

PRACTICE QUESTIONS SET – 3 (2024-25)

MATHEMATICS

CLASS – X

Section A

Answer ALL the following Questions. Each question carries 2 marks.

1. Determine if the points (1,5), (2,3) and (–2, –11) are collinear.
2. Find the sum of $1 + (-2) + (-5) + (-8) + \dots + (-236)$
3. Find the values of y for which the distance between the points $P(2, -3)$ and $Q(10, y)$ is 10 units.
4. In an AP, if $S_n = 3n^2 + 5n$ and $a_k = 164$, then find the value of k .
5. How many numbers lie between 10 and 300, which divided by 4 leave a remainder 3?

Section B

Answer ALL the following Questions. Each question carries 3 marks.

6. If A and B are (–2, –2) and (2, –4) respectively, find the coordinates of P such that $AP = \frac{3}{7}AB$ and P lies on the line segment AB.
7. If there are $2n + 1$ terms in A.P, prove that the ratio of the sum of odd terms and the sum of even terms is $(n + 1) : n$.
8. The centre of a circle is $(2a, a - 7)$. Find the values of a , if the circle passes through the point $(11, -9)$ and has diameter $10\sqrt{2}$ units.
9. How many terms of AP: 9, 17, 25... must be taken to give a sum of 636?
10. Which term of the AP –7, –12, –17, –22, will be (–82)? Is –100 any term of the A.P? Give reasons for your answer.

Section C

Answer ALL the following Questions. Each question carries 5 marks.

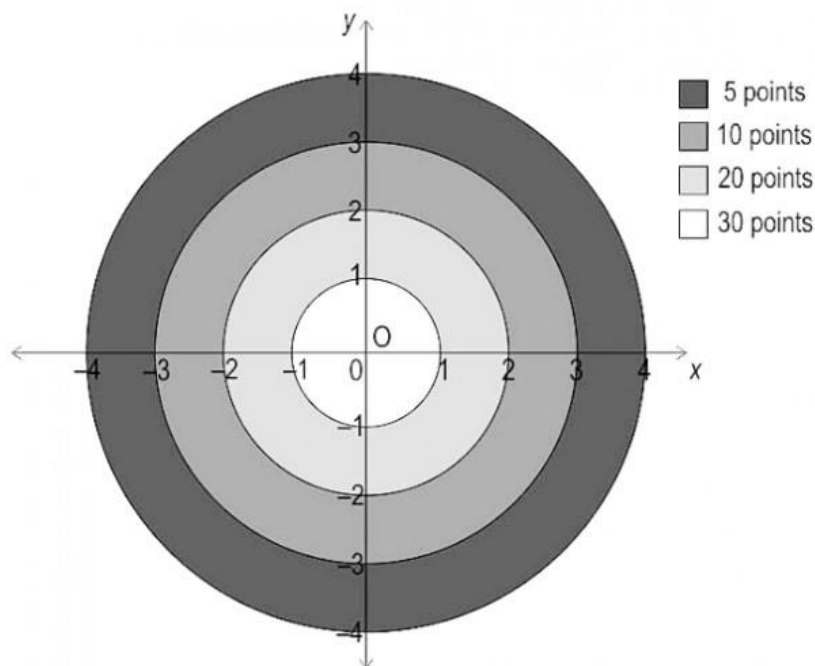
11. Find the ratio in which the line $2x + 3y - 5 = 0$ divides the line segment joining the points (1, –9) and (2, 1). Also, find the coordinates of the point of division.

12. 10th term from the end of an A.P is 11th term from the beginning. Its value is 55. If its first term be 5, find the common difference, the number of terms and the last term.

Section – D : Case Study (4 Marks)

13. In a game of archery, a bow is used to shoot arrows at a target board. One such board, which is divided into 4 concentric circular sections, is drawn on a coordinate grid as shown. Each section carries different points. If an arrow lands on the boundary, the inner section points are awarded.

Answer the questions based on the given information.



- a) After shooting two arrows, Rohan scored 25 points. Write one set of coordinates for each arrow that landed in the target.
- b) If one player's arrow lands on $(2, 2.5)$, how many points will be awarded to the player?
- c) One of Rohan's arrows landed on $(1.2, 1.6)$. He wants his second arrow to land on the line joining the origin and first arrow such that he gets 10 points for it. Find one possible pair of coordinates of the second arrow's landing mark.

OR

An arrow landed on the boundary and is worth 20 points. The coordinates of the landing mark were of the form $(m, -m)$. Find all such coordinates.

14. **ASSERTION REASON BASED QUESTIONS**

A statement of assertion (A) is followed by a statement of Reason (R).

Choose the correct answer out of the following choices.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) (A) is false but (R) is true.

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): Three points A, B and C are collinear if $AB + BC = AC$