is three-fourth of the way from A(3,1) to B(-2,5).
25. ABCD is a parallelogram where A(a,b), B(5,8), C(4,7) and D(2,-4). Find the co-ordinates of A and equation of diagonal BD.
26. Find the equation of straight line containing the point (3, 2) and making positive equal intercepts on axes.
27. A (-1,3), B (4,2), C (3,-2) are the vertices of a triangle. (i) Find the coordinates of the centroid G of the triangle. (ii) Find the equation of the line through G and parallel to AC.
28. If $\begin{bmatrix} 1 & 4 \\ -2 & 3 \end{bmatrix} + 2M = 3 \begin{bmatrix} 3 & 2 \\ 0 & -3 \end{bmatrix}$, find the matrix M.
29. Show that $X = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ satisfies the relation: $X^2 - 2X - 3I = O$, where I is the unit matrix of order 2x2 and O is the null matrix of order 2x2.
30. Let $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$, find the matrix B such that $AB = I$, where I is the unit matrix of order 2x2.