SSLC PRE MODEL EVALUATION JANUARY 2023
MATHEMATICS
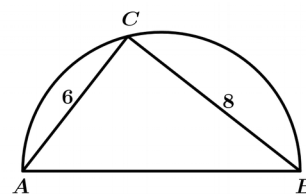**Time : 1½ Hrs**   (English Medium)   **Score : 40**

Answer any 3 questions from 1 to 4 . Each question carries 2 scores . $(3 \times 2 = 6)$

1. In the figure , AB is the diameter of the semicircle , C is a point

on the semicircle . AC = 6 centimetres , BC = 8 centimetres .

 (a) What is the measure of $\angle ACB$?

 (b) What is the radius of the semicircle ?

2. The sum of the first and the 11th terms of an arithmetic sequence is 50 .

 (a) What is the sum of the 5th and the 7th terms of the sequence ?

 (b) What is its 6th term ?

3. " 1 is added to the product of two consecutive odd numbers gives 144 " - By taking the

 smaller odd number as x , write a second degree equation using the above detail .

4. There are 6 black beads and 4 white beads in a box . A bead is taken without looking .

 (a) What is the probability of getting a black bead ?

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

Answer any 4 questions from 5 to 10 . Each question carries 3 scores . $(4 \times 3 = 12)$

**5.** Draw a circle of radius 3 centimetres passing through all the vertices of a triangle with two

 of the angles 60^0 and 80^0 .

6. 4 is added to the product of two consecutive multiples of 4 gives 324 .

 (a) By taking the smaller multiple as x , write a second degree equation using the above detail

 (b) Find the numbers .

7. (a) What is the 20th term of the arithmetic sequence 5 , 9 , 13 , . . . ?

 (b) What is t the sum of the first 20 terms of the arithmetic sequence 5 , 9 , 13 , . . .?

 (c) What is the sum of the first 20 terms of the arithmetic sequence 7 , 11 , 15 , . . . ?

8. In the figure , P , Q , R are the mid points of the sides of the triangle ABC .

A dot is put in the figure without looking .

(a) If the length of BC is 12 centimetres , what is the length

of PR ?

(b) Find a triangle of the same area as that of the triangle PQR.

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9. In the fgure , $\angle K = 100^0$, $\angle L = 50^0$, $\angle M = 120^0$.
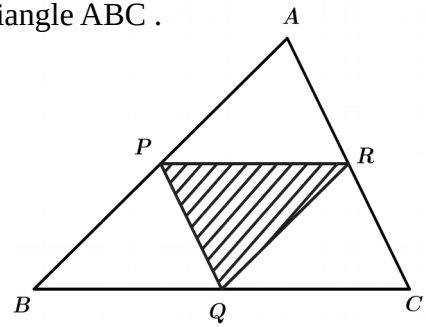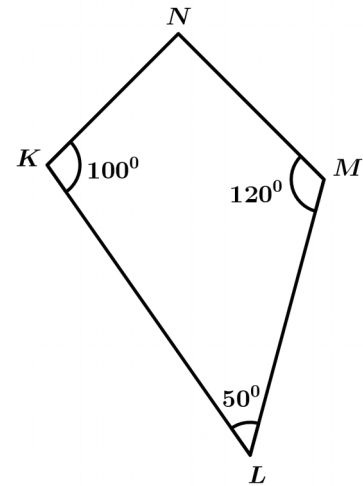
(a) What is the measure of $\angle N$?

(b) If a circle is drawn with KM as diameter , where will

be position of N among the following ?

(in the circle , on the circle , outside the circle)

(c) If another circle is drawn through K , L ,M , where will

be position of N among the following ?

(in the circle , on the circle , outside the circle)

10. 5th term of an arithmetic sequence is 10 and its 10th term is 5 .

(a) What is the common difference of the sequence ?

(b) What is the 15th term of the sequence ?

(c) What is the sum of the first 29 terms of the sequence ?

Answer any 3 questions from 11 to 16 . Each question carries 4 scores. $(3 \times 4 = 12)$

11. Draw a rectangle of length 6 centimetres and breadth 3 centimetres .

Draw a square of the same area .

12. Consider the arithmetic sequence 7 , 9 , 11 , . . .

(a) What is the common difference of the sequence ?

(b) What is the sum of the first n terms of the sequence ?

(c) Prove that the sum of any number of terms of this sequence starting from the first ,added to
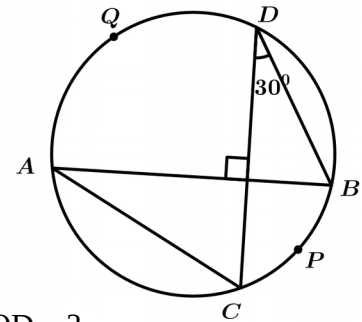
9 gives a perfect square .

13. A box contains 10 slips numbered from 1 to 10 and another box contains 5 slips

numbered from 1 to 5 . One slip is taken from each box .

(a) What is the number of possible pairs ?

(b) What is the probability of both being even ?

(c) What is the probability of getting one even number and one odd number ?

(d) What is the probability of getting at oleast one even number ?

14. (a) What are the smallest and largest three digit numbers which leave a remainder 1 on

division by 3 ?

(b) Find the number of three digit numbers which leave a remainder 1 on division by 3 .

15. In the figure teh chors AB and CD of the circle are perpendicular

to each other . P and Q are two points on the circle . $\angle D = 30^0$.

(a) What is the measure of $\angle A$?

(b) What is the central angle of the arc BPC ?

(c) What is the sum of the central angles of the arcs BPC and AQD ?

16. (a) What number is to be added to t $x^2 - 10x$ to get a perfect square ?

(b) If $x^2 - 10x = 75$, find the natural number represented by x ?

Answer any 3 questions from 17 to 21 . Each question carries 5 scores . $(5 \times 2 = 10)$

17. Draw a rectangle of length 7 centimetres and breadth 2 centimetres .
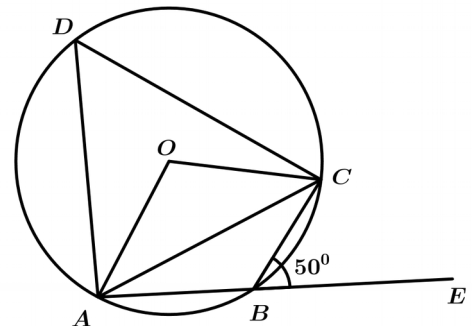
Draw another rectangle of the same area with a side 6 centimetres .

18. In the figure O is the centre of the circle . Chord AB is

extended to E . C , D are two points on the circle .

$\angle CBE = 50^0$.

find the measures of the following angles .

(a) $\angle ABC$

(b) $\angle ADC$

(c) Central angle of the arc ABC .

(d) ∠ OAC

(e) If AB = BC , what is the measure of ∠ OCB ?

19. Sum of the first 7 terms of an arithmetic sequence is 77 and the sum of the first 8 terms is 96 .

(a) What are the 4th and 8th terms of this sequence ?

(b) What is the common difference of the sequence ?

(c) Write the algebraic form of the sequence .

20. (a) What is the sum of the first 10 natural numbers ?

(b) What is the sum of the first n natural numbers ?

(c) How many consecutive natural numbers starting from 1 should be added to get 120 ?

21. Look at the number pattern given below .

2

4   6

8   10   12

14   16   18   20

....

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(a) Write the next one more line of the above pattern .

(b) What is the algebraic form of the arithmetic sequence 2 , 4 , 6 , . . . ?

(c) What is the last number in the 9th line ?

(d) What are the first and the last numbers in the 10th line ?