WANDOOR GANITHAM - S S L C MODEL QUESTION PAPER 2021

PREE2 **MATHEMATICS** **Maximum score : 80**

Time : $2\frac{1}{2}$ **hours**

Instructions :

- **20 minutes is given as cool - off time . Use cool – off time to read the questions and plan your answers .**
- **Attempt the questions according to the instructions .**
- **Keep in mind the score and the time while answering the questions .**
- **The maximum score for questions 1 to 45 will be 80 .**
- **Simplify using the appropriate values of** π , $\sqrt{2}$, $\sqrt{3}$ **only if it is asked to do in questions**

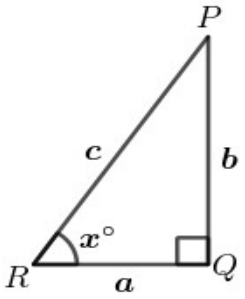
For questions from 1 to 5 one score each (Choose the correct answer from the bracket)

1)The sum of first five terms of an arithmetic sequence is 30 and sum of first seven terms is 56 . What is the sum of its sixth and seventh terms ?

(43 , 16 , 26 , 50)

2)Which among the following is $\tan x^0$ **?**

$\left(\frac{b}{c}, \frac{a}{c}, \frac{b}{a}, \frac{a}{b}\right)$

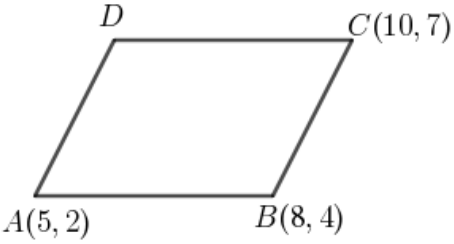


3) (0 ,0) and (6, 8) are the ends of the diameter of a circle . What is its radius ?

(10 , 6 , 8 , 5)

4) In the figure ABCD is a parallelogram . What are the coordinates of D ?

((5 , 7) , (3 , - 1) , (13 , 9) , (7 , 5))



5) In a class there are 30 boys and 20 girls . One student is to be selected as leader .

What is the probability that the class leader will be a boy ?

($\frac{30}{50}$ **,** $\frac{20}{50}$ **,** $\frac{30}{20}$ **,** $\frac{20}{30}$ **)**

For questions from 6 to 10 carries 2 scores each .

6) Seventh term of an arithmetic sequence is 10 and its tenth term is 7 .

a) What is its common difference ?

b) What is its 17th term ?

7) $p(x)$ **is a second degree polynomial ,** $p(3)=0, p(-5)=0$ **and the coefficient of** x^2 **is 1**

a) Write a factor of $p(x)$ **?**

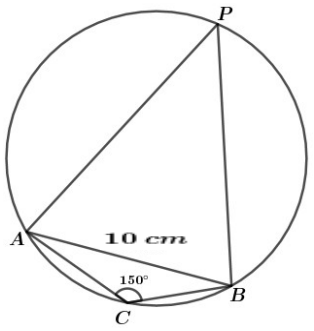
b) Write $p(x)$ **as the product of two first degree polynomials ?**

8) In triangle ABC **,** $AB=10\,cm, <ACB=150^0$ **.**

P **is a point on the alternate arc of arc** ACB **.**

a) What is the measure of $<APB$ **?**

b)What is the circumdiameter of triangle ABC **?**



9) A solid metal cylinder of base radius 9 centimetres and height 20centimetres is melted and recast into cones of same base radius and heght as that of the cylinder .

a) What is the volume of the cylinder ?

b) How many cones can be made ?

10) Consider a line passing through the points (4 , 2) and (9 , 5) .

a) What is the slope of the line ?

b) If (m , n) is a point on this line ,prove that (m +10 , n + 6) is also a point on this line?

For questions from 11 to 20 carries 3 scores each .

11) Draw a triangle of circumradius 4 cm and two of the angles 45^0 and 65^0 .

12) Consider an arithmetic sequence 5 , 9 , 13 , ...

a) What is its common difference ?

b)What is its algebraic form ?

c) Find the position of 121 in this sequence ?

13) If $p(x)=x^2-25$

a) Find $p(5)$ **?**

b) Write $p(x)$ **as the product of first degree polynomials ?**

c) Write $121x^2-25$ **as the product of first degree polynomials ?**

14) One is asked to say a two digit number .

a) How many two digits numbers are there ?

b) What is the probability that both the digits being same ?

c) What is the probability that the product of the digits being zero ?

15) The below are the the rain fall in millimetres in a place last week .

55 , 62 , 70 , 61, 63 , 56 , 53

a) What is mean rainfall during that week ?

b) What is median rainfall during that week ?

16) When sun is an elevation of 60^0, the length of the shadow of a tree is 12 meters.

a) Draw a rough figure based on the given details ?

b) What is the height of the tree ?

c) What will be the length of the shadow if sun is an elevation of 30^0 ?

17) Two cones have same volume . Their heights are in the ratio 9 : 16

a) If the height of the first cone is taken as 9h , what is the height of the second cone ?

b) What is the ratio of their radii ?

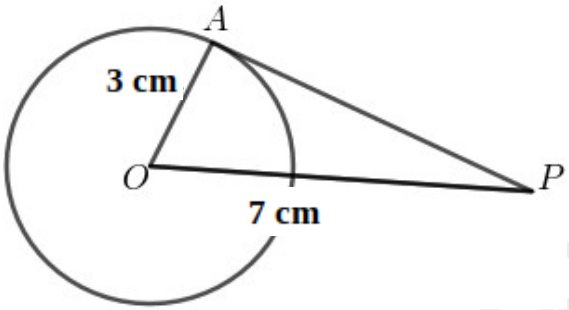
18) A (0 , 0) , B(2 , 0) and C(1 , $\sqrt{3}$) are the vertices of a triangle .

a) What is the length of AB ?

b) What is the length of BC ?

c) Prove that ABC is an equilateral triangle ?

19)



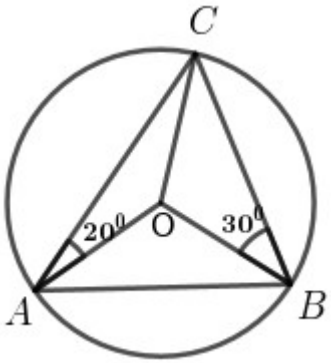
In the figure O is the centre of the circle . PA is a tangent and the radius of the circle is 3 centimetres .Draw this figure in the given measures .

20) In the figure O is the centre of the circle .< OAC = 20^0

< OBC = 30^0

a) What is the measure of < ACO ?

b) What is the measure of < AOB ?



For questions from 21 to 30 carries 4 scores each .

21) Draw a rectangle of width 7 cm and height 2 cm . Draw a square of the same area .

22) The angles of a hexagon are in arithmetic sequence .The smallest angle is 80^0.

a) What is the sum of the angles of a hexagon ?

b) What is the sum of the largest and smallest angles ?

c)What is the common difference ?

23) A bag contains 15 white and 25 green beads . Take one bead from this

a) What is the probability of getting a green bead ?

b) What is the probability of getting a white bead ?

c) How many more green beads are to be put in the box to make the probability of getting a white bead is $\frac{3}{10}$?

d) If some balls are taken out from the bag , then the probability of getting a white bead becomes $\frac{1}{q}$. What is the probability of getting a green bead ?

24) Perpendiculars are drawn from a point P to the axes , cut the x axis at (3 , 0) and the y axis at (0, 2) .

a) What are the coordinates of P ?

b) Write down the coordinates of two more points on a line passing through the point P parallel to the y – axis ?

c)Write down the coordinates of another point on a line passing through the point P perpendicular to the y – axis ?

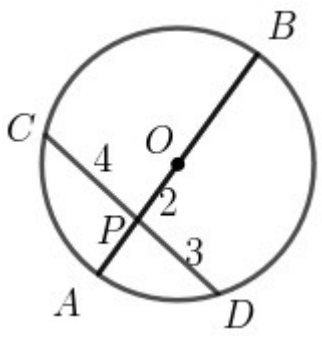
25) If $p(x)=x^2-7x+12$

a) Find $p(2)$?

b) Write a factor of $p(x)-p(2)$?

c) Write $p(x)-p(2)$ as the product of two first degree polynomials ?

26) In the figure O is the centre of the circle . Chords AB and CD are intersect at P . PC = 4 cm , PD = 3 cm , PO = 2 cm .



a) If the radius of the circle is taken as r , what is the length of PB ?

b) PA x PB = ...

c) What is the radius of the circle ?

27) Raju and Geetha stand on either side of a tower . Raju sees the top of the building at an elevation 30^0 and Geetha sees it an elevation of 45^0 . After moving 80 metres towards the tower , Raju sees its top at an elevation 60^0

a) Draw a rough figure based on the given details ?

b) What is the height of the tower ?

c) What is the distance between the tower and Geetha ?

28) Workers in a factory are sorted according to their daily wage in the table below .

Daily wage (Rs)	Number of workers
750	6
1000	8
1250	10
1500	11
1750	9
2000	5
2250	4
2500	3

a) If the workers are arranged in increasing order of daily wage , what is the daily wage of the worker at the 26^{th} position ?

b) If the workers are arranged in increasing order of daily wage , what is the peculiarity of the median daily wage ?

c) Find the median daily wage ?

29) A sector of arc length 12π centimetres is rolled up into a cone of slant height 18 centi - metres .

a) What is the radius of the sector ?

b) What is the base perimeter of the cone ?

c) What is the base radius of the cone ?

d) What is the central angle of the sector ?

30) a) Which number is to be added to $x^2 - 20x$ to get a perfect square ?

b) Find the natural number value of x satisfying the equation $x^2 - 20x = 576$?

For questions from 31 to 45 carries 5 scores each .

31) Draw a circle of radius 2.5 cm . Draw a triangle of angles 50^o , 60^o , 70^o with all its sides touching this circle .

32) Find the following sums .

a) 1 + 2 + 3 + 4 + 5 + ... +60

b) 1 + 2 + 3 + 4 + 5 + ... + 30

c) 31 + 32 + 33 + 34 + 35 + ... + 60

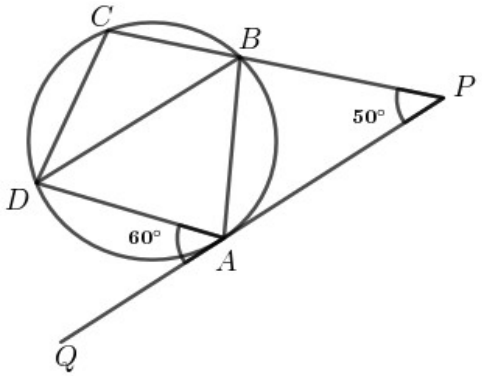
d) 62 + 64 + 66 + 68 + 70 + ... +120

e) 93 + 96 + 99 + 102 + 105 + ... +180

33)a) Draw the axes and mark the points A (0 , 2) , B (-1 , 3) , C (-1 , - 2) , D (4 , - 2) .

b) Join the points A,B,C,D in order and give the most suitable name for the polygon obtained ?

34) In the figure PQ is a tangent . AB = PB , $< DAQ = 60^0$, $< APB = 50^0$



a) What is the measure of < ABD ?

b)What is the measure of < BAP ?

c) What is the measure of < ADB ?

d) What is the measure of < BCD ?

35) P(1 , 1) , Q(9 ,7) and R(2 , 8) are the vertices of a triangle .

a) What is the length of PQ ?

b) prove that PQR is an isosceles triangle ?

c) What are the coordinates of the midpoint of the side PQ ?

d) What is the perpendicular distance from the vertex R to the side PQ ?

e) What is the area of the triangle PQR ?

36) The sum of first 9 terms of an arithmetic sequence is 171 and the sum of first 10 terms is 210 .

a) What is its fifth term ?

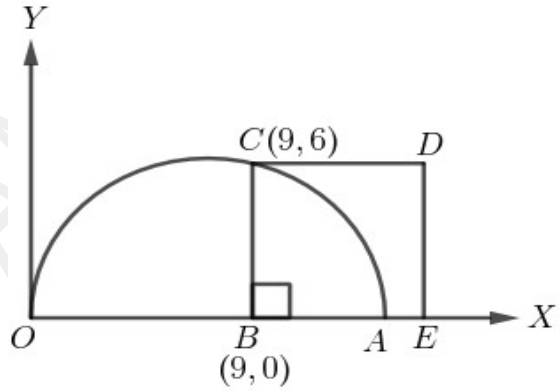
b) What is its tenth term ?

c) What is its common difference ?

d) What is its algebraic form ?

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

37) In the figure OA is the diameter of the semicirle . BCDE is a square .



a) What is the length of BC ?

b) What are the coordinates of E ?

c)What are the coordinates of D ?

d) What are the coordinates of A ?

38) 8 identical solid metal cones of base radius 6 centimetres and height 8 centimetres are melted and recast in to a larger cone of base radius 12 centimetres .

a) What is the volume of a small cone ?

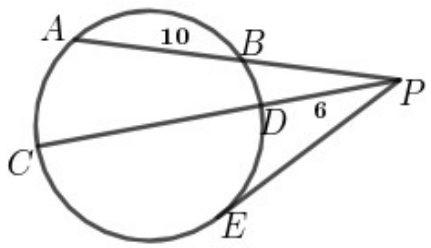
b) What is the volume of the larger cone ?

c) What is the height of the larger cone ?

d) What is the surface area of the larger cone ?

39)In the figure two chords AB and CD are extended to meet the tangent through E at P .

PA = 18 cm , AB = 10 cm , PD = 6 cm



a) What is the length of PB ?

b) PC x PD = ...

c) What is the length of CD ?

d) What is the length of the tangent PE ?

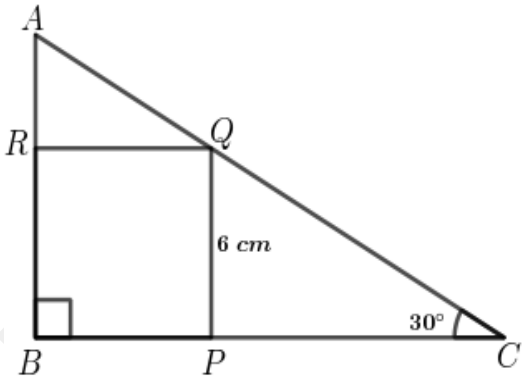
40) If $x^2-20x+96=(x-a)(x-b)$

a) What is the value of $a+b$ **?**

b) What is the value of ab **?**

c) Write $x^2-20x+96$ **as the product of two first degree polynomials ?**

41) In the figure $BPQR$ **is a square .** $PQ=6\,cm, <C=30^\circ$



a) What is the measure of $<A$ **?**

b) What is the length of CQ **?**

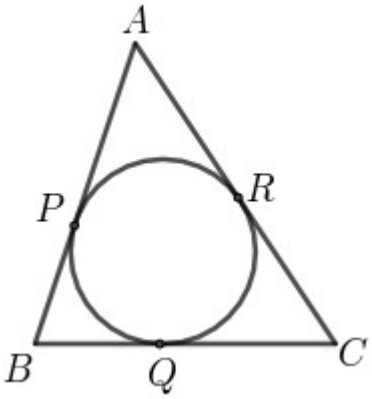
c) What is the area of the triangle AQR **?**

d) What is the perimeter of the triangle ABC **?**

42) In the figure , the circle touches the sides of the triangle

ABC at the points P ,Q , R . AB = 12 cm , BC = 10 cm

AC = 14 cm .



a) Which other line has the same length as that of AP ?

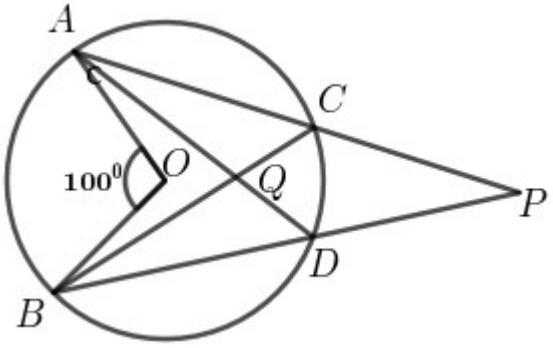
b) If the length AP is taken as x **, what is the length of BQ ?**

c) What is the value of x **?**

d) What are the lengths of the line CR ?

43) In the figure O is the centre of the circle .

< AOB = 100 ^{0}



a)What is the measure of < ACB ?

b)What is the measure of < PDQ ?

c) What is the sum of the angles < CQD and <CPD ?

44) The perimeter of a rectangle is 56 centimetres and its diagonal is 20 centimetres.

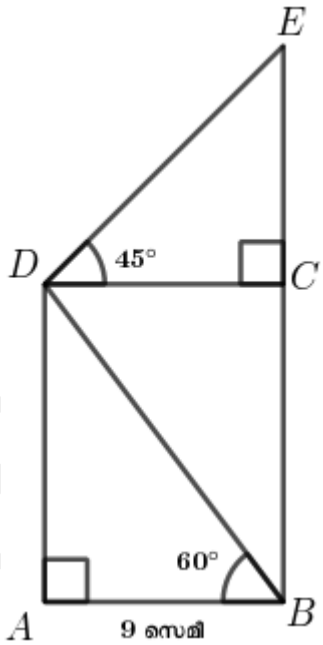
a) What is the sum of the lengths of its shorter and longer sides ?

b) Write down a second degree equation b taking the shorter side as 14 - x ?

c) What are the lengths of the sides ? ?

45) In the figure ABCD is a rectangle . AB = 9 cm .

< ABD = 60^0 , < CDE = 45^0 .



a) What is the measure of < ADB ?

b) What is the length of the side BD ?

c) What is the length of the side DE ?

d) What is the measure of < BDE ?

e)What is the ratio of the sides of a triangle having angles 30^0 , 45^0 and 105^0