Section – I (12× ½ = 6)
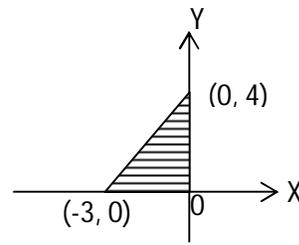
Note: (i) Answer all the questions.

(ii) Each question carries ½ mark.

1. Find the area of the shaded region, in the figure given below.

2. A Card is drawn from a well shuffled deck of cards randomly. What is the probability of getting a card, which is neither a jack nor a queen card?

3. The length of the minutes hand of a clock is 14cm then how much distance does it cover in one hour?

4. If a ladder of length 10m, touches a wall at a height of 5m, then find the angle which the ladder makes with the land?

5. Areas of two similar triangles are 100 sq.cm, 64 sq.cm. If the length of the median of a big triangle is 10 cm then find the median of the smaller triangle?

6. If the slope of a line is $\sqrt{3}$, then find the angle made by the line with X-axis?

7. Which of the following is true?

i) The values of sin θ or cosθ are always less than 1 or equal to 1

ii) The values of cosecθ or secθ are always less than 1 or equal to 1

8. What are to be taken on x-axis to draw the greater than cumulative frequency curve?

9. In the following figure, if $\angle PAQ = 120^0$ then find $\angle AOP$.
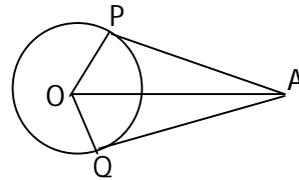
10. $\Delta ABC \sim \Delta DEF$ and if $\angle D = 35^0$, $\angle F = 78^0$ then find $\angle B$

11. Mid values are used to find which central tendency?

12. Which of the following statement is true

i) Any two similar triangles are congruent

ii) Any two congruent figures are similar

iii) Two polygons are similar if their corresponding angles are equal

A) (i), (ii) are true   B) (ii),(iii) are true

C) (i), (iii) are not true   D) all the above

Section – II (8× 1 = 8)

Note: (i) Answer all the questions.

(ii) Each question carries 1 mark.

13. Two concentric circles of diameters 10cm and 6cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle.

14. Is it right to say that cos(A-B) = cosA – cosB ? Justify your answer.

15. Rama observes a flower on the ground from the balcony of the first floor of a building at an angle of depression 'α'. The height of the first floor of the building is 'x' meters. Draw the diagram for this data.

16. Define 'Pythagoras theorem'.

17. Can $\frac{7}{2}$ be the probability of an event? Explain.

18. Write the formula for finding median of grouped data and explain each term.

19. Can you draw a triangle with vertices (1,5) , (2,3) and (-2,-1)? Give reason.

20. The perimeters of two similar triangles are 15cm and 10cm respectively. If one side of first triangle is 6cm determine the corresponding side of the second triangle.

Note: (i) Answer all the questions.

    (ii) Each question carries 2 marks.

21. If a circle touches all the four sides of a quadrilateral ABCD at points PQRS. Then prove that AB+CD=BC+DA.

22. If A,B and C are interior angles of triangle ABC, then show that $sec\left(\frac{A+C}{2}\right) = Cosec\frac{B}{2}$.

23. An observer of height 1.8m is 13.2 m away from a palm tree. The angle of elevation of the top of the tree from his eyes is 45^0. What is the height of the palm tree?

24. Gopi buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random from a tank containing 5 male fish and 8 female fish. What is the probability that the fish taken out is a
   i) male fish and   ii) not a male fish.

25. Find the mode of the following data, which is about the marks, out of 50 obtained by 100 students in a test.

Marks obtained	20	29	28	33	42	38	43	25
Number of students	06	28	28	14	01	3	1	19

26. Find the co-ordinates of a Point A, Where AB is the diameter of a circle whose centre is (2,-3) and B is (1,4) and also find the diameter of the circle.

27. The hypotenuse of a right triangle is 6m more than twice of the shortest side. If the third side is 2m less than the hypotenuse, find the sides of the triangle.

28. Prepare a frequency distribution table to the following data with class intervals.

Marks secured	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50
No. of students	8	19	26	42	50

Section – IV (5×4 = 20)

29. a) Name the type of quadrilateral formed, if any by the following points, (1,7), (4,2), (-1,-1) and (-4,4) and also find its area.

    (OR)

  b) State and prove converse of Thales theorem.

30. a) A chord of a circle of radius 12cm subtends an angle of 120^0 at the centre. Find the area of the corresponding major segment of the circle. (use $\pi = 3.14$ and $\sqrt{3} = 1.732$)

    (OR)

  b) Show that $(\sin A – cosecA)^2 + (cosA – secA)^2 = \tan^2A + \cot^2A – 1$

31. a) Two men on either side of temple of 30 meter height observe its top at the angles of elevation 30^0 and 60^0 respectively. Find the distance between the two men.

    (OR)

  b) One card is drawn from a well – shuffled deck of 52 cards. Find the probability of getting
   i) a queen of black colour   ii) a club   iii) the king of hearts   iv) a face card

32. a) In a retail market, fruit vendors were selling oranges kept in packing baskets. These baskets contained varying number of oranges. The following was the distribution of oranges.

Number of oranges	10- 14	15 – 19	20 – 24	25 – 29	30 – 34
Number of baskets	15	110	135	115	25

 Find the mean number of oranges kept in each basket.

 Which method of finding the mean did you choose?

    (OR)

  b) Find the ratio in which the y-axis divides the line segment joining the points (5, -6) and (-1, -4). Also find the point of intersection.

33. a) Construct a triangle of sides 4cm, 5cm and 6cm then construct a triangle similar to it, whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.

    (OR)

  b) Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at an angle 60^0.