WANDOOR GANITHAM - S S L C MODEL QUESTION PAPER 2021

PREE4	**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

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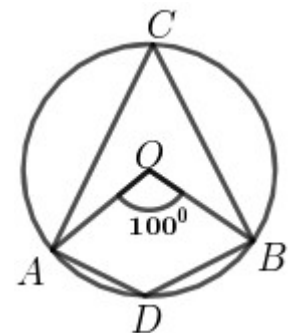**For questions from 1 to 5 one score each** (Choose the correct answer from the bracket)

1) What is the common difference of the arithmetic sequence 6 , 10 , 14 .... ?

(6 , 4 , 2 , 8)

2) In the figure O is the centre of the circle and $\angle AOB = 100^{0}$.

What is the measure of $\angle ACB$?

(50^{0}, 80^{0} , 130^{0} , 200^{0})

3) If $\sin x^{0} = \cos x^{0}$,find the value of x ?

(0 , 30 , 45 , 60)

4) A line is drawn through the point (3, 2) parallel to the x-axis . If (5 , k) is a point on this line , what is the value of k ?

(0 , 1 , 2 , 3)

5) Which among the following is added to $x^{2}+36$ to get a perfect square ?

($6x$, $18x$, $12x$, $36x$)

6) Algebraic form of an arithmetic sequence is   4 n - 1 .
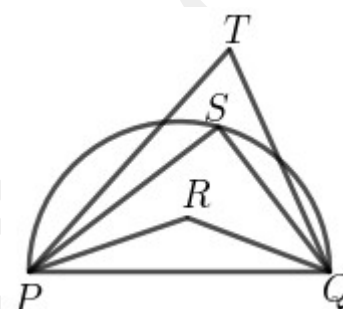
  a) **What is its common difference ?**

  b) **What is its first term   ?**

7) Write $x^2 - 64$ as the product of two first degree polynomials   ?

8) In the figure   PQ is the diameter of the semicircle ..

  The measures of < R , < S and < T are in arithmetic

  sequence . < T = 60 ^{0}

  a) **What is the measure of < S   ?**

  b) **What is the measure of   < R   ?**

9) The base radius of a cone is 12 centimetres and its slant height is 20   centimetres   .
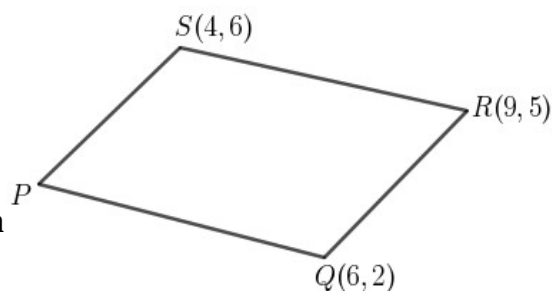
  a) **What is its height   ?**

  b) **Compute its volume   ?**

10) In the figure PQRS is a parallelogram .

  a) **What are the coordinates of P   ?**

  b) **What are the coordinates of the point of intersection**

    of its diagonals   ?

11) Draw a triangle of circumradius 4 cm and two of the angles 70 ^{0} and 80 ^{0} .

12) Find the following sums .

  a) **1 + 2 + 3 + 4 + 5 + ... + 40**

  b) **2 + 4 + 6 + 8 +   10 + ... + 80**

  c) **1   + 3 + 5 + 7 +   9 + ... + 79**

13) Consider the polynomial $p(x) = x^2 - 5x + 4$

  a) Find $p(1)$ **?**

  b) Check whether $x - 4$ **is a factor of** $p(x)$ **?**

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

14) A dice with faces numbered from 1 to 6 is rolled .

  a) What is the probability of getting an even number ?

  b) What is the probability of getting an odd number ?

  c) What is the probability of getting a prime number ?

15) The number of pictures drawn by the arts club members of a school are given below .

15 , 39 , 30 , 42 , 27 , 33 , 24 , 18 , 36 , 21

  a) What is the mean of the number of pictures ?

  b) What is the median of the number of pictures ?

16) Two children stand on either side of a flag post of height 50 meters . First child sees
   the top of the flag post at an elevation of 45^0 **and the second child sees it at an**
   elevation of 30^0

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

  b) What is the distance between the flag post and the first child ?

  c) What is the distance between the flag post and the second child ?

17) The base radii of two cones are in the ratio 3 : 4 and their slant heights are in the
   ratio 5 : 6

  a) If the radius of the first cone is taken as 3 r , what will be the radius of the second cone

  b) What is the ratio of their curved surface areas ?

  c) If the curved surface area of the first cone is $300\,\pi$ **square centimetres , what**
   will be the curved surface area of the second cone ?

18) Consider the line passing through the points A and B

in the picture .
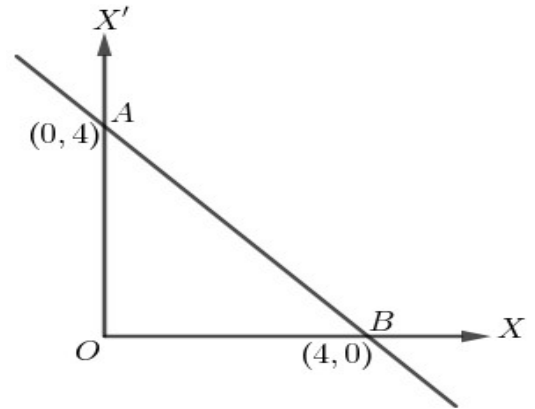
a) What is the slope of the line   ?

b) Write the coordinates of another point on this line   ?

c) If   (x , y) is point on this line , prove that x + y =4   ?

19)   Draw a circle of radius 3 cm and mark a point   7   cm away from its centre. Draw the

tangents to the circle from this point .

20) When each side of a square was decreased by 5 metres , the area became 225 square

metres .

a) Write   a second degree equation by taking the side of the original square as x

b) What was the length of a side of the original square ?

21) Draw a rectangle of width 7 cm and height 3 cm . Draw a square of the same area .

22) Consider the following number patterns .

1

2   3

4   5   6

7   8   9   10

....

....

(pattern 1)

4

7   10

13   16   19

22   25   28   31

....

....

(pattern 2)

	pattern 1	pattern 2
Next line of the number patterns	a)	b)......................
Last number in 10ᵗʰ line	c)	d) ....

23) A bag contains 25 white and 35 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 white beads are to be put in the box to make the probability of

   getting a green bead is $\dfrac{5}{9}$?

24) A line is drawn by joining the points   A(3 , 6) and B(7 , 6) .

  a) What are the coordinates of the midpoint of the line ?

  b) Write the coordinates of another two points on this line ?

  c) What are the coordinates of the point on the x-axis which is equidistant from the ends

   of the line AB ?

25)) Consider the polynomial $p(x)=x^2+9x+8$

  a) Find $p(1)$?

  b) Write a factor of $p(x)-p(1)$?

  c) Write $p(x)-p(1)$ as the product of two first degree polynomials ?

26) In triangle PQR , $<Q=90^0, <R=x^0$ and the length of the sides
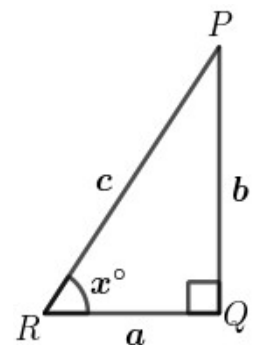
   QR, PQ, PR are a, b, c respectively.

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

   ($\dfrac{b}{c}$, $\dfrac{a}{c}$, $\dfrac{b}{a}$, $\dfrac{a}{b}$)

  b) Similarly write $\sin x^0$ and $\cos x^0$ from this triangle ?

  c) Prove that $\dfrac{\sin x^0}{\cos x^0}=\tan x^0$?

27) in the figure line OA makes an angle 450 with the x-axis .
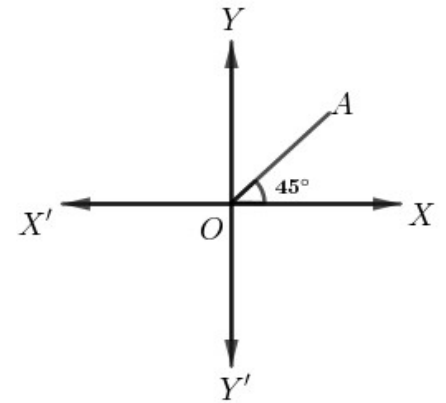
a) What are the coordinates of O ?

b)What is the slope of the line OA ?

c) Write the coordinates of another two points on this line

   other than the origin   ?

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

Daily wage (Rs)	Number of workers
900	5
1000	7
1250	10
1500	11
1750	8
2000	6

a) If the workers are arranged in increasing order of daily wage , what is the daily wage

   of the worker at the 23rd 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 10π centimetres is rolled up into a cone of slant height

   15 centimetres .

 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) The sum of the square of a number and 8 times that number is 240 .

a) Write a second degree equation by taking the number as x

b) Find the number ?

31) In the figure O is the centre of the circle . The circle

touches the sides of the triangle at the points P , Q and R

< ABC = 45^0
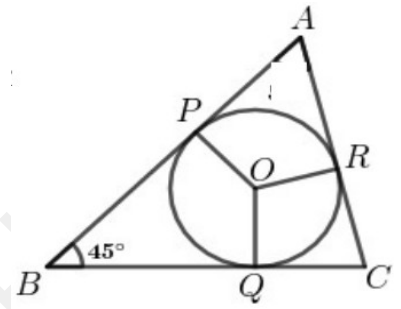
a) What is the measure of < POQ ?

b) Draw a circle of radius 3 cm . Draw a triangle of

angles 45º , 55º , 80º with all its sides touching this circle .

32) The sum of first 9 terms of an arithmetic sequence is 189 and the sum of first 4 terms

is 44 .

a) What is its fifth term ?

b) What is the sum of first 5 terms of this sequence ?

c) What is its third term ?

d) What is its common difference ?

e) What is its algebraic form ?

33) a) Draw the axes and mark the points A (1, 2) , B (6 , 2) , C (6 , 5) and D (1 , 5)

b) Write the most suitable name for the quadrilateral ABCD ?

c) Find its perimeter ?

34) In the figure the circle touches the sides of the triangle

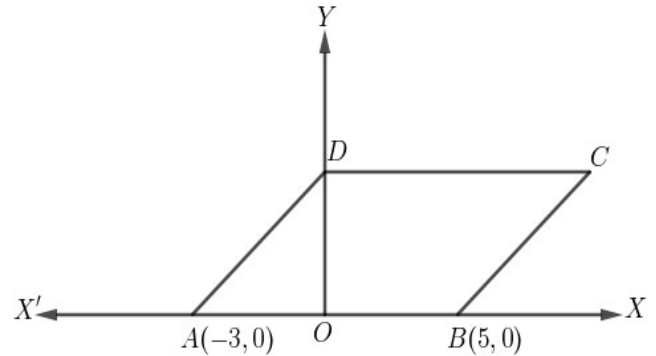at P , Q and R . AP = 5 cm , BQ = 4 cm , CR = 3cm

BQ = 4 cm , CR = 3cm .
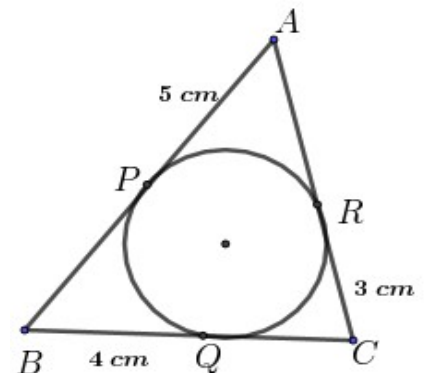
a) What is the length of AR ?

b) What is the length of BC ?

c) What is the perimeter of the triangle ABC ?

35) In the figure ABCD is a parallelogram

and its area is 40 square centimetres .

a) What are the coordinates of O ?

b) What are the lengths of   AB and OD   ?

c) What are the coordinates of C and D ?

36) Consider the sequence of two digit numbers which leave a remainder 1 on divisible by 5

a) What is its common difference ?

b) What are the smallest and the largest numbers in this sequence ?

c) How many two digit numbers are there which leave a remainder 1 on divisible by 5 ?

37) In the figure midpoints of the sides of the

quadrilateral ABCD are P, Q , R and S ?

a) What is the most suitable name of the

quadrilateral PQRS ?

b) What are the coordinates of S , B , C and D ?
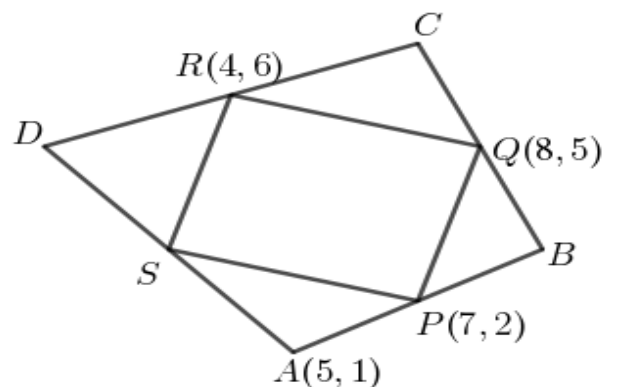
38) The base radius and height of a solid metal cone are 5 centimetres and 12 centimetres

a) What is its slant height ?

b) What is its surface area   ?

c) If 10000 such cone are painted and cost of the painting is 10 rupees per square metre ,

what will be the total cost   ?   (hint : $\pi = 3.14$)

39) In the figure two circle intersect at C . PC is the

common tangent to both the circles.

AB = 5cm , PB = 4 cm , PD = 3 cm
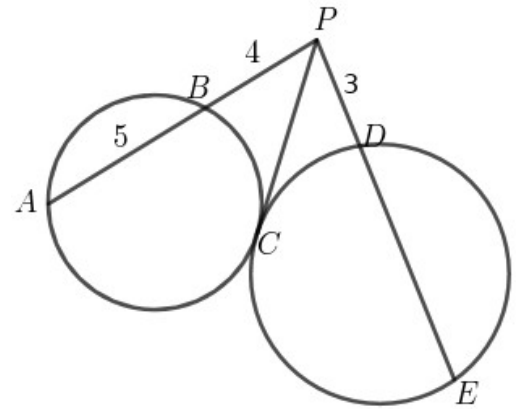
a) What is the length of PA ?

b) What is the length of the tangent PC ?

c) What is the length of DE ?

40) If $x^2 - 10x + 16 = (x-a)(x-b)$

a) Find $a+b$?

b) Find ab ?

c) Write $x^2 - 10x + 16$ as the product of two first degree polynomials ?

41) In the figure two chords AB and CD   intersect at P .

a) Which other angle is equal to the measure of < CAB   ?

b) Which other angle is equal to the measure of < ABD   ?

c) Prove that   PA x PB = PC x PD ?
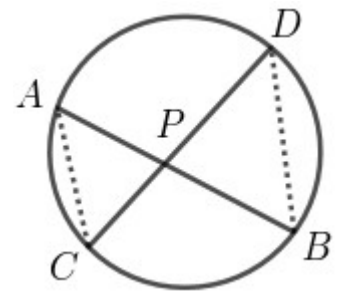
42) Look at the number pattern given below.

<div align="center">

1

2   3   4

5   6   7   8   9

....

....

</div>

a) Write down the next two more lines of this pattern ?

b) What is the last number in the 9th line ?

c) What is the first number in the 10th line ?

d) How many numbers are there in the 10th line ?

43) In the figure O is the centre of the circle . $<ABC = 130^0$
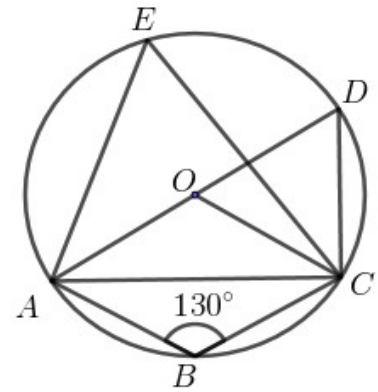
 a) What is the measure of $<AEC$?

 b) What is the measure of $<AOC$?

 c) What is the measure of $<ADC$?

 d) What is the measure of $<ACD$?
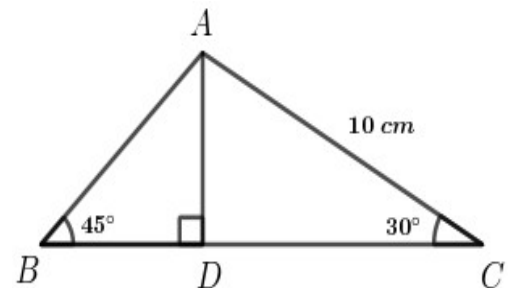
 e) What is the measure of $<CAD$?

44) In the figure AB is the diameter of the semicircle .

  P is a point on AB . The perpendicular drawn through P

  to AB meets the semicircle at C . PA is 10 centimetres

  more than PB . PC = 12 centimetres .

 a) PA x PB = ...
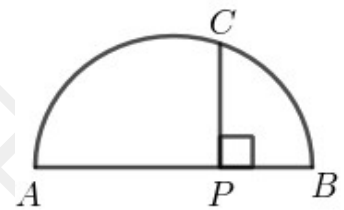
 b) Write down a second degree equation by taking the length of PB as x .

 c) Compute the length of AB ?

45) In the figure $AC = 10\,cm, <B = 45^0, <C = 30^0$. AD is perpendicular to BC

 a) What is the measure of $<BAC$?

 b) What is the length of AD ?

 c) What is the perimeter of the triangle ABC ?

 d) What is the ratio of the length of the sides if the ratio of angles of a triangle is $2:3:7$