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# INDIAN SCHOOL SALALAH

FINAL EXAMINATION, FEBRUARY 2026 (AY 2025- 26)

MATHEMATICS (041)



**Class: IX**

**Date: 08/02/2026**

**Time Allowed: 3 hours**

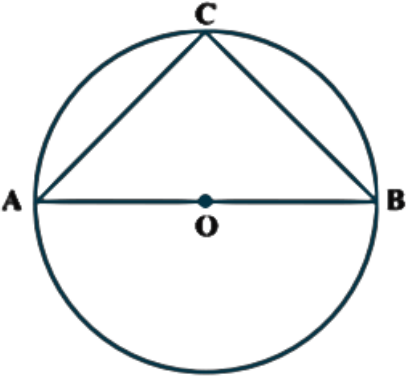
**Maximum Marks: 80**

## General Instructions:

- This Question paper contains 38 questions. All questions are compulsory.
- This Question paper is divided into five Sections - A, B, C, D and E.
- In Section A, Questions no. 1 to 18 are multiple choice questions (MCQs) with only one correct option and Questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.
- In Section B, Questions no. 21 to 25 are Very Short Answer (VSA)-type questions, carrying 2 marks each.
- In Section C, Questions no. 26 to 31 are Short Answer (SA)-type questions, carrying 3 marks each.
- In Section D, Questions no. 32 to 35 are Long Answer (LA)-type questions, carrying 5 marks each.
- In Section E, Questions no. 36 to 38 are Case study-based questions, carrying 4 marks each.
- There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 3 questions in Section C, 2 questions in Section D and one subpart each in 2 questions of Section E.
- Use of calculator is not allowed.

NO	SECTION A	MARKS
1	Which of the following statement is true? (a) Zero is not a rational number. (b) Every rational number is an integer. (c) Every integer is a rational number. (d) Every whole number is a natural number.	1
2	The value of $1.999\dots$ in the form $\frac{p}{q}$ , where p and q are integers and $q \neq 0$ , is (a) $\frac{19}{10}$ (b) $\frac{1999}{1000}$ (c) 2                      (d) $\frac{1}{9}$	1



13	<p>In the following figure if AOB is a diameter of the circle and <math>AC = BC</math>, then <math>\angle CAB</math> is equal to:</p>  <p>(a) <math>30^\circ</math>                      (b) <math>60^\circ</math>                      (c) <math>90^\circ</math>                      (d) <math>45^\circ</math></p>	1
14	<p>The area of an equilateral triangle with a side length of 8cm is</p> <p>(a) <math>16\sqrt{3}</math> sq cm                      (b) 54 sq cm (c) 81 sq cm                      (d) 27 sq cm</p>	1
15	<p>If the semi-perimeter of a triangle is 12 cm, and two sides have lengths 5 cm and 7 cm, then the length of the third side is</p> <p>(a) 12cm                      (b) 4cm                      (c) 8cm                      (d) 10cm</p>	1
16	<p>The Curved surface area of a right circular cylinder is 4.4 sq.cm. The radius of the base is 0.7 cm. The height of the cylinder will be:</p> <p>(a) 2cm                      (b) 3cm                      (c) 1cm                      (d) 1.5cm</p>	1
17	<p>The radius of a hemisphere is <math>2r</math>, then its volume will be</p> <p>(a) <math>\frac{4}{3}\pi r^3</math>                      (b) <math>\frac{8}{3}\pi r^3</math>                      (c) <math>\frac{2}{3}\pi r^3</math>                      (d) <math>\frac{16}{3}\pi r^3</math></p>	1
18	<p>The width of each of five continuous classes in a frequency distribution is 5 and the lower class-limit of the lowest class is 10. The upper class-limit of the highest class is:</p> <p>(a) 15                      (b) 25                      (c) 35                      (d) 40</p>	1
	<p><b>Question numbers 19 and 20 are Assertion and Reason based question. Two statements are given, one labelled Assertion (A) and the other labelled Reason (R). Select the correct answers from the codes A, B C and D as given below.</b></p> <p>(a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A.</p>	

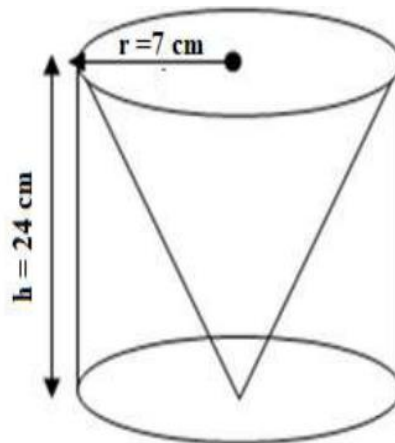
	(c) A is true and R is false. (d) A is false and R is true.	
19	<b>Assertion (A):</b> If the diagonals of a parallelogram are equal, then it is a rectangle. <b>Reason (R):</b> The diagonals of a parallelogram bisect each other at right angles.	1
20	<b>Assertion (A):</b> Frequency polygons can be drawn independently without the histogram by joining the midpoints of the class-marks. These midpoint of the class marks are called class intervals <b>Reason (R):</b> Class mark = (Upper limit + Lower limit)/2	1
<b>SECTION B</b>		
21	Find the area of the triangle whose sides are 56 cm, 60 cm and 52 cm long.	2
22	Factorise: $x^2 - 1 - 2a - a^2$ .	2
23	A) If a transversal intersects two lines such that bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.  <b>OR</b> B) In the given figure, lines AB and CD intersect each other at O. Find the values of x and y	2
24	In the given figure, $AB = AC$ and $BE$ & $CF$ are bisectors of angles $B$ and $C$ respectively. Prove that $\triangle EBC \cong \triangle FCB$ .	2
25	A) Express y in terms of x, given that $2x - 5y = 7$ . Check whether the point $(-3, -2)$ is on the given line.	2

	<b>OR</b>													
	B) Express $\sqrt{3} = 2x + \sqrt{3}y$ in the form of $ax + by + c = 0$ and indicate the values of a, b and c.													
	<b>SECTION C</b>													
26	Represent $\sqrt{7.2}$ on the number line.	3												
27	(i) Using suitable identity, evaluate $(-32)^3 + (18)^3 + (14)^3$ (ii) Examine whether $x - 1$ is a factor of the polynomial $4x^3 + 3x^2 - 4x - 3$ .	3												
28	Given the equation, $2x + y = 7$ (i) What is the value of x, when the value of y is 3? (ii) What is the value of y, when the value of x is 4? (iii) Find one more solution of the above equation?	3												
29	A) If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.  <b>OR</b> B) If the non-parallel sides of a trapezium are equal, prove that it is cyclic.	3												
30	Construct a histogram for the following data. <table border="1" style="margin-left: auto; margin-right: auto;"><tbody><tr><td>Speed</td><td>40-60</td><td>60-80</td><td>80-100</td><td>100-120</td><td>120-140</td></tr><tr><td>No. of Vehicles</td><td>20</td><td>25</td><td>15</td><td>12</td><td>30</td></tr></tbody></table>	Speed	40-60	60-80	80-100	100-120	120-140	No. of Vehicles	20	25	15	12	30	3
Speed	40-60	60-80	80-100	100-120	120-140									
No. of Vehicles	20	25	15	12	30									
31	A) A right triangle PQR with sides 10 cm, 24 cm and 26 cm is revolved about the side 24 cm. Find the volume and curved surface area of the solid so obtained. (Take $\pi=3.14$ )  <b>OR</b> B) A spherical ball is divided into two equal halves. If the curved surface area of each half is 56.52 sq.cm, find the volume of the spherical ball. (Take $\pi=3.14$ )	3												
	<b>SECTION D</b>													
32	A) Factorise: $6x^3 - 5x^2 - 17x + 6$  <b>OR</b> B) a) Expand $(-a + 2b + 3c)^2$	5												

	<p>b) Find <math>102^3</math> using suitable identity</p> <p>c) Factorise: <math>5x(a - b) + 6y(a - b)</math></p>	
33	<p>A) ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA, respectively. Show that the quadrilateral PQRS is a rectangle.</p> <p style="text-align: center;"><b>OR</b></p> <p>B) In the following figure ABCD is a parallelogram. AX and CY bisect angles A and C. prove that AYCX is a parallelogram.</p> <div style="text-align: center;"> </div>	5
34	<p>In the below figure, two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of <math>\Delta PQR</math>. Show that</p> <p>i) <math>\Delta ABM \cong \Delta PQN</math></p> <p>ii) <math>\Delta ABC \cong \Delta PQR</math></p> <div style="text-align: center;"> </div>	5
35	<p>Simplify: <math>\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}</math></p>	5
<b>SECTION E</b>		
36	<p><b>Case Study.1</b></p> <p>One afternoon, while returning home from school, Rinku noticed a carpenter working in his workshop. The carpenter was carefully carving a cone from a solid cylinder of wood. Rinku observed that the cone and the cylinder have the</p>	

same height and the same base diameter. The carpenter explained that the height of the cylinder is 24 cm and the radius of its base is 7 cm. Since the cone is carved out of the cylinder, its height is also 24 cm and its base radius is 7 cm.

This real-life situation made Rinku curious about the mathematical concepts involved in such a process. He started thinking about how much wood would be used and how much would be left after carving the cone from the cylinder.



Based on the information given above, answer the following questions:

- (i) Find the slant height of the conical cavity.
- (ii) What is the curved surface area of the conical cavity so formed?
- (iii) (a) Find the volume of the conical cavity.

1  
1  
2

**OR**

- (b) Curved surface area of a cone is  $308 \text{ cm}^2$  and its slant height is 14 cm. Find its total surface area.

37 **Case Study.2**

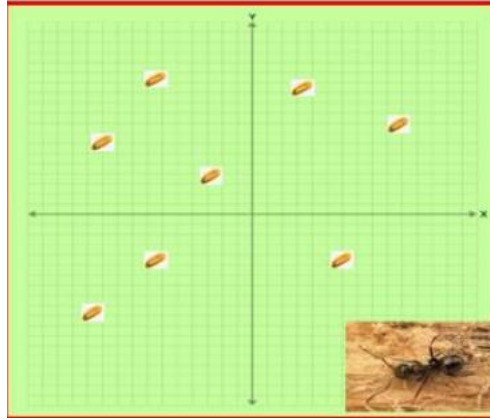
Ants are among the most hard-working and intelligent insects on Earth. An ant can lift objects that are 10–50 times heavier than its own body weight. Ants live and work in organized colonies and follow planned paths while collecting food. They also communicate with one another using signals and trails, which shows their strong problem-solving ability and coordination.

An ant comes out of its anthill to collect food grains scattered on a flat ground. The ground is represented by a Cartesian coordinate plane. Each grain is placed at a specific point on the plane.

The food grains are located at the following points:

A (-4, 2), B (-2, 4), C (1, 3), D (3, 1), E (2, -2), F (-1, -3)

To maintain balance in the food arrangement, identical grains are also placed at the mirror images of these points across the y-axis.



Based on the above information answer the following questions:

- (i) Write the coordinates of the mirror image of point A (-4, 2) across the y-axis.
- (ii) Name the quadrant in which point E (2, -2) lies.
- (iii) (a) Identify any two points that lie in different quadrants. Write their coordinates and name their quadrants.

**OR**

- (b) A square has its sides parallel to the axes and center at the origin. One vertex is A (-4, 2). Write the coordinates of the vertex diagonally opposite to A. Also write the coordinates of the remaining two vertices.

1

1

2

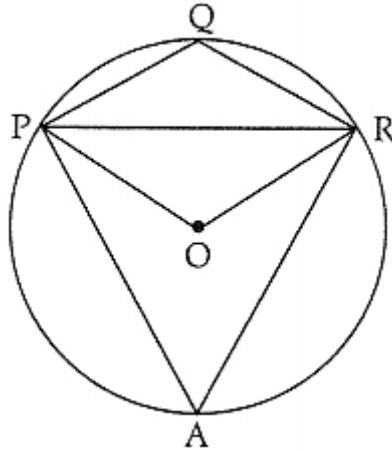
38 **Case Study.3**

Four friends — Rima, Mohan, Sohan and Sita — are sitting on the boundary of a circular park. Their positions are marked by points P, Q, R and A, forming a quadrilateral PQRA. Another friend, Rohit, sits at the centre O of the circular park and is equidistant from all the four friends. They are enjoying a peaceful morning walk and discussing how mathematics helps in understanding shapes and symmetry found in nature. Rohit explains that sitting at the centre allows him to observe everyone equally and maintain balance in the group. The friends decide to use their positions to frame a real-life geometry problem for practice.

It is given that:

- $\angle PQR = 120^\circ$ ,

- The radius of the circular park is 13 cm
- The perpendicular from O to chord PR meets it at M, such that  $OM = 5$  cm.



Based on the information given above, answer the following questions:

- |   |   |
|---|---|
| (i) Find the measure of the reflex $\angle POR$ .             | 1 |
| (ii) Find the measure of $\angle POR$ .                       | 1 |
| (iii) (a) Find the measure of $\angle PAR$ and $\angle PRO$ . | 2 |

**OR**

- (b) Find the length of the chord PR.

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