WANDOOR GANITHAM - S S L C MODEL QUESTION PAPER 2021

PREM1 **MATHEMATICS** **Maximum score : 80**

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

Instructions :

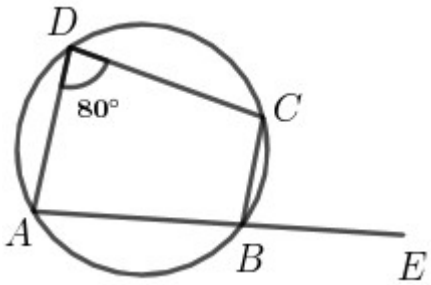
- **20 minutes is given as cool - off time . Use cool – off time to read the questions and plan your answers .**
- **Attempt the questions according to the instructions .**
- **Keep in mind the score and the time while answering the questions .**
- **The maximum score for questions 1 to 45 will be 80 .**
- **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) What is the algebraic form of the arithmetic sequence 5 , 8 , 11 , ... ?

(2 n + 3 , 3 n + 2 , 4 n + 1 , 5n)

2) In the figure < ADC = 80^0 .What is the measure of < CBE ?.



(100^0 , 90^0 , 80^0 , 50^0)

3) What number is to be added to x^2+20x to get a perfect square ?

(400 , 100 , 144 , 64)

4) In triangle ABC , <B = 90^0 , sin A = $\frac{3}{5}$, then cos C = ...

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

5) What are the coordinates of the midpoint of the line joining the points (1 , 2) , (5 , 8) ?

((6 , 8) , (8 , 6) , (3 , 5) , (4 , 3))

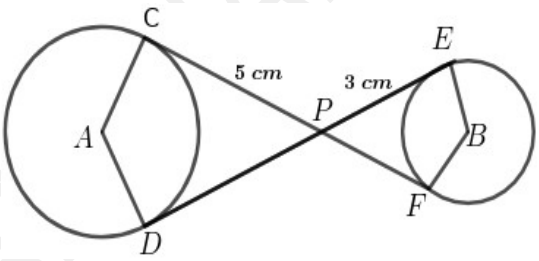
For questions from 6 to 10 carries 2 scores each .

6) Fifth term of an arithmetic sequence is 21 and its ninth term is 37 .

a) What is its common difference ?

b) What is its first term ?

7) In the figure ,A and B are the centres of the circles and tangents are drawn from a point P to the circles . PC = 5 cm , PE = 3 cm



a) What is the length of PD ?

b) What is the length of CF ?

8) The base radius and height of a cone are 9 centimetres and 12 centimetres .

a) What is its slant height ?

b) What is its curved surface area ?

9) A circle of radius 5 is drawn with origin as centre.

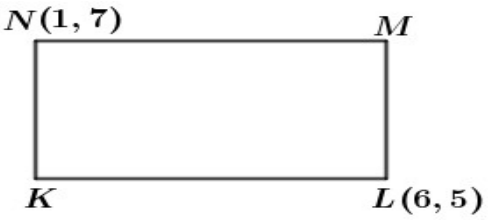
a) Write down the coordinates of a point at which the circle cuts the x -axis ?

b) If (p , q) is a point on this circle , prove that $p^2+q^2 = 25$?

10) In the figure sides of the rectangle KLMN are parallel to the axes .

a)What are the coordinates of K ?

b)What are the coordinates of M ?



For questions from 11 to 20 carries 3 scores each .

11) Draw a triangle of circumradius 5 cm and two of the angles 70^0 and 80^0 .

12) Consider the arithmetic sequence 8 , 15 , 22 , ...

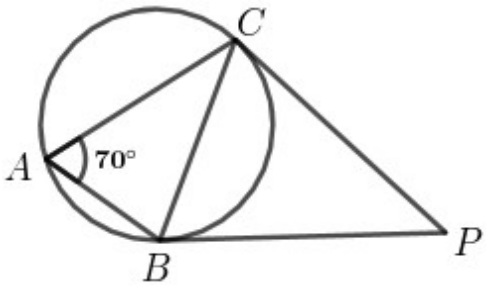
a) What is its common difference ?

b) What is its sixth term ?

c)What is the sum of first 11 terms of this sequence ?

13) In the figure , tangents through the points

B and C intersect at P . < BAC = 70^0



a) What is the measure of < PBC ?

b) What is the measure of < BPC ?

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 ?

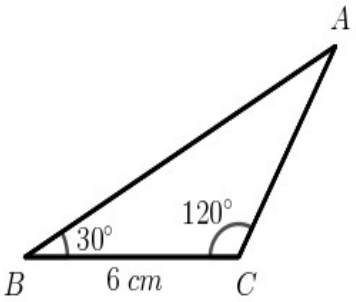
c) What is the probability of getting a perfect square ?

15) When each side of a square was increased by 4 metres , the area became 256 square - metres .

a) Write down 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 ?

16) In triangle ABC **,** $<B=30^\circ, <C=120^\circ, BC=6\,cm$



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

b)What is the perpendicular distance from A to the side BC ?

c) What is the area of the triangle ?

17. If $p(x)=x^2-8x+15$

a) Find $p(3)$ **?**

b) Check whether $x-5$ **is a factor of** $p(x)$ **or not ?**

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

18) The marks obtained by 9 students in a maths exam are given below .

68 , 72 , 76 , 62 , 70 , 64 , 60 , 74 , 66

a) What is the mean mark ? .

b) What is the median mark .

19) 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 base radius of the first cone is taken as 3 r , what will be the base 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 180π square centimetres , what will be the curved surface area of the second cone ?

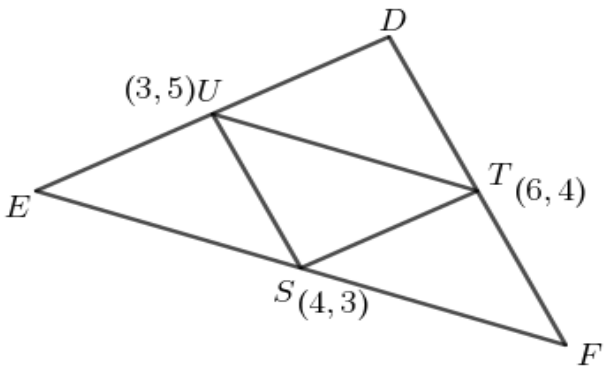
20) In the figure S , T , U are the midpoints of the sides of the triangle DEF

S (4 , 3) , T (6 , 4) , U (3 , 5)

a)What are the coordinates of E ?

b)What are the coordinates of F ?

c)What are the coordinates of D ?



For questions from 21 to 30 carries 4 scores each .

21) Compute the following sums .

a) 1 + 2 + 3 + 4 + 5 + ... + 20

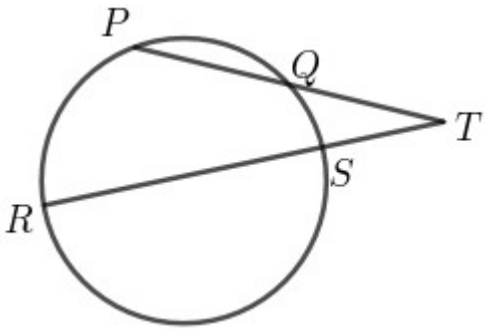
b) 4 + 8 + 12 + 16 + 20 + ... + 80

c) 5 + 9 + 13 + 17 + 21 + ... + 81

d) 9 + 17 + 25 + 33 + 41 + ... +161

22) In the figure ,chords PQ and RS are extended to meet at T . RT = 18 cm , RS = 14 cm

Q is the midpoint of PT .



a) What is the length of TS ?

b) TP x TQ =

c) What is the length of PQ ?

23) 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 . Measure the length of the tangents .

24) One is asked to say a two -digit number .

a) How many two digit numbers are there ?

b) What is the smallest possible product of the digits ?

c) What is the largest possible product of the digits ?

d) What is the probability of the product of the digits being a perfect square ?

25) The longer side of a rectangle is 4 centimetres more than its shorter side . The area of the rectangle is 672 square centimetres .

a) Write down a second degree equation by taking the shorter side as x

b) What are the lengths of its the sides ?

26) A man standing on the top of a building sees the base of a tower at a depression of 45^0 and its top at a depression of 30^0 . The distance between the building and the tower is 90 metres .

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

b) What is the height of the building ?

c) What is the height of the tower ?

27) **If** $p(x)=x^2+3x+2$

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 ?**

28) 55 households in a neighbourhood are sorted according to their monthly income in the table below .

Monthly income (Rs)	Number of households
4000	6
5000	9
6000	10
7000	9
8000	8
9000	7
10000	6

a) If the households are arranged in increasing order of monthly income , what is the monthly income of the household at the 26th position ?

b) If the households are arranged in increasing order of monthly income , the monthly income of the household at what position is taken as the median ?

c) Find the median of the monthly income ?

29) A sector of area 100π **square centimetres is rolled up into a cone of base radius 5 centi metres .**

a) What is curved surface area of the cone ?

b) What is the slant height of the cone ?

c) What is the radius of the sector ?

d) What is the central angle of the sector ?

30) The vertices of a triangle are A (1 , 9) , B (4 , 6) , C(3, 11)

a) What is the length of AB ?

b) What is the length of BC ?

c) Prove that ABC is a right triangle ?

For questions from 31 to 45 carries 5 scores each .

31) Draw a rectangle of width 6 cm and height 3 cm . Draw a square of the same area .

32) Look at the number pattern given below.

1

2 3

4 5 6

7 8 9 10

.....

.....

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

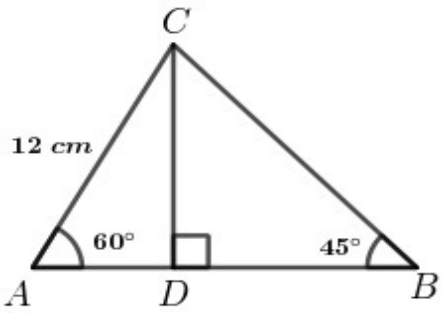
b) How many numbers are there in the 20 th line ?

c) What is the last number in the 19 th line ?

d) What is the first number in the 20 th line ?

33) In the figure $AC = 12\,cm, < A = 60^0, < B = 45^0$

The line CD **is perpendicular to the side** AB **.**



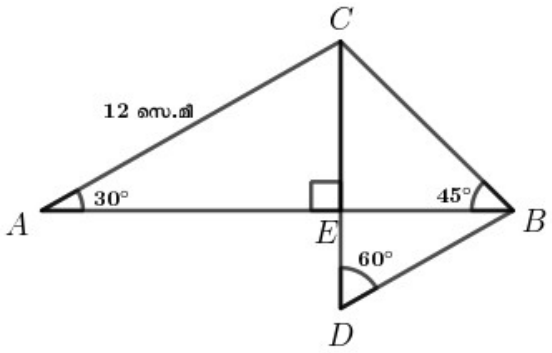
a) What is the measure of $< ACB$ **?**

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

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

d)What is the ratio of the length of the sides if the ratio of angles of a triangle is 3:4:5 ?

34) In the figure $< BAC = 30^\circ, < ABC = 45^\circ$ **,** $< AEC = 90^\circ, < BDE = 60^\circ, AC = 12\,cm$



a) What is the length of CE **?**

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

c)What is the length of AB **?**

d) What is the area of the triangle BCD **?**

35) If $x^2+3x-18=(x-a)(x-b)$

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

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

c) Write $x^2+3x-18$ **as the product of two first degree polynomials ?**

36) Consider the arithmetic sequence 63 , 58 , 53 , ...

a) What is its common difference ?

b) What is the remainder when each positive term of this sequence is divided by 5 ?

c) Which is the smallest positive number in this sequence ?

d) What is its algebraic form ?

e) How many positive numbers are there in this sequence ?

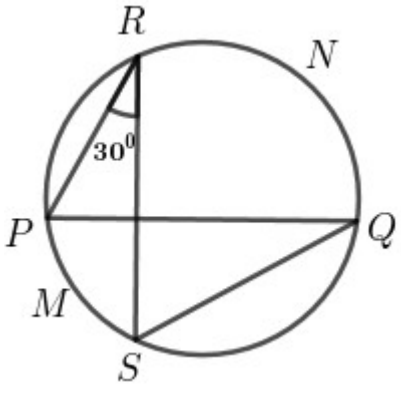
37) a) Draw the axes and mark the following points A(4 ,1) ,B (-2 ,1) , C(-2 , - 1)

D (4 , - 1) .

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

38) In the figure the chords PQ and RS are

perpendicular to each other . < PRS = 30 ^{0}



a) What is the measure of < PQS ?

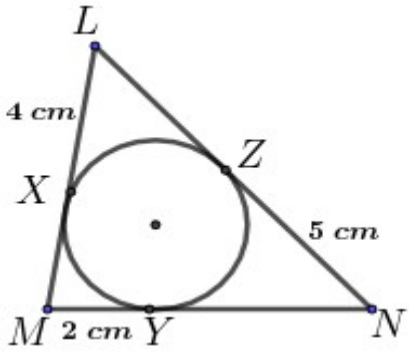
b) What is the central angle of the arc PMS ?

c) What is the sum of the central angles of the arc PMS

and RNQ ?

39) In the figure , the circle touches the sides of the triangle LMN at the points X ,Y , Z .

LX = 4 cm , MY = 2 cm , NZ = 5 cm .



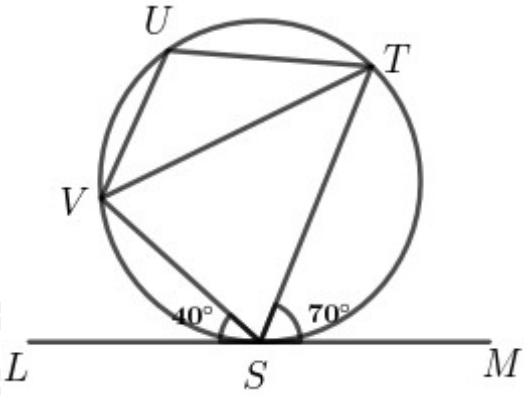
a) What is the length of LZ ?

b) What is the length of MN ?

c) What is the perimeter of the triangle LMN ?

40) In the figure LM is a tangent . TU = VU

< LSV = 40^0 , < TSM = 70^0



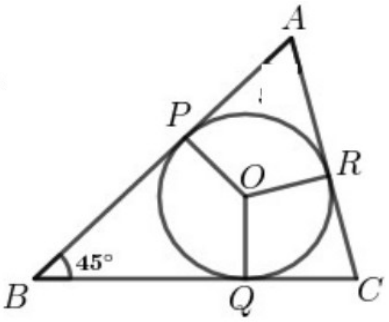
a) What is the measure of < STV ?

b) What is the measure of < SVT ?

c) What is the measure of < TUV ?

41) In the figure O is the centre of the incircle . The circle touches the sides of the triangle at the points P , Q and R

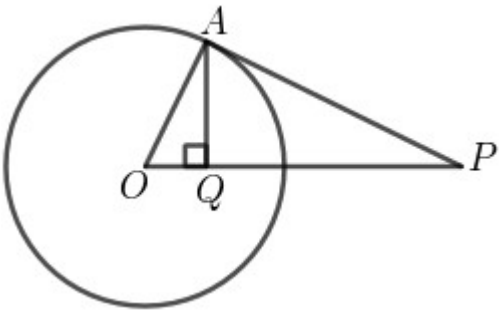
< ABC = 45^0



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 .

42) In th figure , O is the centre of the circle . AP is a tangent . AQ is perpendicular to OP .



a) What is the measure of < OAP ?

b) Prove that the angles of the triangles OAP and OAQ are same ?

c) Prove that OP x OQ = OA^2 ?

43) A conical fire work is of base perimeter 10π centimetres and height 12 centimetres . 10000 such fire works are to be wrapped in colour paper .The price of the colour paper is 10 rupees per square metre.

a) What is the base radius of a fire work ?

b) What is the slant height of a fire work ?

c) What is the surface area of a fire work ?

d) What is the total cost ? **(hint : $\pi = 3.14$)**

44) The vertices of a triangle are A (3 , 5) , B (9 , 13) , C (10 , 6) .

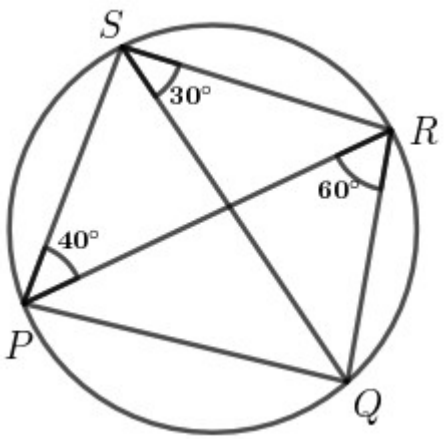
a) What is the length of the side AB ?

b) Prove that ABC is an isosceles triangle ?

c) What are the coordinates of the midpoint of AB ?

d) What is the area of the triangle ABC ?

45) In the figure < PRQ = 60 ^{0}, < QSR = 30 ^{0}, < RPS = 40 ^{0}



a) What is the measure of < PSQ ?

b) What is the measure of < QPR ?

c) What is the measure of < SQR ?

d)What is the measure of < PQS ?

e) What is the measure of < PRS ?