EQUIP - DIET KASARAGOD

SSLC QUESTION POOL

MATHEMATICS - ENGLISH MEDIUM

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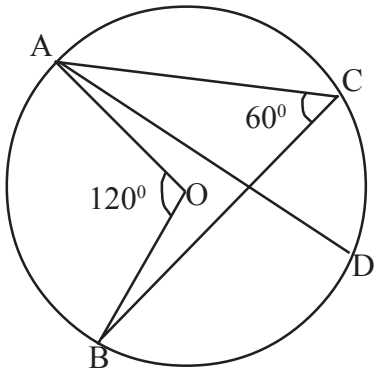
1 Mark Questions

1. Which is the fifth term of the arithmetic sequence 11, 15, 19, 23, ...

   (25, 26, 27, 28)

2. 

   In figure $\angle AOB = 120^0$

   $\angle ACB = 60^0$

   Find $\angle ADB$

   $(30^0, 60^0, 120^0, 240^0)$

3. Numbers from 1 to 25 are written in small papers and placed in a box. A paper is taken at random, without looking. Find the probability of getting an even number.

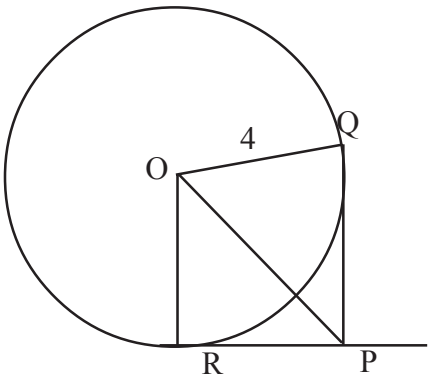
   $\left(\frac{13}{25}, \frac{12}{25}, \frac{9}{25}, \frac{11}{25}\right)$

4. In the right angled traingle ABC $\angle B = 90^0$, $\text{Sin}A = \frac{7}{25}$, then Cos C = ...

   $\left(\frac{7}{25}, \frac{16}{25}, \frac{9}{25}, \frac{25}{7}\right)$

5. In the figure PQ and PR are tangents through Q and R of the circle with centre O, If radius = 4 cm, $\angle QPR = 90^0$ then the length of PQ.....

   (3, 4, 5, 6)

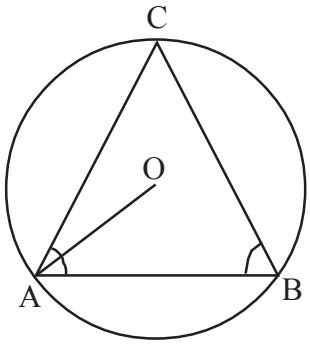


6. The slope of the line joining the points (3, 2), (8, k) is one. Find the value of K.

(5, 6, 7, 8)

7. In the figure 'O' is the centre and A,B,C are points on the circle.

$\angle OAC + \angle ABC =$ .....



(45^0, 60^0, 90^0, 180^0)

8. Which are the two numbers whose sum is 4 and product is 2.

$\left(2+\sqrt{2},\ 2-\sqrt{2}\right)$, $\left(-2+\sqrt{2},\ 2-\sqrt{2}\right)$,
$\left(2+\sqrt{2},\ -2-\sqrt{2}\right)$, $\left(2+\sqrt{2},\ 2+\sqrt{2}\right)$

9. What are the coordinates of the centroid of the triangle with vertices (1,2), (2,3), (3,1)?

$[(1,2),\ (2,2),\ (3,1),\ (1,3)]$

10. Which are the solutions of the equation $x^2 - 2x - 1 = 0$

$\left(1\pm\sqrt{2},\ 2\pm\sqrt{2},\ 3\pm\sqrt{3},\ 4\pm\sqrt{3}\right)$

11. Find the 19th term of the arithmatic sequence 18,17,16.....

(1, -1, 0, 36)

12. Name the quadrilateral for which we can always draw incircle

(Parallelogram, rectangle, trapezium, rhombus)

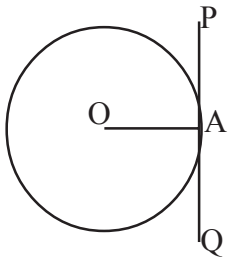
13. Letters of the word 'EXAMINATION' are written on different paper slip and put it in a box. One slip is taken at random. What is the probability of getting the letter 'A'?

$(\frac{1}{11},\frac{1}{10},\frac{2}{11},\frac{2}{10})$

14. In $\triangle$ABC, Sin C $= \frac{AB}{BC}$ then CosC = ...

$\left(\frac{AB}{AC},\frac{BC}{AB},\frac{AC}{BC},\frac{BC}{AC}\right)$

15. In the fig. O is the centre of the circle and PQ is a tangent. Then which may be a measure of $\angle$OPA ?



(60^0, 100^0, 90^0, 120^0)

16. A circle is drawn with the line joining the points (7,-3) and (5,5) as diameter. Then the co-ordinates of the centre is

[(12,2); (2,12); (6,1); (1,6)]

17. Which are the solutions of the second degree equation

$3x^2$-x-10=0

$\left(\left(2,\frac{5}{3}\right),\left(-2,\frac{-5}{3}\right),\left(2,\frac{-5}{3}\right),\left(-1,\frac{5}{3}\right)\right)$

18. Equation of the circle is $x^2+y^2 = 25$. Then the centre of the circle is

[(5,5), (5,-5), (0,0), (-5,0)]

19. Slant height and height of a square pyramid are10 cm and 6 cm respectively. Find the length of its base edge.

(16 cm, 8 cm, 4 cm, 2 cm)

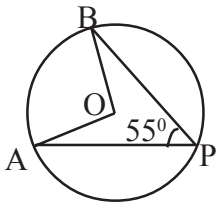
20. Which of the following is a factor of the polynomial x^2-5x+6.

[(x-1), (x+2), (x-3), (x+3)

21. The algebraic form of an arithmetic sequence is 4n-3. What is the common difference ?

(4,-4,3,-3)

22.



In the figure O is the centre of the circle.

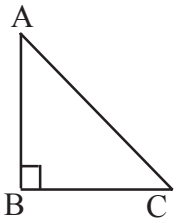
If $\angle APB = 55^0$, What is $\angle AOB$

(55^0, 110^0, 125^0, $22\frac{1}{2}^0$)

23. In a box, there are 10 slips numbered 1,2,3.....10. If one slip is taken from the box, what is the probability of getting a prime number ?

($\frac{5}{10}$, $\frac{4}{10}$, $\frac{3}{10}$, $\frac{6}{10}$)

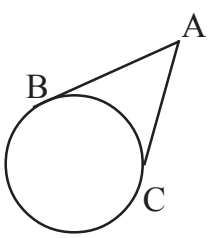
24. In traingle ABC $\angle B = 90^0$,



what is sin C = ...?

($\frac{AB}{BC}$, $\frac{BC}{AC}$, $\frac{AB}{AC}$, $\frac{BC}{AB}$)

25.



In the figure, AB and AC are tangens to the circle.

If AB = 5cm What is AC ?

$\left(5\sqrt{2}cm,\ 5\sqrt{3}cm,\ 5cm,\ \frac{5}{2}cm\right)$

26. Find the slope of the line passing through the points (1,2) and (3,4)

(1, -1, 0, 2)

27. The solution of the equation $x^2 + 1 = 0$ is .....

(1, -1, 0, No solution)

28. The slant height of a square pyramid is 10 cm and its height is 8 cm. Find the base edge.

(6, 12, 10, $10\sqrt{2}$)

29. A sector of radius 16 cm and central angle 120^0 is rolled up into a cone. What is the slant height of the cone.

(8, 10, 16, $16\sqrt{3}$)

30 In the polynomial $P(x) = x^3-1$, $P(1) = 0$ write one factor of this polynomial

(x+1 x-1, x+2, x-2)

2 Mark Questions

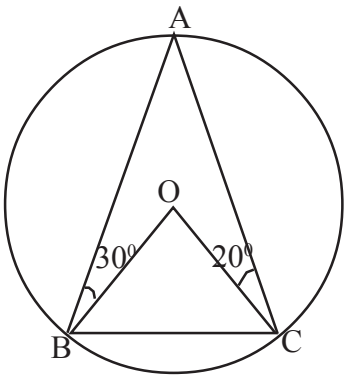
31. a) If 5^{th} term and 8^{th} term of an arithmetic sequence are 16 and 25 respectively then find the common difference.

b) Find the difference between 10^{th} and 20^{th} terms

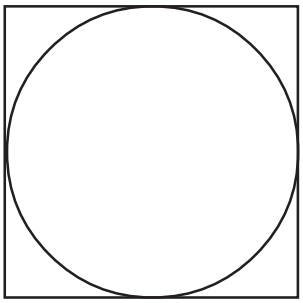
32. In figure 'O' is the centre and A,B,C are points on the circle.

a) Find the measure of $\angle A$

b) In ΔBOC, Find $\angle OBC$.



33. In figure circle exactly fitting inside a square. Calculate the probability of a dot put without looking to be within the circle.



34. Coordinates of a pair of opposite vertices of a rectangle with sides parrallel to the axes are (-2,3) and (5,6). Find the coordinates of the other vertices.

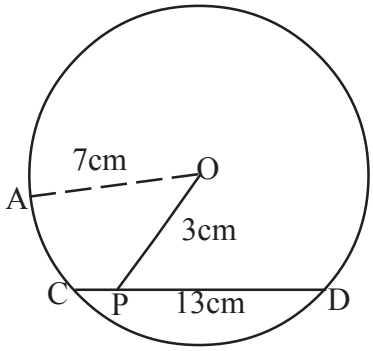
35. In an examination marks obtained by 11 students are given below.

15, 35, 20, 18, 40, 32, 28, 50, 45, 27, 31

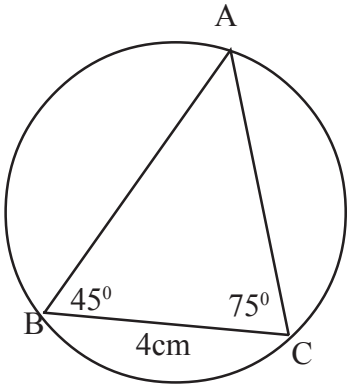
a) Find the mean mark

b) Find the median mark

36. In figure 'O' is the centre of the circle and a line from the centre intersect the chord. Find the length of each part of the chord.



37. In figure BC=4 cm, $\angle B=45^0$, $\angle C = 75^0$ Find the circum radius of the $\triangle$ ABC.



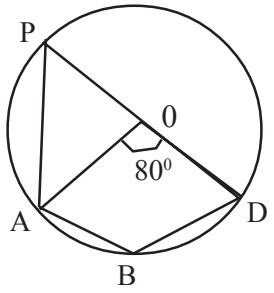
38. The perpendicular sides of a right angled triangle are 9 cm and 12 cm. Find the inradius of the triangle.

39. n^{th} term of an arithmetic sequence is given by 3n-4.

a) Find the common difference

b) Find the 10^{th} term

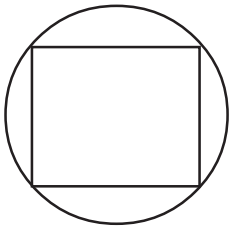
40. In figure 'O' is the centre and $\angle AOD = 80^0$



a) Find $\angle APD$

b) Find $\angle ABD$

41. A dot is put inside the circle without looking into it. Find the probability that the dot is inside the square.



42. Draw X and Y axes and mark the following points.

a) A (0,5); B(0,-2); C(4,0); D(-3,0), E(4,5)

b) Which is not a point on axes.

43. Marks obtained by some students are given below. Find the median mark.

66, 30, 56, 20, 13, 56, 53, 70, 50, 30, 56, 45, 56

44. In ΔABC if $\tan A = \frac{3}{4}$ then find SinA, CosA.

45. Find the inradius of an equilateral triangle of side 10 cm.

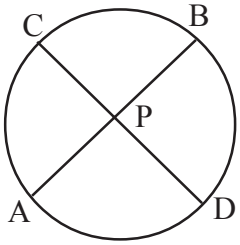
46. Base perimeter and slant height of a square pyramid are 48 cm and 10 cm respectively.

a) Find the height of the pyramid

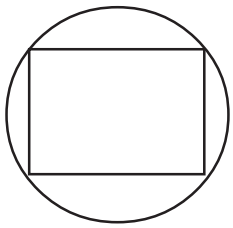
b) Find the volume.

47. a) Write the algebraic form of the arithmetic sequence 1,6,11.....

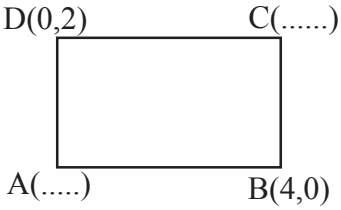
b) Find the 15^{th} term of this sequence

48. 

In the figure PA = 4cm, PB = 6cm, PC = 2cm, Find PD.

49. 
A dot is put inside the circle, without looking. What is the probability that the dot is outside the square.

50. Find the co-ordinates of other two vertices of the rectangle given below.



51. The weights of 25 students are given below. Find the median weight.

Weight in Kgs	No. of students
35kg	4
40kg	5
50kg	6
55kg	6
60kg	2
65kg	2

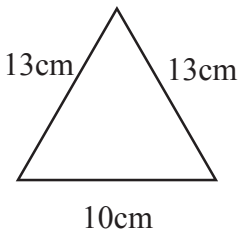
52. In triangle PQR, $\angle Q = 90^0$, $\text{Sin } P = \frac{7}{25}$ Find Tan P.

53. The perimeter of a traingle is 20 cm and radius of the incircle is 3 cm, find the area of the traingle.

54. The measures of one lateral face of a square pyramid are given below.

a) Find the sum of all edges of the Square pyramid

b) Find the slant height.



3 Mark Questions

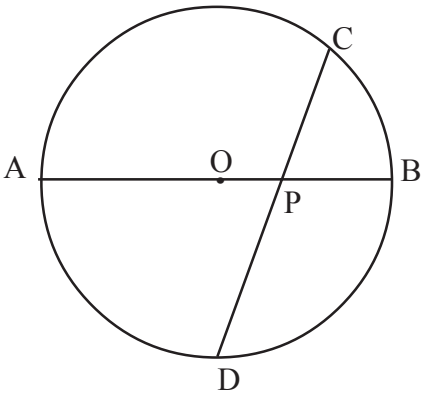
55. Draw a rectangle of side 6 cm and 3 cm. Construct a square of equal area of the rectangle.

56. In figure AB is the diameter and CD is a chord intesecting AB at P. AB = 16 cm; CD = 19 cm, PC = 4cm

a) If PA = x then find PB

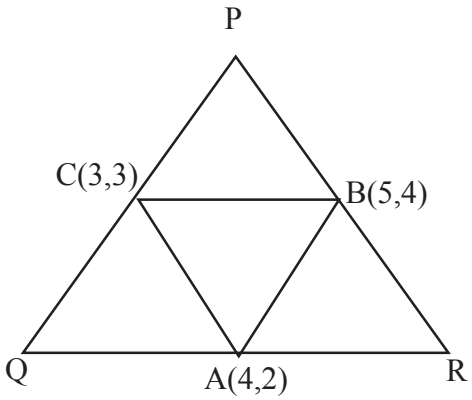
b) Find length of PD

c) Find the length of PA



57. Draw a circle of radius 3.5 cm. Mark a point at a distance 7 cm from the centre of the circle. Draw tangents from this point to the circle. Measure the length of the tangents.

58. In figure A(4,2), B(5,4) and C(3,3) are the mid -points of the sides QR, PR and PQ of the traingle PQR respectively. Find the coordinates of the vertices of ΔPQR.



59. a) $P(x) = x^2-7x+6$ Find P(1), P(6)

b) Find the solution of the equation P(x) = O

c) Write a polynomial with P(1) = 0, P(2) = 0, P(3) = 0

60. Sum of first n terms of an arithmetic sequence is $3n^2+2n$.

Find,

a) Common difference

b) prove that if 9 is added to the sum of first certain terms of the arithmetic sequence 16, 24, 32, 40, ... then it is a perfect square.

61. Two dice with faces numbered from 1 to 6 are rolled together.

a) What are the possible sums?

b) Which of these sums has the maximum probability?

62. Draw a rectangle of sides 4 cm and 3 cm. Construct a square of equal area.

63. 40m long wire is cut into two pieces. Each piece is bend to form squares. The sum of the area of these two squares is 58 m^2

a) If length of one piece is taken as x then find the length of other.

b) What is the length of the side of each square.

c) Form an equation with the given data

d) Find the length of each pieces.

64. Draw a circle of radius 3 cm. Draw a triangle in which sides are tangent to the circle with two of its angle 50^0 and 60^0 .

4 Mark Questions

65. Consider the line joining the points (4,5) and (7,9)

a) Find the slope

b) Find two more points on the line

c) Check whether (2,2) a ponit on this line

d) Find the coordinate of the point of intersection of x axis and the line.

66. a) If $P(x) = x^2-5x+k$ $P(2) = 0$ then find the value of K

b) find the value of P(3), P(4)

c) Check whether (x-3) is a factor of P(x)

67. Sum of n terms of an arithmetic sequence is $3n^2+2n$

a) Find the first term

b) Find the common diffrence

c) Write the sequence

d) Find the sum of first 10 term of the arithmetic sequence 7,13,19.....

68. In class 10 A, there are 30 boys and 20 girls. In 10 B, there are 20 boys and 15 girls. One student is to be selected from each class.

a) How many ways selection can be done

b) What is the probability of both being boys

c) What is the probability of both being girls

d) What is the probability of one girl and one boy.

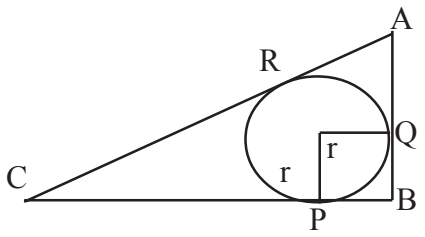
69. Draw a rectangle with sides 5 c.m., 3 cm. construct a square of equal area.

70. In the equation $x^2 + 10x = 24$,

a) What number should be added on both sides to make it a perfect square?

b) Find the values of 'x'

71. In a right traingle ABC, right angled at B, BC=12 cm, AB =5cm, What is the radius of the circle inscribed in the traingle.



72. A(-2, -2), B(2, -2) , C(0,1) are vertices of triangle ABC.

a) Find the co-ordinates of the mid points of the sides of ΔABC

b) Prove that traingle ABC is an isosceles traingle.

73. Draw a circle of radius 2.5 cm. Then draw a rhombus of one angle 70^0 with all its sides touching the circle.

74. The sum of n terms to an arithmetic sequnce is $4n^2-3n$.

Find,

a) The first term

b) Find the common difference

c) Find the n^{th} term

75. In a box there are 3 black and 7 white balls. In another box, there are 4 black and 6 white balls. If One ball is taken from each box without looking into it.

Find the probability that,

a) both being black

b) both being white

c) Atlest one ball is black

5 Mark Questions

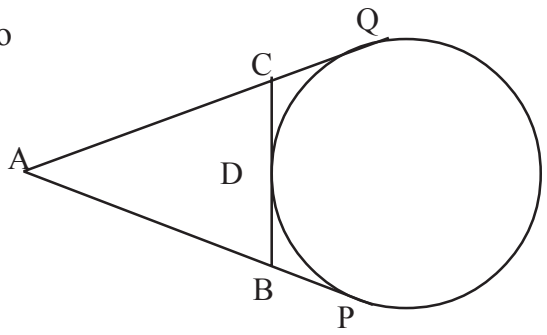
76. Length of a rectangle is 2m more that its breadth. If the area of the rectangle is $224m^2$

a) Take the breadth as x, find its length

b) Form a second degree equation with the given data

c) Find the perimeter of the rectangle.

77. a) In the figure AP, AQ, BC are tangents to the circle. If AP = 12 cm then find the perimeter of ΔABC



b) Draw a circle of radius 2.5cm. Draw a triangle of angles 40^0, 60^0, 80^0 with all its sides touching the circle.

78. From the top of an electric post, two wires are stretched to either side and fixed to the ground. For one wire it makes an angle of 45^0 with the ground and the distance to the foot of the post is 24 metres. For the second wire it makes an angle 30^0 with the ground.

a) Draw a rough figure

b) Find the height of the post

c) Find the total length of the wires

$\left(\begin{matrix}\sqrt{2}=1.414\\ \sqrt{3}=1.732\end{matrix}\right)$

79. a) Prove that the points (7,10,); (-2,5) and (3-4) are vertices of an isosceles right triangle.

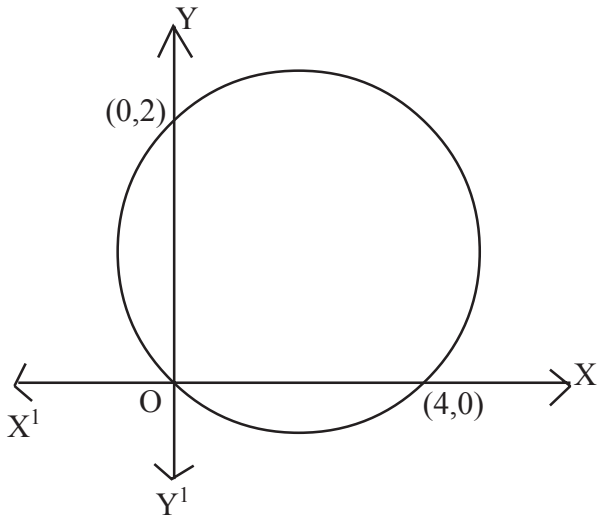
b) Draw X and Y axes and mark the points A(1,1); B (4,1); C (4,4) and D (1,4) Join these points in order and give a suitable name for the figure so obtained.

80. a) A square pyramid of base edge 10 cm and height 12 cm is to be made of paper. What should be the dimensions of the traingles.

b) The height of a square pyramid with all its edges are equal is 12 cm. Find its volume.

81. a) Find the coordinates of the points which divides the line joining the points (1,2) and (7,5) into three equal parts.

b) Find the equation of the circle in the given figure.



82. The table below shows the ages of 100 people.

a)

Age	Number of people
0-10	5
10-20	15
20-30	20
30-40	25
40-50	15
50-60	11
60-70	9
Total	**100**

a) The age of the persons at what position is taken as the median.

b) What is the assumed age of 41^{th} person?

c) Find the median age.

83. In a right triangle one of the perpendicular side is one less than two times the shortest

side. Hypotenuse is one more that two times the shortest side.

a) Considering the shortest side as x, find the other two sides.

b) Find the sides of triangle

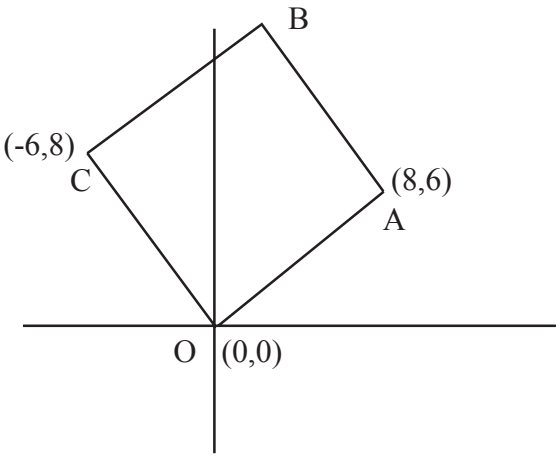
c) Find the area of the traingle.

84. Two building are 24 m apart. From the top of the smaller building , one sees the foot of the taller building at a depression of 60^0 and its top at an elevation of $30^{0.}$

a) Draw a rough figure

b) Find the heights of both buildings.

85. In the figure the coodinates of 3 vertices of a square are given.



a) Find the coordinates of the fourth vertex

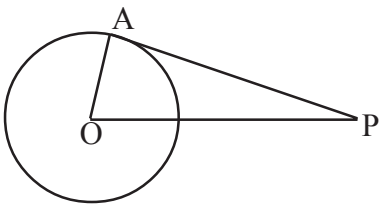
b) Find the length of its side

c) Find the area.

86. a) In figure O is the centre of the circle and PA is a tangent.

If PA = 5 cm and OP = 4cm then find the radius of the circle.

b) Draw a circle of radius 3 cm. Draw tangent from a point which is at a distance of 4 cm away from the centre of the circle. Measure the length of the tangent.



87. Draw a rectangle of sides 6 cm and 4 cm. Draw another rectangle with one side 7 cm and area equal to that of the first rectangle.

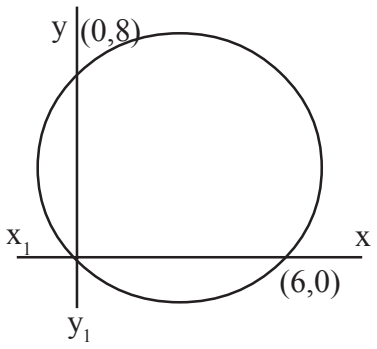
88. a) In the figure below find the coordinate of the centre of the circle.

b) Find the radius.

c) Find the equation of the circle.

d) Find the centre of the circle with equation.

$x^2+4x+y^2 - 6y+12 = 0$



89. In a locality the house are classified according to the consumption of electricity.

Consumption of Electricity	Number of House
0-60	4
60-120	10
120-180	12
180-240	15
240-300	14
300-360	4

a) Find the total number of houses

b) According to the hypothesis what is the consumption of electricity of 27^{th} house.

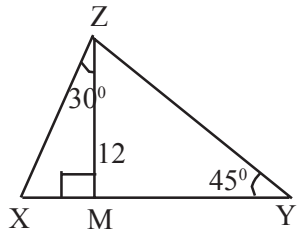
c) Find the median

90. The length of a rectangle is 4 cm more than its breadth ; the area of that rectangle is $96cm^2$

a) If the breadth is 'x' find the length.

b) Find the length and breadth of the traingle.

91.



In the figure MZ=12 cm, MZX $=30^0$

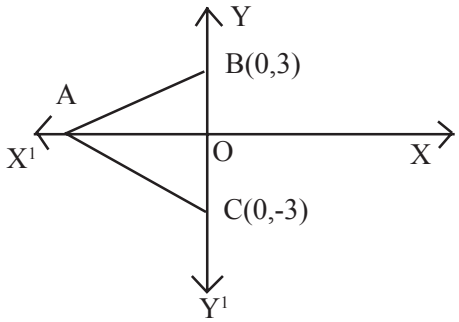
$\angle Y=45^0$ and ZM is Perpendicular to XY

a) Find MX, XY

b) Find the perimeter of Δ XYZ

c) Find XZ : YZ : XY

92. In the figure ΔABC is an equilateral one .



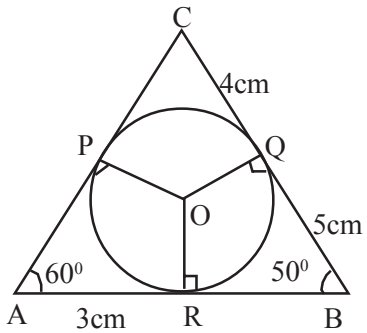
a) Find the length of one side of triangle ABC.

b) Find the perimeter of triangle ABC

c) Find the co-ordinates of A.

93. In triangle ABC $\angle A = 60^0$, $\angle B = 50^0$, AR = 3cm,

CQ = 4cm, BQ = 5cm



a) Find the perimeter of ΔABC

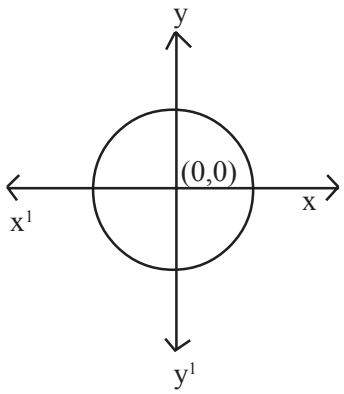
b) Find $\angle$POR, $\angle$POQ

c) Find $\angle$RPQ, $\angle$BRQ

94. Draw a rectangle with sides 6 cm and 4 cm.

Draw another rectangle of same area with one side 7 cm.

95. In the figure, the radius of the circle is 5 cm. Centre is the origin.



a) Find the co-ordinates of the ponits of intersection of the circle with the X and Y axes.

b) Write the equation of the circle.

c) Find the Co-ordinates of any other two points on the circle.

96. The details of income tax given by the teachers of a school is given below.

a)

Income tax in rupees	Number of Teachers
30,000 - 40,000	4
40,000 - 50,000	6
50,000 - 60,000	5
60,000 - 70,000	4
70,000 - 80,000	4

a) The income tax of the teachers at what position is taken as the median ?

b) What is the assumed income tax of 11th teacher?

c) Find the median tax.

97. Consider the pattern

1

2 3 4

5 6 7 8 9

10 11 12 13 14 15 16

.....

.....

a) Write the next line

b) Write the sequence of number of numbers in each raw.

c) Write the algebraic form of the sequence 1,3,5,7.....

d) How may numbers are there in 30^{the} raw

e) Write the first and last number in the 30^{th} row.

98. a) A sector of a circle with radius 18 cm and central angle 240^0 is bent to form a cone.

i) Find the slant height of the cone

ii) Find the base radius of the cone

iii) Find the curved surface area.

b) Consider a cone of height and radius equal, a hemisphere, a cylinder of equal radius and height and a sphere. Radius of each figures is 'r' unit. Prove that the volumes of these are in arithmetic sequence.

99. Read the following and understand the mathematical idea expressed in it and answer the questions that follows.

1,4,9,16....are the squares of the counting numbers. The remainders got by dividing the square numbers with natural numbers have a cyclic property. For example the remainders on dividing these numbers by 3 are tabulated here

Number	1	4	9	16	25	36	49	.....
Remainder	1	1	0	1	1	0	1	.....

a) Write the 8^{th} term of the sequence 1, 4, 9, 16.....

b) What is the remainder when 100 is divided by 3

c) Which are the possible remainders when a perfect square is divided by 3

d) Find the remainder when the numbers of the sequence 5^2, 8^2, 11^2, ... are divided by 3.

e) What is the remainder that leaves on dividing the terms of the sequence 4^2, 7^2, 10^2, ... by 3.

100. The sum of first nine terms of an arithmetic sequence is 261 and sum of next 6 terms is 444.

a) Find 5^{th} and 8^{th} term

b) Find the first term and common difference

c) Write the sequence

d) Write the algebraic expression of the arithmetic sequence

e) Find the sum of first 15 terms of the arithmetic sequence 6,12,18.....

101. Height and radius of a conical vessel are 8cm and 5 cm respectively. It is completely filled with water. Some lead balls of radius 0.5cm were immersed in it. One fourth of water spilled out. Find the number of balls immersed.

102. Read the mathematical concept carefully and answer the following.

1 = 1

1+2 = 3

1+2+3 = 6

1+2+3+4=10

Consider the sequence 1,3,6,10.....

It is the sum of natural numbers. These numbers are called traingle numbers.

1+3 = 4 ; 3+6 = 9, 6+10 = 16 .....

1, 4, 9, 16, ... are called square numbers. Each square number is the sum of two consecutive triangle numbers.

a) Find the next term of the sequence 1,3,6,10.....

b) Find the fifth square number

c) Write the algebraic form of the sequence of traingle numbers

d) Write the algebraic expression of the sequence of square numbers.

e) If 20th triangle number is x and 21st triangle number is y then y-x = ...

103.

1

3 5 7

9 11 13 15 17

.....

.....

.....

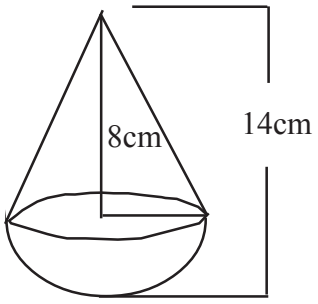
a) Write the next two lines of this pattern

b) How many numbers are there in 10^{th} row.

c) Find the sum of all numbers in the 10^{th} row..

d) Write the algebraic form of the arithmetic sequence 1, 3, 5, 7, ...

104.



A toy is made in the form of a cone mounted on a hemisphere.

The total length of the toy is 14 cm and height of the cone alone is 8 cm.

a) Find the radius of the hemisphere ?

b) Find the total surface area of the toy.

c) Find the total cost of painting 500 such toys at the rate of Rs. 2 per square centimeter.

1 Marks Questions - Answers

1. 27 (1)
2. 60^0 (1)
3. $\frac{9}{25}$ (1)
4. $\frac{7}{25}$ (1)
5. 4 (1)
6. 7 (1)
7. 90^0 (1)
8. $2+\sqrt{2},\ 2-\sqrt{2}$, (1)
9. (2,2) (1)
10. $1\pm\sqrt{2}$ (1)
11. 0 (1)
12. rhombus (1)
13. $\frac{2}{11}$ (1)
14. $\frac{AC}{BC}$ (1)
15. 60^0 (1)
16. (6,1) (1)
17. $\left(2,\frac{-5}{3}\right)$ (1)
18. (0,0) (1)
19. 16cm (1)
20. (x-3) (1)

21. 4 (1)

22. 110^0 (1)

23. $4/10$ (1)

24. $\frac{AB}{AC}$ (1)

25. AC = 5cm (1)

26. 1 (1)

27. No Solution (1)

28. 12cm (1)

29. 16cm (1)

30. x-1 is a factor (1)

2 Marks Questions - Answers

31. a) d=3 (1)

b) 30 (1)

32. a) $\angle A=50^0$ (1)

b) $\angle OBC = 40^0$ (1)

33. $\frac{\pi}{4}$ (2)

34. (-2,6), (6,3) (1+1=2)

35. a) Mean = 31 (1)

b) Median = 31 (1)

36. 8, 5 (2)

37. $\frac{a}{\text{Sin } A} = 2R \Rightarrow A = 60$ (2)

a=4 $\text{Sin } A = \frac{\sqrt{3}}{2}$ $\frac{a}{\text{Sin } A} = \frac{4}{\frac{\sqrt{3}}{2}} = \frac{8}{\sqrt{3}}$ (2)

38. $r = \frac{A}{S}$ $A = 54,\ S = 18$ (1)

r = 3

39. a) 3 (1)

b) 26, 3x10-4

= 30-4

= 26 (1)

40. a) $\angle$APD = $\frac{80}{2}$

= 40 (1)

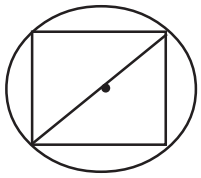
b) $\angle$ABD = 180-40

= 140 (1)

41.

radius of the circle r

diameter of circle = diagonal of square



probability $= \frac{\frac{(2r)^2}{2}}{\pi r^2} = \frac{2r^2}{\pi r^2} = \frac{2}{\pi}$ (2)

42. a) for drawing X, Y axes and marking the points. (1)

b) E or (4,5) (1)

43. Arranging in ascending or descending order (1)

13, 20, 30, 30, 45, 50, 53, 56, 56, 56, 56, 66, 70

Median = 53 (1)

44. SinA = $\frac{3}{5}$ (1)

CosA = $\frac{4}{5}$ (1)

45. $r = \frac{A}{S}$

A = $\frac{\sqrt{3}}{4}$x10x10 (1)

S = 15

$r = \frac{\sqrt{3}x10x10}{4x15}$

$= = \frac{5}{\sqrt{3}}$ (1)

46. Area of triangle = $\frac{48}{4}$

= 12

a) height = 8 (1)

b) Volume = $\frac{1}{3}x12^2x8$

= $384cm^3$ (1)

47. a) $x_n = 5n-4$ (1)

b) $x_{15} = 5x15-4 = 71$ (1)

48. PA x PB = PC X PD

4 x 6 = 2 x PD (2)

$\therefore$ PD = $\frac{4x6}{2} = 12$

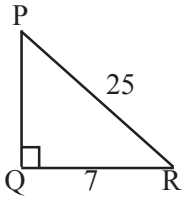
49.

$1-\frac{2}{\pi}$ (2)

50. A (0,0) C(4,2) (1)

51. Median Weight = $\frac{25+1}{2}$ = Weight of 13^{th} student = 50kg (2)

52.



$PQ = \sqrt{25^2 - 7^2} = \sqrt{625-49}$ (1)

= $\sqrt{576} = 24cm$ (1)

$\tan P = \frac{7}{24}$

53. Area = $rs = 3x\frac{20}{2} = 10cm^2$ (2)

54. a) 4x13+4x10

= 52 + 40 = 92cm (1)

b) $\sqrt{13^2 - 5^2} = \sqrt{169 - 25} = \sqrt{144} = 12cm$ (1)

3 Marks Questions - Answers

55. For correct figure (3)

56. a) 16 - x (1)

b) PD = 15 (1)

c) PA = 10 (1)

57. For correct figure (3)

58. By considering the parallelograms QABC, ARBC, and ABPC

P = (4,5) Q = (2,1) R=(6,3) (3)

59. a) P(1) = 6 (1)

P(6) = 0

b) 1, 6 (1)

c) (x-1) (x-2) (x-3) (1)

60. a) d=6 (1)

b) $Sn = 4n^2 + 12n$

$Sn+9 = 4n^2 + 12n + 9$

$= (2n+3)^2$ (2)

61. a) 2, 3, 4, 5, 6, 7,

8, 9, 10, 11, 12 (2)

b) 7 (1)

62. For drawing rectangle (1)

for drawing square (2)

63. a) 40 - x

b) $\frac{x}{4}, \frac{40-x}{4}$ (1)

c) $\left(\frac{x}{4}\right)^2+\left(\frac{40-x}{4}\right)^2=58$ (1)

d) 28, 12 cm (!)

4 Mark Questions - Answers

64. For drawing the circle with radius 4 (1)

For drawing triangle (2)

65. a) Slope = $\frac{4}{3}$ (1)

b) (10, 13), (13, 17) (2)

c) $\frac{2-9}{2-7}=\frac{-7}{-5}=\frac{7}{5}$

not a point. (1)

d) Point on x axis (x,0)

Slope = $\frac{5-0}{4-x}=\frac{4}{3}$

$\frac{5}{4-x}=\frac{4}{3}$

$15=16-4x$

$4x=16-15$

$=1$

$x=1/4$

point = $\left(\frac{1}{4},0\right)$ (1)

66. a) 2^2-5x2+k = 0

-6+k = 0

$k = 6$ (1)

b) $P(3) = 0$ (1)

$P(4) = 4^2-20+6$

$= 2$ (1)

c) $P(3) = 0$

$\therefore$ a factor (1)

67. a) 5 (1)

b) 6 (1)

c) 5, 11, 17..... (1)

d) 320 + 20 = 340 (1)

68. a) 50x35 = 1750 (1)

b) $\frac{600}{1750}$ (1)

c) $\frac{300}{1750}$ (1)

d) $\frac{850}{1750}$ (1)

69. To draw the square with specific measures (4)

70 a) $5^2=25$

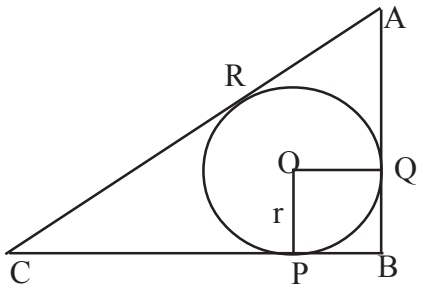
b) $x^2+10x+25 = 24+25 = 49$

ie $(x+5)^2 = 7^2$ (2)

$x+5 = 7$	$x+5= -7$
$x=7-5 = 2$	$x=-7-2 = -9$

(2)

71.



$AC^2 = 12^2+5^2 = 13^2$

$AC = 13$

$CP = 12 - r$

$CR = 12 - r$

$AR = AQ = 5-r$

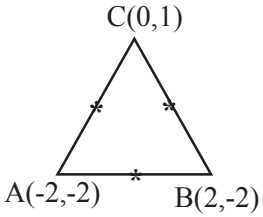
$12-r + 5-r = 13$

$17-2r = 13$

$r = \frac{17-13}{2} = \frac{4}{2} = 2$ (4)

72.

a)



Mid-point of AB = $\left(\frac{-2+2}{2}, \frac{-2+-2}{2}\right)$

$= (0, -2)$

Mid-point of BC = $\left(\frac{2+0}{2}, \frac{-2+1}{2}\right)$

$= (1, -1/2)$

Mid-point of AC = $\left(\frac{-2+0}{2}, \frac{-2+1}{2}\right)$

$= (1, -1/2)$ (3)

b) $AC^2 = 2^2 + 3^2 = 13$

$BC^2 = 2^2 + 3^2 = 13$

$\therefore$ AC = BC

$\therefore$ Isosceles (1)

73. Draw the rhombus with the specific measures. (4)

74. a) 1 (1)

b) 8 (1)

c) 8n-7 (2)

75. a) $\frac{3x4}{10x10} = \frac{12}{100}$ (1)

b) $\frac{7x6}{10x10} = \frac{42}{100}$ (1)

c) 1 - P (Both are black)

$= l - \frac{12}{100} = \frac{88}{100}$ (2)

5 Marks Questions - Answers

76. a) x+2 (1)

b) $x^2+2x=224$ (2)

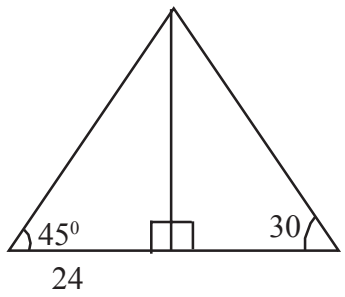
c) l = 16, b = 14

Perimeter = 60 (2)

77. a) 24 (2)

b) For correct figure (3)

78. a)



(1)

b) 24 m (2)

c) $48 + 24\sqrt{2}$ (2)

79. a)) $AB = \sqrt{212}$

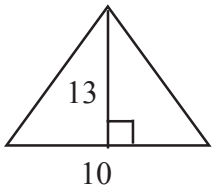
$BC = \sqrt{106}$

$AC = \sqrt{106}$

$AB^2 = BC^2 + AC^2$ (3)

b) Square (2)

80. a)



Triangle with base 10 and height 13cm

or

Sides are $\sqrt{194}$ cm; $\sqrt{194}$ cm and 10cm (3)

b) h=12, a=e

$a = 12\sqrt{2}$

$r = \frac{1}{3}a^2h$

$= \frac{1}{3}x12\sqrt{2}x12\sqrt{2}x12$ (3)

$= 1152cm^3$

81. a)

AP : PB = 1:2

$\therefore$ P is (3,3) (2)

PQ + QB - 1:1

Q is (5,4) (1)

b) $(x-2)^2 + (y-1)^2 = 5$ (2)

82.

Age	Number
below 10	5
below 20	20
below 30	40
below 40	65
below 50	80
below 60	91
below 70	100

10 (1)

a) 50, 51 (1)

b) $30+\frac{5}{25} = 30.2$ (1)

c) Median $= \frac{50^{th} + 51^{st}}{2}$

$= 30\frac{100}{25}$

$= 30 + 4 = 34$ (2)

83. a) 2x-1, 2x+1 (1)

b) $x^2+(2x-1)^2 = (2x+1)^2$ (1)

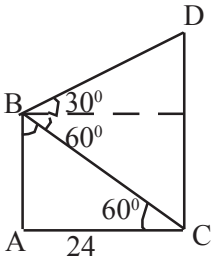
$x^2+4x^2-4x+1 = 4x^2+4x+1$

$x^2-8x = 0$ (1)

$x(x-8) = 0$ $x=8$ (1)

Sides 8cm, 15cm, 17cm (1)

84.



(1)

Height of the small building = $24\sqrt{3}$ (2)

Height of taller building

$= \frac{24}{\sqrt{3}} + 24\sqrt{3}$

$= 8\sqrt{3} + 24\sqrt{3}$

$= 32\sqrt{3}$ (3)

85. a) (2,14) (2)

b) $\sqrt{8^2+6^6} =$ 10 unit (1)

c) 10 x 10 = 100 square unit (2)

86. a) radius$^2 = 5^2 - 4^2$

= 9

radius = 3 (2)

For drawing the figure (2)

Length = 5cm (1)

87. For drawing rectangle of sides 6, 4 (1)

Drawing another rectangle with one side 7 (4)

88. a) (3, 4) (1)

b) 5 unit (1)

c) $(x-3)^2 + (y-4)^2 - 25$ (1)

d) (-2,3) (2)

89.

60	4
120	14
180	26
240	41
300	55
360	59

a) 59 (1)

b) 182 (2)

c) 194 (2)

90. a) x+4 (1)

b) $x(x+4) = 96$

$x^2 + 4x = 96$

$x^2 + 4x + 2^2 = 22+96$

$(x+2)^2 = 100 = 10^2$

x+2 = 10	breadth = 8cm
x=10-2=8	length = 12cm

(4)

91. a) $MX = \frac{12}{\sqrt{3}}$, $XY = \frac{12}{\sqrt{3}} + 12$ (1)

b) Perimeter = XY + YZ + ZX

$= \frac{24}{\sqrt{3}} + 12\sqrt{2} + \frac{12}{\sqrt{3}} + 12$ (2)

$\frac{36}{\sqrt{3}} + 12\sqrt{2} + 12$

c) $2 : \sqrt{6} \ : \ \sqrt{3} + 1$ (2)

92. a) 6cm (1)

b) 18cm (2)

c) A is $\left(-3\sqrt{3}, 0\right)$ (2)

93. a) AB + BC + AC

$= 8 + 9 + 7 = 24$cm (1)

b) $\angle PQR = 120^0$, $\angle POQ = 110^0$ (2)

c) $\angle RPQ = 65^0$, $\angle BRQ = 65^0$ (2)

94. Draw the rectangle. Draw a rectangle of the same area. (5)

95. a) (5,0) (-5,0) (0,5) (0,-5) (2)

b) $x^2+y^2 = 25$ (1)

c) (3,4) (-3,4) (2)

96. a) $\frac{23+1}{2}$ = Tax of 12th teacher (1)

b) Assumed tax for 11th teacher.

$d = \frac{10000}{5} = 2000$

$= 50000 + {}^{d}\!/_{2}$

$= 50000 + 1000$

$= 51000$ (2)

c) Median Tax = 51000+2000

53,000 (2)

97. a) 17 18 19 20 21 22 23 24 25 (1)

b) 1, 3, 5, 7, ... (1)

c) $x_n = 2n-1$ (1)

d) $x_{30} = 59$ (1)

e) $30^2 = 900$ (last number) (1)

First Number = 842 (2)

98 a) (i) 18cm (1)

ii) r = 12 cm (1)

iii) $216\pi\,cm^2$ (1)

b) $\frac{1}{3}\pi r^3, \quad \frac{2}{3}\pi r^3, \ \pi r^3, \quad \frac{4}{3}\pi r^3$ (1)

$d = \frac{1}{3}\pi r^3$ (2)

99. a) 64 (1)

b) 1 (1)

c) 0, 1 (1)

d) 1 (1)

e) 1 (1)

100. a) 5^{th} term = $\frac{261}{9} = 29$ (1)

8^{th} term = $\frac{261+444}{15}$

= $\frac{705}{15} = 47$ (1)

b) $d = \frac{47-29}{8-5} = \frac{18}{3} = 6$

f = 29-24 = 5 (1)

c) 6n-1 (1)

d) 705 + 15 = 720 (2)

101. Volume of the cone

$= \frac{1}{3} x\pi x5x5x8$ (1)

Volume of sphase = $\frac{1}{4}\left(\frac{1}{3} x\pi 5x5x8\right)$

$= \frac{1}{4} x\pi x \frac{5}{10} x \frac{5}{10} x \frac{5}{10}$ (2)

$n = \frac{4}{3} x\pi x \frac{5}{10} x \frac{5}{10} x \frac{5}{10} = \frac{1}{12} x\pi x5x5x8$

n = 100 (2)

102. a) 15 (1)

b) 25 (1)

c) $n\left(\frac{n+1}{2}\right)$ (1)

d) n^2 (1)

e) 21 (1)

103. a) 19, 21, 23, 25, 27, 29, 31

33, 35, 37, 39, 41, 43, 45, 47, 49 (1)

b) $x_n = 2n-1$

$x_{10} = 2x10-1 = 19$ (1)

c) $\frac{19}{2}(163+199) = 19x181 = 3439$ (2)

d) 2n-1 (1)

104. a) 6cm (1)

b) $132x3.14cm^2$

$= 2x\pi x6^2 + \pi x6x10$

$= 72\pi + 60\pi = 132\pi cm^2$

$= 132x3.14cm^2$

$= 414.48\ cm^2$ (2)

c) 414.48 x 2x500

= 828.96 x 500 rupees (2)

= 414,480 rupees

◆◆◆