MANNARKKAD GROUP

Pre – Model Test -2022

MATHEMATICS

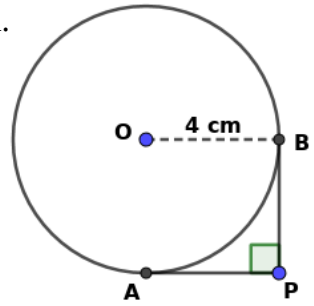
Answer for each question from 1 to 10 carries 1 score, Answer any four questions from 1 to 6.

1 The algebraic expression of an Arithmetic sequence is 7n + 3. What is the common difference the arithmetic sequence.

2 p(x) = x^2-1 , is a polynomial, what is the value of p(1)?

3 Which is the below given coordinates is the coordinates of origin.

4 The radius of the circle with centre O is 4 centimetres.
PA and PB are two tangents from P. What is the length of PB.



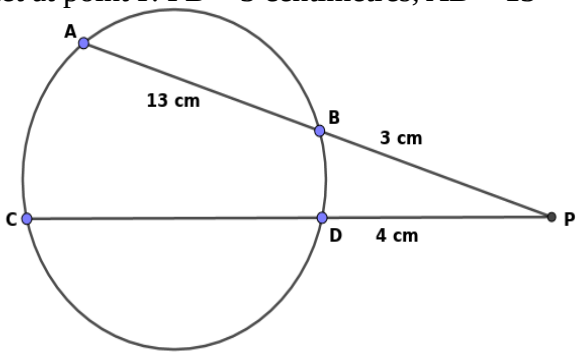
5 One is asked to select a letter from the word SCISSORS. What is chance that it will be the letter S.

6 The coordinates of A is (5.7) and B is (3,3). Which is the coordinates of the mid point of AB.

Answer all the questions from 7 to 10.

7 Base area and the height of a square pyramid is 100 square centimetres and 12 centimetres.
What is the lateral surface area of the square pyramid?
(240, 1200, 120, 100)

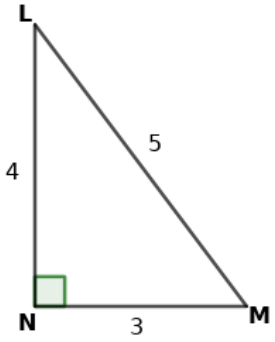
8 In the figure the chords AB and CD are extended and they met at point P. PB = 3 centimetres, AB = 13 centimetres, PD = 4 centimetres, What is the length of CD.
(24, 12, 6, 8)



9 The sum of first n terms of an arithmetic sequence is $2n^2+3n$. Which is the first term of the arithmetic sequence given below.
(2, 3, 4, 5)

10 In the right angle triangle LMN, LN = 4 units, NM = 3 units and LM = 5 units, Then $\tan(M)$ is.

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

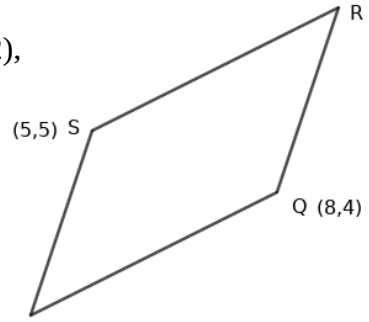


Answer for each question from 11 to 18 carries 2 score, Answer any three questions from 11 to 15.

11 In the figure PQRS is a parallelogram and the coordinates of P is (4,2), Q is (8,4) and S is (5,5).

a) Find the coordinates of vertex R.

b) Calculate the coordinates of the meeting point of the diagonals.

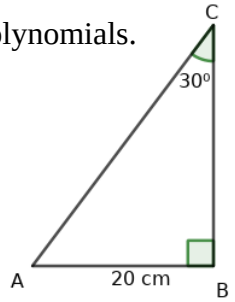


12 Write the polynomial x^2-16 as the product of two first degree polynomials.

13 In the figure ABC is a right angle triangle and AB = 20 centimetres

a) Calculate the length of AC.

b) What is the radius of the circumcirle of the triangle ABC.



14 Draw a circle of radius 2.5 centimetres and mark a point M on the circle and draw a tangent through M.

15 a) Surface area of a sphere is 400 Π square centimetres. Calculate the radius of the sphere.

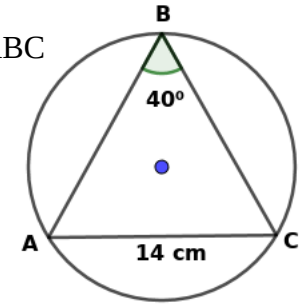
b) Calculate the surface area of a hemisphere having the same radius.

Answer any two questions from 16 to 18.

16 How many consecutive natural numbers starting from 1 should be added to get 210.

17 In the figure the circle passes through the three vertices of the triangle ABC and <A = 40°, AC = 14 centimetres. Calculate the radius of the circle.

($\sin(40)=0.70$, $\cos(40)=0.71$)



18 The coordinates of M is (2,5) and N is (5,7).

a) Calculate the slope of the line passing through the points M and N

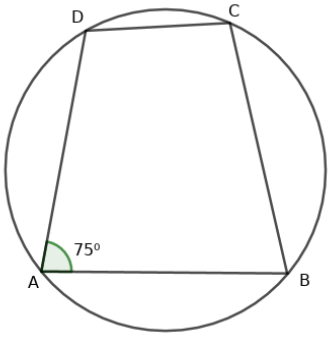
b) Write the equation of the line passing through the points M and N

Answer for each question from 19 to 25 carries 4 score. Answer any three questions from 19 to 23.

19 In the figure ABCD is a cyclic quadrilateral and <A = 75°.

a) Calculate the angle <C.

b) If <B is half of the <D, calculate the <B and <D.



20 The circumradius of the triangle ABC is 3 centimetres and the two angles are <A = 70° and <B = 50°. Draw the triangle. Write angles on the vertices A,B,C.

21 The perimeter of a rectangle is 64 centimetres and its area is 255 square centimetres.

a) What is the sum of length and breadth of the rectangle?

b) If we take the breadth as x , then write the length of the rectangle in terms of x.

c) Calculate the length and breadth of the rectangle.

22 Below given are the scores of a cricket player in 9 matches. Calculate the mean and median of the scores,

31, 25, 36, 35, 43, 27, 39, 24, 30

23 Draw the coordinate axes and mark the points (3,2), (0,2) and $(0,2\sqrt{2})$.

Answer any one question from 24 to 25.

24 In a school there are 15 boys and 21 girls are studying in 10A class and 18 boys and 12 girls are studying in 10 B class. One student is to be selected from each division.

a) What is the probability of selecting a girl from 10A.

b) What is the maximum number of possible pairs.

c) What is the probability of selected students is a boy and a girl?

25 The coordinates of the points A and B are (1,1) and (11,6), Find the coordinates of

a) The point P on AB with AP:PB = 2:3

b) The point Q on AB with AQ:QB = 3:2

Answer for each question from 26 to 32 carries 6 score. Answer any three question from 26 to 29.

26 A sector of radius 15 centimetres and central angle 216° is rolled up into a cone.

a) What is the slant height of the cone.

b) Calculate the radius and height of the cone.

c) Calculate the curved surface area and volume of the cone.

27

If $p(x)=x^2-8x+17$ is a polynomial.

b) Calculate p(3)

c) Write the polynomial p(x) – p(3) .

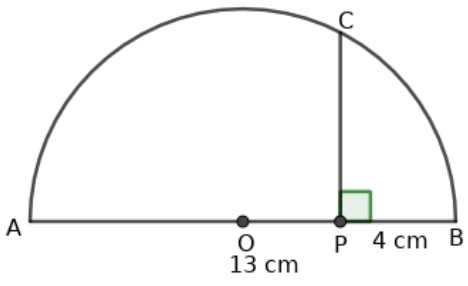
d) Find the solutions of the equation p(x) – p(3).

28 A child sees the top of a building at an angle of elevation 30°. After walking 20 meters towards the building, child sees the top of the same building at an elevation 60°. Draw a rough figure relating to this problem.

a) Calculate the height of the building.

b) Calculate the distance between the girl and the building.

29



In the figure AB = 13 centimetres and PB = 4 centimetres.

c) What is the length of AP?

d) Calculate length of PC.

a) Draw a rectangle with sides 7 centimetres and 3 centimetres.

Draw a square of same area of the rectangle.

Answer any two questions from 30 to 32.

30 In the below given table daily income of 35 employees are given.

Daily income	Number of employees
500-600	6
600-700	7
700-800	10
800-900	8
900-1000	4
Total	35

a If we arrange the employees due to their daily income in ascending order then, what will be the assumed income of the 14th student.

b Compute the median income.

31 In triangle ABC, AB = AC = 5 centimetres and BC = 6 centimetres.

a) Calculate the half of the perimeter of the triangle.

b) If the area of the triangle is 12 square centimetres then calculate the in radius of the triangle.

c) Draw triangle ABC and draw incircle

32 A metal square pyramid of base edge 16 centimetres and slant height 17 centimetres.

a) Calculate the surface area of the square pyramid.

b) Calculate the volume of the square pyramid.

c) If the metal square pyramid is melted and re-casted into small square pyramids of base edge 4 centimetres and height 5 centimetres. How many such small square pyramids can be made.

Answer for each question from 33 to 35 carries 8 score. Answer any two questions from 33 to 35.

33 An arithmetic sequence 4, 7, 10, ...

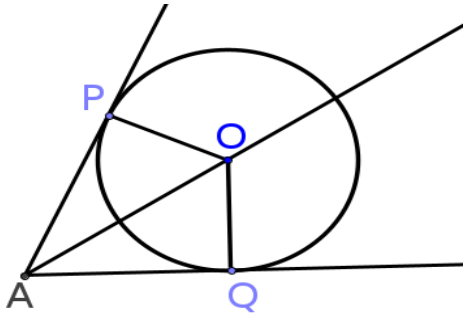
a) Write the algebraic expression of this arithmetic sequence.

b) Calculate the sum of first 20 terms of the sequence.

c) What is the remainder when each term of this sequence is divided by the common difference?

Prove that square of each term in this arithmetic sequence is a term in this sequence.

34 In the figure the circle touches AP,AQ at P,Q



a) < PAO = x° ആയാൽ < QAP =.....

b) < APO = < AQO = ..., If < PAQ = 60° ,

AO = 5 cm Find OQ.

c) Draw triangle ABC with AB =10cm ,AC =8cm , BC = 6cm, then draw its incircle.

35 The coordinates of the end points of the diameter of a circle are (1,1) and (9,7).

a) Find the coordinates of the centre of the circle, and Calculate the radius of the circle.

b) Check whether the circle will pass through the point (8, 8)? Why?

c) prove that the line passing through the points (1,1), (9,7) and the line passing through (-2,3) and (2,6) are parallel