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കണ്ണൂർ ജില്ലാ പഞ്ചായത്ത്
ഡയറ്റ് കണ്ണൂർ - സമഗ്രശിക്ഷ കേരളം , കണ്ണൂർ
സമഗ്ര വിദ്യാഭ്യാസ പദ്ധതി

SMILE 2023 – SSLC Examination February 2023

MATHEMATICS

Time: 2½ Hours

Total Score: 80

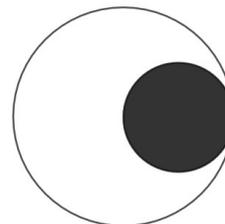
Instructions:

- Read each question carefully before writing the answer
- Give explanation wherever necessary
- First 15 minutes is cool-off time, you may use cool-off time to read the questions and plan your answers.
- No need to simplify irrationals like $\sqrt{2}$, $\sqrt{3}$, π etc. Using approximations unless you are asked to do.

(Questions From 1 to 4 answer any 3. Each question carries 2 marks) 3x2= 6

1. a) Write the arithmetic sequence with first term 3 and common difference 5.
b) Write the twentieth term of this sequence

2. In the figure, the smaller circle passes through the centre of the larger circle. What is the probability that if a dot is put in the figure without looking into it, being inside the shaded circle?



3. The end points of the diameter of a circle are (2,8) and (2,14)

- a) Write the coordinates of the centre of the circle.
b) Find the length of the diameter of the circle.

4. $P(x) = x^2 - 7x + 10 = (x-a)(x-b)$

- a) How much is $a+b$?
b) How much is ab ?

(Questions From 5 to 10 answer any 4. Each question carries 3 marks)

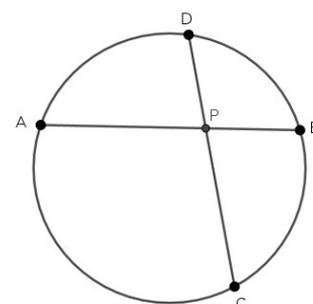
4x3 = 12

5. If the 5th term of an arithmetic sequence is 15 and the 25th term is 95

- a) Find the 15th term term
b) Find the sum of first 29 terms.

6. In the figure if $AB = 10$ centimetres $AP = 6$ centimetres $PC = 8$ centimetres

- a) What is the length of PB ?
b) $PC \times PD = \dots\dots\dots$
c) What is the length of PD ?

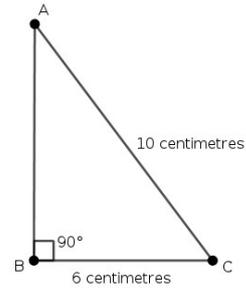


7. The product of two counting numbers which are adjacent multiples of 4 is 320.

- a) If one number is x , what is the second number?
- b) Find numbers.

8. In the Figure

- a) What is the length of AB ?
- b) Find $\tan A$?
- c) What is $\tan A \times \tan C$?



9. Draw a circle of radius 3 cm. Mark a point P outside of the circle 8 cm from the centre of the circle. Draw tangents from P to the circle.

10. A square pyramid has base edge 12 centimetres and height 8 centimetres.

- a) Find slant height
- b) Find the area of colour paper needed to cover the lateral surface of the pyramid .

(Questions From 11 to 21 answer any 8. Each question carries 4 marks) 8x4= 32

11. A circular sheet of radius of 12 centimetres is divided into 6 equal sectors and using one sector a cone is made.

- a) What is the slant height of the cone?
- b) Find the curved surface area of the cone?

12. Find the sum.

- a) $1+ 2+ 3 + \dots + 20$
- b) $2+ 4+ 6 +\dots + 40$
- c) $1+ 3+ 5+ \dots + 39$
- d) $11+ 12+ 13+ \dots + 30$

13. Draw a triangle of circumradius 3.5 centimetres and angles $60^\circ, 70^\circ$

14. A box contains a total of 36 beads including red beads and blue beads. If you take a bead with your eyes closed, the chance of it being red is $\frac{2}{3}$. Then

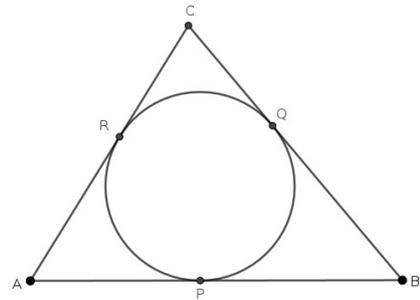
- a) What is the probability of getting a blue bead?
- b) What is the number of red beads?
- c) What is the probability that if 4 more blue beads are placed in the box and one bead is taken from the box, it will be red?

15. The length of a rectangle is 8 centimetres more than the width. The area of the rectangle is 128 square centimetres .

- a) If breadth = x then length =
- b) Form a quadratic equation and find length and breadth.

16. In the figure, the perimeter of the triangle is 18 centimetres and $AB = 6$ centimetres.

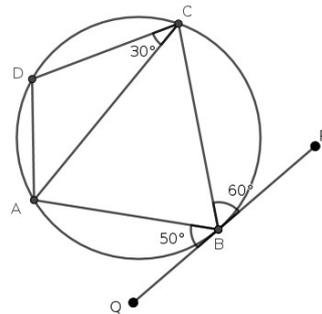
- Find the length of CR
- Find the length of CQ .
- What is the area of the triangle if the radius of the circle is 3 centimetres?



- Draw the X and Y axes and mark the points $A(-5, 2)$, $B(5, 2)$, $C(2, 4)$, $D(-2, 4)$.
 - Give a suitable name for the shape obtained by joining A, B, C and D in order.

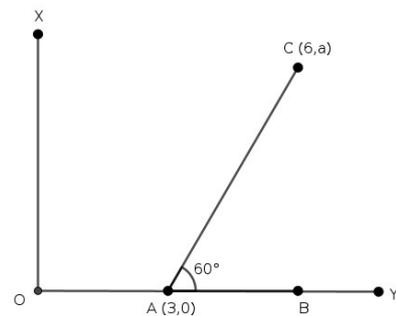
18. In the figure, PQ is a tangent to the circle
 $\angle PBC = 60^\circ$, $\angle ABQ = 50^\circ$, $\angle ACD = 30^\circ$

- Find $\angle ABC$.
- Find $\angle ADC$.
- Find $\angle ACB$.
- Find $\angle CAD$.



19. In the figure $A(3,0)$, $C(6,a)$ $AB = 3$ centimetres
 $\angle A = 60^\circ$ B, C are points on a line parallel to Y axis.

- Write the coordinates of B
- What is the length of AC ?
- Find a ?



- $P(x) = x^2 - 6x + 12$ is. Find $P(2)$.
 - Write the polynomial $P(x) - P(2)$ as the product of two first degree polynomials.

21. A line passes through the points $(2,4)$ and $(6,10)$

- What is the slope of the line?
- Write the equation of the line
- What is the y coordinate of a point on this line if its x coordinate is 4?

(Questions From 22 to 29 answer any 6. Each question carries 5 marks) $6 \times 5 = 30$

22. Draw a rectangle, whose sides are 5 centimetres and 3 centimetres. Then Draw a square of equal area to this rectangle.

23. The algebraic form of the sum of an arithmetic sequence is $3n^2 + 2n$.

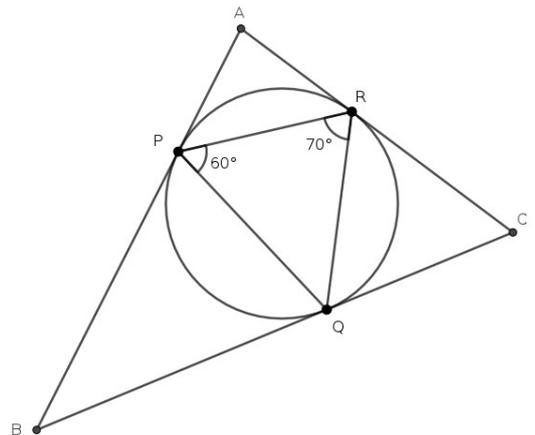
- Write the first term.
- Find common difference.
- Write the algebraic form of the arithmetic sequence.
- Find the sum of the first 20 terms of the arithmetic sequence.

24. A child sees the tip of a tree at an angle of elevation of 30° and walks 10 metres towards the tree and sees the tip of the tree at an angle of elevation of 60° .

- Draw appropriate diagram
- How far is the boy from the tree when seen the tip of the tree at an angle of elevation of 60° ?
- Find the height of the tree.

25. In the figure, the sides of triangle ABC touch the circle at points P,Q,R. If $\angle QPR = 60^\circ$ $\angle PRQ = 70^\circ$

- Find $\angle PQR$?
- Find $\angle BPQ$?
- Find all angles in triangle ABC.



26. $(9,12)$ is a point on a circle with centre at the origin.

- Find the radius?
- Write the equation of the circle
- Write the coordinates of the points where the circle cuts the X axis.

27. The height of a solid cone made of iron is 3 times the radius. If the height is 12 centimetres

- Find the radius?
- How many cones of height 4 cm and radius 2 cm can be made by melting this cone?
- Find the ratio between the areas of a smaller cone and the larger cone.

28. The following is a list of workers in a factory tabulated according to their daily wages

Daily Wages (in Rupees)	Number of workers
300-400	3
400-500	6
500-600	9
600-700	10
700-800	8
800-900	7
900-1000	2

- a) If arranged on the basis of daily wages, which person's wage will be the median wage?
- b) What is the assumed wage of 19th worker ?
- c) Calculate the median wage.

29. Look at the following Sequences

Sequence 1 : 1, 2, 4, 8, ...

Sequence 2 : 1, 3, 9, 27, ...

In sequence 1, the next term is obtained by multiplying all the numbers by 2.

Similarly, In sequence 2 , the next term is obtained by multiplying all the terms in by 3.

Multiplying the first term 1 by 3 gives the second term and multiplying second term 3 by 2 times (3^2) gives the third term 9 etc..

A series in which all the terms are multiplied by a fixed number to get the next term is called a Geometrical Sequence. A fixed number that is multiplied is called a common ratio. find the answers to the following questions?

- a) What is the next term in the sequence 1, 2, 4, ...?
- b) What is the next term in the sequence 1, 3, 9, 27, ...?
- c) What is the common ratio of the sequence 2,6,18, ...?
- d) How many terms are there in the sequence 1, 2, 4, ... is 64?
- e) 1, 3, 9, ... How many times in this sequence can 1 be multiplied by 3 to get the 10th term of the sequence?