

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD

Malleshwaram, Bengaluru – 560003

S.S.L.C. MODEL QUESTION PAPER – 03 – 2025-26

Subject: MATHEMATICS
(English Medium)

Subject Code: 81 – E

[Time: 3 Hours 15 Minutes]

[Max. Marks: 80]

General Instructions to the candidate:

1. This question paper consists of 38 questions.
2. Follow the instructions given against the questions.
3. Figures in the right hand margin indicate maximum marks for the questions.
4. The maximum time to answer the paper is given at the top of the question paper.
It includes 15 minutes for reading the question paper.

- I. Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.**

$$8 \times 1 = 8$$

1. If the lines represented by the pair of linear equations $3x + 2ky = 2$ and

$2x + 5y + 1 = 0$ are parallel, then the value of k is,

(A) $\frac{-5}{4}$

(B) $\frac{2}{5}$

(C) $\frac{15}{4}$

(D) $\frac{3}{2}$

2. Any composite number can be expressed as the product of ,

(A) even numbers

(B) odd numbers

(C) prime numbers

(D) square numbers

3. "The length of a rectangle is three times the breadth. The area of the rectangle is 75cm^2 .

The quadratic equation to find the length and breadth of the rectangle is,

(A) $3x^2 + 75x = 0$

(B) $x^2 + 3x - 75 = 0$

(C) $3x^2 - 75 = 0$

(D) $8x^2 - 75 = 0$

4. If the n^{th} term of an arithmetic progression $a_n = 2n - 1$, then its 4^{th} term is,

(A) - 7

(B) 7

(C) 5

(D) 6

5. In the following, the pair of triangles that are always similar are,

(A) Any two isosceles triangles

(B) Any two equilateral triangles

(C) Any two right angled triangles

(D) Any two scalene triangles

6. The formula to find the volume (V) of a sphere of radius 'r' units is,

(A) $V = 2\pi r^3$ cubic units

(B) $V = \frac{4}{3}\pi r^3$ cubic units

(C) $V = 3\pi r^3$ cubic units

(D) $V = \frac{2}{3}\pi r^3$ cubic units

7. Median = $l + \left[\frac{\frac{n}{2} - cf}{f} \right] \times h$, here 'f' refers to,

(A) lower limit of the median class

(B) size of the class interval

(C) frequency of the median class

(D) cumulative frequency

8. The zero of the polynomial $p(x) = 5x + 3$ is,

(A) $\frac{-3}{5}$

(B) $\frac{-5}{3}$

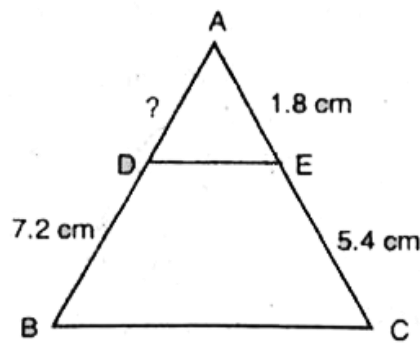
(C) -5

(D) -3

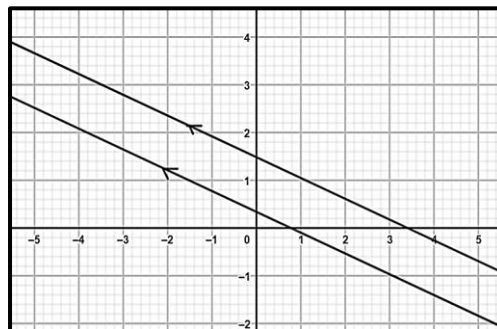
II. Answer the following questions:

$8 \times 1 = 8$

9. In the figure, $DE \parallel BC$. If $BD = 7.2\text{cm}$, $AE = 1.8\text{cm}$ and $EC = 5.4\text{cm}$ then, find the length of AD .



10. Write the distance of a point $P(a, b)$ from the origin.
11. In the quadratic polynomial $f(x) = x^2 - 9x + 20$, find the value of $f(1)$.
12. In an arithmetic progression, if the sum of first 4 terms is 20 and the sum of first 3 terms is 12, then find the 4th term of the arithmetic progression.
13. A rectangular sheet of paper $40\text{cm} \times 22\text{cm}$ is rolled to form a hollow cylinder of height 40cm. Find the radius of the cylinder.
14. The graph of the pair of linear equations in two variables is shown below. What is the number of solutions does the pair have?



15. If $\sin A + \sin^2 A = 1$, then find the value of $\cos^2 A + \cos^4 A$

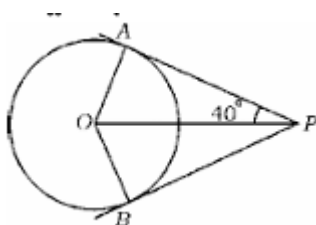
16. If the probability of an event A is $\frac{1}{5}$ and $n(A) = 2$, then find the value of $n(S)$

III. Answer the following questions:

$8 \times 2 = 16$

17. Prove that $2 + \sqrt{3}$ is an irrational number.

18. In the given figure, PA and PB are tangents to the circle with centre 'O'. If $PA = 4$ cm and $\angle APO = 40^\circ$, then find the measure of $\angle AOB$ and find the length of PB.



19. Solve the given pair of linear equations by elimination method:

$$2x + y = 10$$

$$x - y = 2$$

20. If the first term of an arithmetic progression is 1 and the 14th term is 53, then find the n^{th} term of this progression.

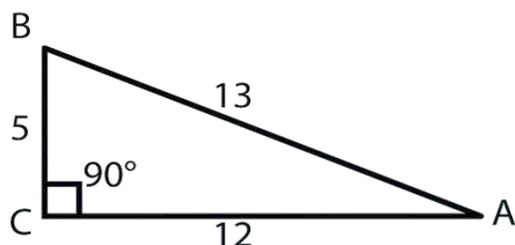
21. Find the H.C.F. of 135 and 75 by prime factorization method and then find the L.C.M. of 20 and H.C.F(135, 75).

22. Find the value of y for which the distance between the points P (2, -3) and Q (10, y) is 10 units.

OR

Find the coordinates of the point which divides the line segment joining the points $(-1, 7)$ and $(4, -3)$ internally in the ratio 2:3.

23. In the figure, write the value of $\sec B$ and $\cot A$.



24. Find the roots of the quadratic equation $2x^2 + x - 6 = 0$

OR

Find the discriminant of the quadratic equation, $2x^2 - 6x + 3 = 0$ and write the nature of roots.

IV. Answer the following questions:

$9 \times 3 = 27$

25. If two fair dice are rolled simultaneously, then find the probability

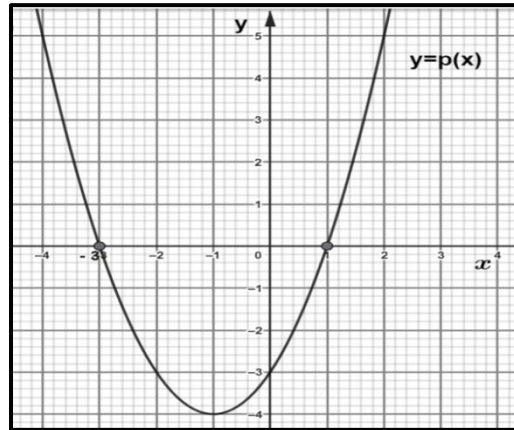
- a. that the sum of the numbers on the top faces is less than 8
- b. of getting a square number on one of the faces only

26. Prove that "The lengths of tangents drawn from an external point to a circle are equal".

27. Find the zeroes of the quadratic polynomial $p(x) = 6x^2 - 7x - 3$ and verify the relationship between the zeroes and the coefficients.

OR

The graph of $y = p(x)$ is given in the figure. Write the degree of this polynomial. Identify its zeroes and hence find the polynomial.



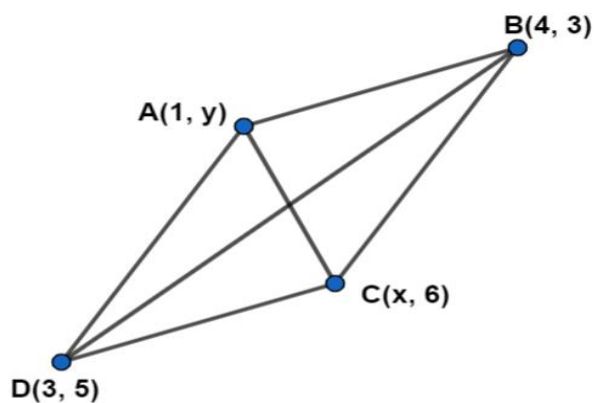
28. In an isosceles triangle PQR, $PQ = PR$. The angular bisector of angle P meets QR at 'O'.

Prove that $\frac{OQ}{OR} = 1$

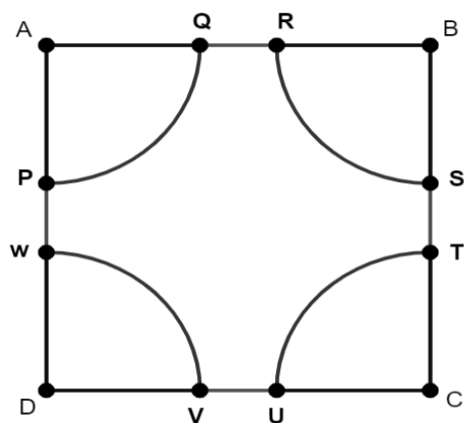
OR

ABCD is a parallelogram. E is a point on BC. Diagonal BD intersects the line joining A and E at F. Prove that $DF \times EF = FB \times FA$.

29. If $A(1, y)$, $B(4, 3)$, $C(x, 6)$ and $D(3, 5)$ are the vertices of a parallelogram as shown in the figure, then find the values of 'x' and 'y'.



30. Arcs are drawn in square ABCD with A, B, C and D as the centres of the circles of radius 3.5cm as shown in the figure. If the area of the square ABCD is 144cm^2 , then find the perimeter of the shape PQRSTUWV formed by arcs within the square.



31. Find the mean for the following frequency distribution table:

<i>Class – interval</i>	<i>Frequency</i>
5 – 15	2
15 – 25	3
25 – 35	5
35 – 45	7
45 – 55	3

OR

Find the mode for the following frequency distribution table

<i>Class – interval</i>	<i>Frequency</i>
5 – 10	3
10 – 15	5
15 – 20	8
20 – 25	4
25 – 30	5

32. The difference between the altitude and base of a right angled triangle is 5cm. If the area of the triangle is 150cm^2 , then find the base and altitude of the triangle.

33. Evaluate: $\frac{2 \cos 60^\circ + \tan 45^\circ - \sqrt{3} \operatorname{cosec} 60^\circ}{\sqrt{3} \sec 30^\circ + 2 \cos 60^\circ + \cot 45^\circ}$

OR

Prove that $\frac{\cos^3 \theta + \sin^3 \theta}{\cos \theta + \sin \theta} + \frac{\cos^3 \theta - \sin^3 \theta}{\cos \theta - \sin \theta} = 2$

V. Answer the following questions:

$4 \times 4 = 16$

34. Find the solution of the given pair of linear equations by graphical method:

$$2x + y = 8$$

$$x + y = 6$$

35. An arithmetic progression consists of four terms whose sum is 32. The ratio of the product of first and last terms to the product of second and third terms is 7 : 15. Find the terms of the progression.

OR

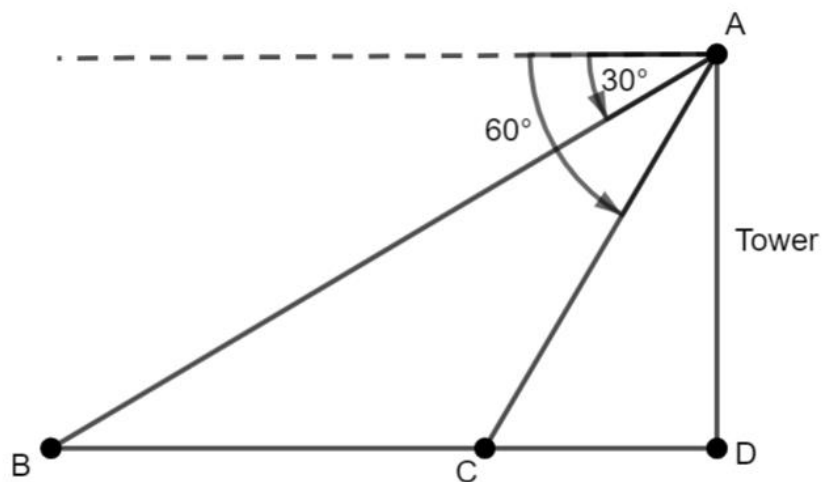
A book contains 432 pages. A student wants to read fixed number of pages of the book daily. He reads 25 pages on the first day. From the next day onwards he decides to read 2 pages more than what he read on the previous day. By using formula, find how many pages will he read on 12th day and also find the number of days the student takes to read the book completely.

36. Prove that “If in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or in proportion) and hence the two triangles are similar”.

OR

Prove that “If one angle of a triangle is equal to one angle of the other triangle and the sides including these angles are proportional, then the two triangles are similar”.

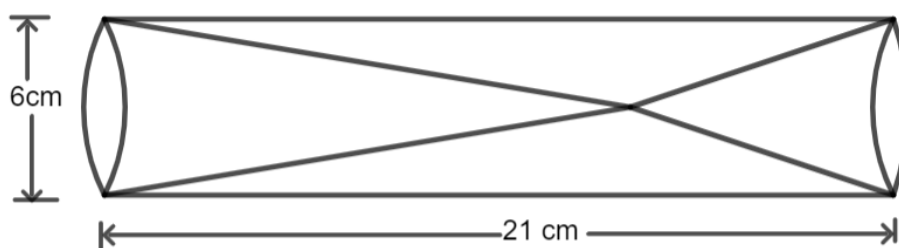
37. A straight highway leads to the foot of a tower as shown in the figure. A person standing at the top of the tower observes a car at the point 'C' with an angle of depression 60° , which is moving away from the foot of the tower with a uniform speed. Six seconds later, the person observes the car at the point 'B' and the angle of depression of the car is found to be 30° . Find the time taken by the car to reach the point 'B' from foot of the tower. If the height of the tower is 30m, then find the distance between the top of the tower and the point B.



VI. Answer the following question:

$$1 \times 5 = 5$$

38. Two solid cones of radii equal to the base radius of the cylinder are hollowed out from it as shown in the figure. The ratio of the volumes of cones is 2 : 1. The diameter and height of the cylinder are 6 cm and 21 cm respectively. Find the height and volume of cones. Also, find the volume of the remaining portion of the cylinder after the cones are hollowed out.



OR

A rectangular wooden block has length 40cm, breadth 30cm and height 7.5cm. From this block, a cone of radius 10cm is drilled out as shown in the figure. Find the volume and surface area of the remaining solid.

