

SSLC MODEL QUESTION PAPER 2021

MATHEMATICS

THIRUVANANTHAPURAM EDUCATIONAL DISTRICT

Time :2 ½ hours

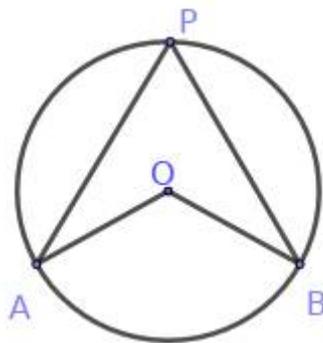
Maximum Marks: 80

Questions 1- 5 . Choose the correct answer from the bracket. (One mark each)

1 The algebraic form of an arithmetic sequence is $4n+3$. What is first term of the sequence?

(4, 5, 3, 7)

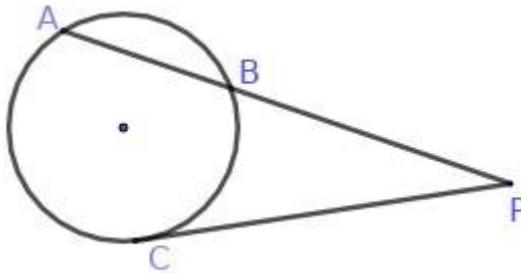
2



If $\angle AOB = 120^\circ$. What is the measure of $\angle APB$?

(30° , 60° , 240° , 120°)

3



From the above picture, $PA = 9\text{cm}$, $PB = 4\text{cm}$, what is the length of PC ?

(3cm, 6cm, 5cm, 10cm)

4 A sector of central angle 60° is cut from a circle of radius 10cm .It is bended to form a cone, what is the slant height of the cone ?

(5cm, 7cm, 10cm, 15cm)

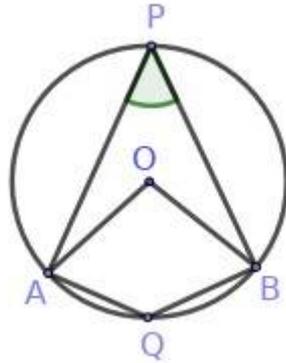
5 Which of the following is a point on the X axis ?

((4,1) , (-4,1) , (0,4), (4,0))

From questions 6 - 10, each question carries Two marks.

- 6 (a) Write the arithmetic sequence with first term 4 and common difference 3.
(b) Write the algebraic form.

7



If $\angle AOB = 130^\circ$, Find

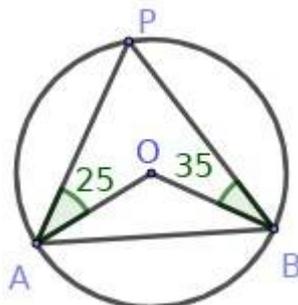
- (a) $\angle P$
(b) $\angle Q$

- 8 The weights of 11 children in a school cricket club are 35, 39, 32, 36, 40, 30, 34, 37, 38, 33, 31 (kgs). Find the median weight.
- 9 Write the polynomial $P(x) = x^2 - 9$ as the product of two first degree polynomials
- 10 (a) Find the midpoint of the line segment joining the points (-2, 6) and (3, 1).
(b) Find the slope of the line

[From questions 11 - 20, each question carries Three marks]

- 11 In the arithmetic sequence 6,11,16..... find
- (a) Common difference
(b) 7th term
(c) Sum of 15 terms
- 12 Tenth term of an arithmetic sequence is 15 and fifteenth term is 10.
- (a) Find the common difference
(b) Find the First term
(c) What is 25th term

- 13 In the figure O is the centre of the circle



- (a) What is the measure of $\angle APO$
- (b) What is the measure of $\angle BPO$
- (c) What is the measure of $\angle AOB$

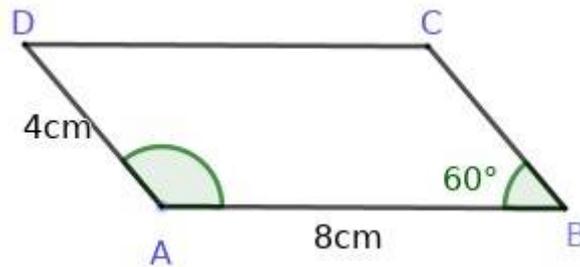
14 Draw tangent at a point on the circle with radius 3cm.

15 Each two digit number is written on a paper slip and these are all put in a box.

If a slip is taken from it

- (a) What is the probability to get a number with both digits same?
- (b) What is the probability that the product of the digits is a perfect square?

16



ABCD is a parallelogram. $AB = 8\text{cm}$, $AD = 4\text{cm}$, $\angle B = 60^\circ$

- (a) What is the perpendicular distance from C to AB ?
- (b) What is the area of parallelogram ABCD?

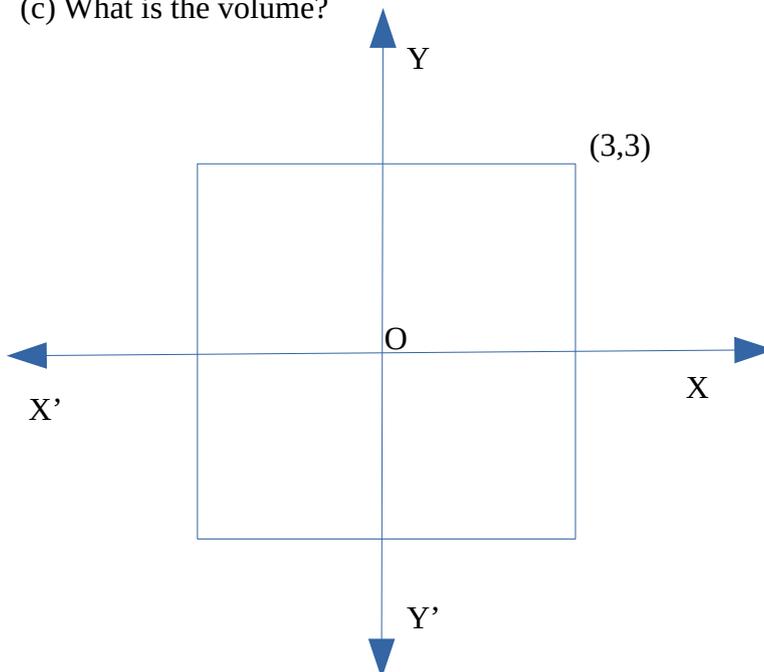
17 (a) Draw tangents from an external point which is at a distance of 7cm away from the centre of circle with radius 3cm.

(b) Measure the lengths of tangents?

18 Base radius and height of a cone are respectively 3cm and 4cm.

- (a) Find slant height
- (b) What is the curved surface area?
- (c) What is the volume?

19



What are the coordinates of the other three vertices?

20 $P(x) = x^2 - 8x + 14$

(a) Find $P(2)$

(b) Write $P(x) - P(2)$ as the product of two first degree polynomials.

[From questions 21 - 30, each question carries Four marks]

21 Perimeter of a rectangle is 42cm and its area 20cm².

(a) Find the sum of length and breadth .

(b) Form a second degree equation connecting length breadth and area.

(c) Find the length and breadth of rectangle .

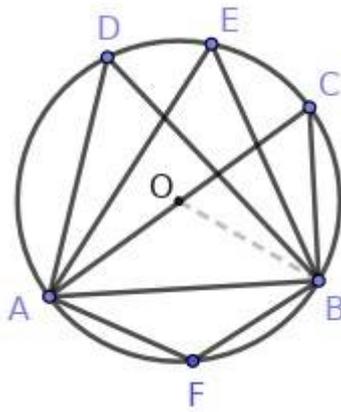
22 (a) What is the sum of first 20 natural numbers

(b) Find the sum of first 20 terms of the sequence 5 , 10 , 15 ,

(c) If 3 is added to each term of the sequence write its algebraic form.

(d) Find the sum of first 20 terms of the new sequence.

23 'O' is the centre of the circle. $\angle D = 80^\circ$ find the following



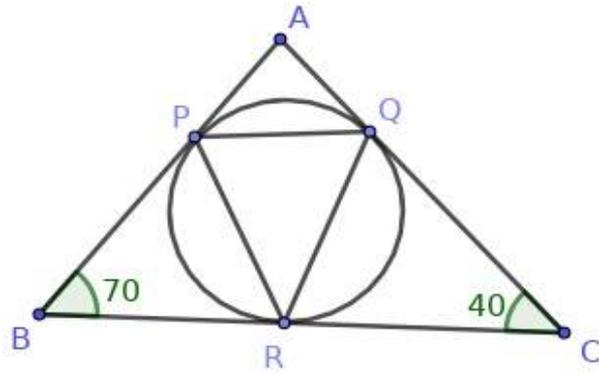
(a) $\angle E$

(b) $\angle ABC$

(c) $\angle AFB$

(d) $\angle AOB$

24 Draw the X and Y axes and mark the points (4,3) , (-4,-3) , (-3,2) .



In the figure, the sides of the large triangle are tangents of the circumcircle of smaller triangle through its vertices. Find

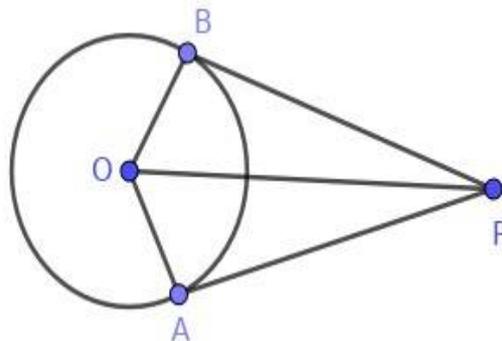
- (a) $\angle A$
- (b) $\angle RPQ$
- (c) $\angle PQR$
- (d) $\angle PRQ$

26 The perimeter of the base of a square pyramid is 96cm and its height is 16cm.

- (a) What is the length of a base edge?
- (b) What is the slant height?
- (c) Find the lateral surface area?

27 Draw a rectangle of sides 4cm and 3cm .Draw a square having area equal to the area of the rectangle.

28



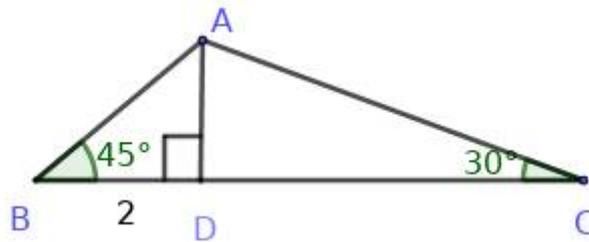
PA and PB are two tangents of circle with centre 'O' Radius of the circle is 5cm, PO = 13cm,

- (a) Find the length of PA
- (b) Find the length of PB

(c) Find the Area of ΔPAO

(d) Find the Area of quadrilateral PAOB

29



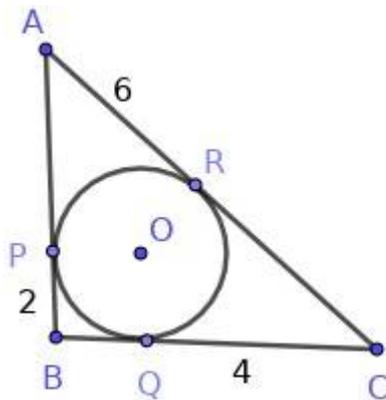
In the figure $\angle B = 45^\circ$ $\angle C = 30^\circ$ $BD = 2\text{cm}$

(a) Find the length of AD

(b) Find the length of CD

(c) Find the area of ΔABC

30



In the figure the incircle of ΔABC touches the sides at the points P, Q, R .

$BP = 2\text{cm}$, $CQ = 4\text{cm}$, $AR = 6\text{cm}$ then

(a) Find AP , BQ , CR

(b) Find the length of the sides of ΔABC

(c) Find the radius of the circle

(d) Find the area of ΔABC

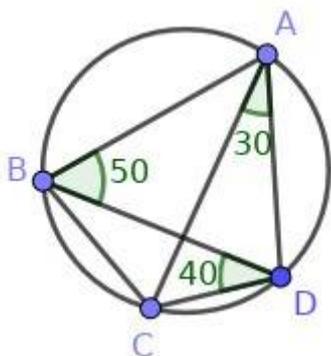
[From questions 31 - 45, each question carries Five marks]

31 The sum of first and 21st terms of an arithmetic sequence is 140.

(a) Find the sum of 6th term and 16th term.

- (b) What is the 11th term.
- (c) Find the sum of first 21 terms
- (d) Find the sum of first 11 terms of the sequence 20, 25, 30,

32. ABCD is a cyclic quadrilateral and $\angle CAD = 30^\circ$, $\angle DBA = 50^\circ$, $\angle BDC = 40^\circ$. Find the measures of all angles of the quadrilateral and angle between the diagonals.



33. A box contains 6 red beads and 5 white beads. Another box contains 8 red beads and 4 white beads. If one bead is taken from each box, then
- (a) What is the number of possible pairs?
 - (b) What is the probability of both beads being red ?
 - (c) What is the probability that both beads are white?
 - (d) What is the probability of getting at least one red bead ?
34. Draw a triangle of circumradius 2.5 cm and two of the angles 30° and 70° .
35. The sides of a rectangle ABCD are parallel to axes. If A (2, 3) and $AB = 5$ cm, $BC = 3$ cm Find
- (a) The coordinates of the vertices B, C, D
 - (b) Length of the diagonals
36. The base perimeter of a cone is 20π cm and slant height is 18 cm. It is made by rolling a sector sheet.
- (a) What is the radius of the sector?
 - (b) What is the radius of the cone?
 - (c) What is the central angle of the sector ?
 - (d) Find the curved surface area of the cone ?
37. Draw a circle of radius 3 cm. Draw a triangle of angles $60^\circ, 70^\circ$ with all its sides touching the circle
38. Sum of the first 4 terms of an arithmetic sequence is 72. Sum of the first 9 terms is also 72.
- (a) What is the 5th term of the sequence?
 - (b) Find the sum of the first 5 terms
 - (c) Write the sequence.

- 39 A boy standing on the bank of a river sees the top of a tree on the other bank at an angle of elevation of 60° . Stepping 20 m back he sees the top at an angle of elevation of 30° . Draw a rough figure and calculate the height of the tree and width of the river.
- 40 (a) What is the radius of the largest sphere that can be carved from a cube of edge 12 cm?
 (b) Find the surface area and volume of the sphere.
 (c) What is the volume of the cone of maximum size that can be carved from a cube of edge 12 cm?
- 41 (a) Write the sequence which leaves remainder 2 when dividing the numbers in between 200 and 500 by 4 .
 (b) Find the first term
 (c) Find the last term
 (d) Find the sum of all terms of the sequence
- 42 A circle is drawn with (5,3) as centre. (5,6) is a point on the circle
 (a) What is the radius of the circle?
 (b) Write the equation of the circle
 (c) What is the distance from the centre of the circle to the x- axis?
 (d) What is the length of the tangents from the origin to the circle?
- 43 P(2, -1), Q(3, 4) , R(-2, 3) and S(-3, -2) are the vertices of a quadrilateral.
 (a) Find the lengths of the sides of the quadrilateral.
 (b) Find the length of its diagonals.
 (c) Suggest a suitable name for the quadrilateral.
 (d) Calculate the area of the quadrilateral.
- 44 Longest side of a rectangle is 8cm more than the shorter side. Area is 180cm^2 . Take the shorter side as 'x'
 (a) Write the longest side in terms of x
 (b) Write the algebraic equation involving the sides and area
 (c) Find the sides of the rectangle
- 45 The table given below shows the number of children in a class arranged according to their heights.

Height (Centimetres)	Number of children
120 - 130	7
130 - 140	9
140- 150	10
150 -160	10
160 - 170	9

- (a) The mark of the student at what position is taken as the median.
 (b) Calculate the median mark