

CARMEL CONVENT SCHOOL
Final Term Examination (Session 2025-2026)
MATHEMATICS

CLASS: IX

DATE: 16.02.2026

TOTAL MARKS: 80

TIME: 3 HOURS

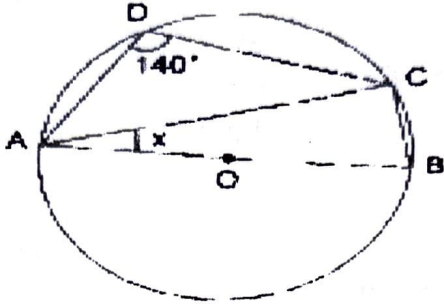
General Instructions:

- (i) All questions are compulsory.
- (ii) The question paper has five sections: A, B, C, D and E.
 Section A has 20 questions (Q1 to 20) of 1 mark each.
 Section B has 5 questions (Q21 to 25) of 2 marks each.
 Section C has 6 questions (Q26 to 31) of 3 marks each.
 Section D has 4 questions (Q32 and 35) of 5 marks each.
 Section E has 3 Case Study questions (Q36 to 38) of 4 marks each.
- (iii) All questions are compulsory.
- (iv) Draw neat figures wherever required

SECTION A

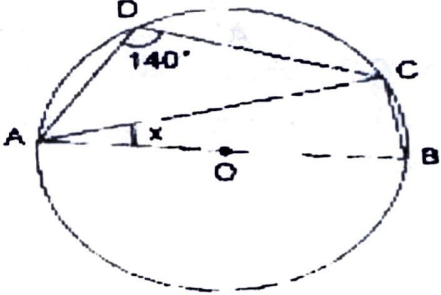
Q. No.	Question	Marks
1	Q1 The rational form of $15.666666\dots$ is a) $58 / 999$ a b) $159 / 999$ a c) $44 / 9$ d) $141 / 999$ a	1
2	Factor of $ax^2 + bx^2 + ay^2 + by^2$ is a) $(a + b)$ and x^2 b) $(a + b)$ and x and y c) $(a + b)$ and $(x^2 + y^2)$ d) $(a + b)$ and $(x^2 + x)$	1
3	Y-axis in coordinate plane is called _____ a) Abscissa b) ordinate c) Cartesian plane d) original plane	1
4	An equation of the form $2x + 3y + 7 = 0$ is a) Linear equation of degree 2 b) linear equation whose solution is 2 c) a quadratic equation d) equation with infinite solutions	1
5	If $x+1$ is a factor of the polynomial $2x^2 + kx$, then the value of k is a)-3 b)-4 c) 2 d)- 2	1
6	If $49x^2 - b = (7x - \frac{1}{2})(7x + \frac{1}{2})$ Find value of b	1

7	a) $(-\frac{1}{4})$ b) $\sqrt{2}$ c) $\frac{1}{4}$ d) $\frac{1}{2}$ Value of $(a + \frac{1}{a})^2 = 121$ then value of $a + (\frac{1}{a}) + 5$ is a) 11 b) 16 c) 17 d) 19	1
8	If $2x$ and $5y$ form a linear pair and $x = 30^\circ$ then value of $4y$ is a) 20° b) 24° c) 96° d) 130°	1
9	Line p is parallel to line q , and t is the transversal. Then, the ratio of corresponding angles is 1:1, and the ratio of the pair of exterior alternate angles is a) 2:1 b) 1:1 c) 3:2 d) not possible to find ratio	1
10	ABC is an equilateral triangle, and BCD is an isosceles triangle right-angled at D. Both triangles have a common base BC, then angle BCD measures a) 120° b) 45° c) 105° d) 125°	1
11	Hypotenuse of an isosceles right triangle is $4\sqrt{2}$ cm, find the other two sides of the triangle. a) 8cm b) 4cm c) 2cm d) $\sqrt{8}$ cm	1
12	Which of the following is an irrational number a) -2 b) $\sqrt{5}/\sqrt{125}$ c) $\sqrt{49}$ d) $\sqrt{100}/\sqrt{10}$	1
13	Total surface area of hemisphere is (27π) cm ² . Diameter of hemisphere is a) 27 cm b) 9 cm c) 6 cm d) 3 cm	1
14	In the figure, if O is the centre of the circle, and angle ACB = 40° . then the measure of x is: <div style="text-align: center;"> </div> (a) 60° (b) 110° (c) 50° (d) 45°	1
15	The perimeter of a triangle is 150 cm and its sides are in the ratio 3 : 4 : 5. Find the sides of triangle? a. 10, 12, 14 cm b. 30, 45, 55 cm c. 30, 40, 50 cm d. 60, 48, 35 cm	1

16	<p>What is the total surface area of a cone having radius $\left(\frac{r}{2}\right)$ and <i>slant</i> height 21?</p> <p>(a) $\pi r \left(1 + \frac{r}{4}\right)$ (b) $\pi r \left(r + \frac{1}{4}\right)$ (c) $\pi r \left(1 + \frac{r}{2}\right)$ (d) $\pi r \left(4 + \frac{1}{2}\right)$</p>	1
17	<p>Class mark of class interval 45.5-55.5 is</p> <p>a) 50 b) 51.5 c) 50.5 d) 49.5</p>	1
18	<p>In the figure, O is the centre of the circle. If $\angle ADC = 140^\circ$, then what is the value of x?</p> <p>(a) 45° b) 55° (c) 50° (d) 45°</p> 	1
	<p>In Q19 and Q20, a statement of assertion(A) is followed by a statement of reason(R). Choose the correct option :</p> <p>a) Both assertion(A) and reason (R) are true and reason(R) is the correct explanation of assertion (A)</p> <p>b) Both assertion(A) and reason (R) are true and reason(R) is not the correct explanation of assertion(A)</p> <p>c) Assertion(A) is true but reason (R) is false</p> <p>d) Assertion(A) is false but reason (R) is true</p>	1
19	<p>Assertion(A): If diagonals of parallelogram ABCD are equal, then angle $ABC = 90^\circ$</p> <p>Reason(R): If diagonals of parallelogram are equal then it is a rectangle</p>	1
20	<p>Assertion (A): If the radius of a sphere is doubled, its surface area becomes four times.</p> <p>Reason (R): Surface area of a sphere is directly proportional to the square of the radius.</p>	1

SECTION - B

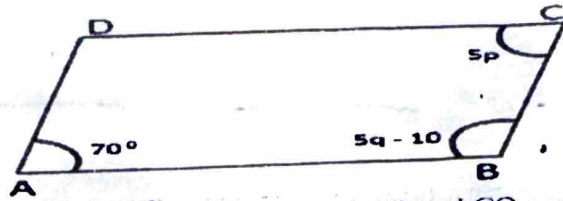
Q. No.	Question	Marks
21	ABCD is a parallelogram. Find value of p and value of angle ADC	2

16	What is the total surface area of a cone having radius $\left(\frac{r}{2}\right)$ and <i>slant</i> height 21? (a) $\pi r \left(1 + \frac{r}{4}\right)$ (b) $\pi r \left(1 + \frac{r}{4}\right)$ (c) $\pi r \left(1 + \frac{r}{2}\right)$ (d) $\pi r \left(1 + \frac{r}{2}\right)$	1
17	Class mark of class interval 45.5-55.5 is a) 50 b) 51.5 c) 50.5 d) 49.5	1
18	In the figure, O is the centre of the circle. If $\angle ADC = 140^\circ$, then what is the value of x? (a) 45° b) 55° (c) 50° (d) 45°	1
		
	In Q19 and Q20, a statement of assertion(A) is followed by a statement of reason(R). Choose the correct option: a) Both assertion(A) and reason (R) are true and reason(R) is the correct explanation of assertion (A) b) Both assertion(A) and reason (R) are true and reason(R) is not the correct explanation of assertion(A) c) Assertion(A) is true but reason (R) is false d) Assertion(A) is false but reason (R) is true	1
19	Assertion(A): If diagonals of parallelogram ABCD are equal, then angle $ABC = 90^\circ$ Reason(R): If diagonals of parallelogram are equal then it is a rectangle	
20	Assertion (A): If the radius of a sphere is doubled, its surface area becomes four times. Reason (R): Surface area of a sphere is directly proportional to the square of the radius.	1

SECTION - B

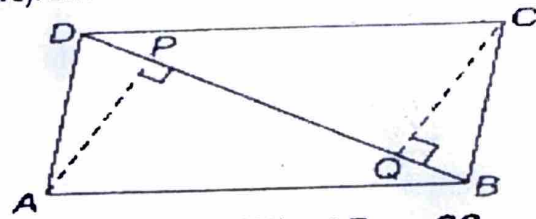
Q. No.	Question	Marks
21	ABCD is a parallelogram. Find value of p and value of angle ADC	2

Angle C = $5p$, angle A = 70° , angle B = $5q - 10$



- 22 ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD (see figure). Show that

2



(i) $\triangle APB \cong \triangle CQD$

(ii) $AP = CQ$.

- 23 $5y - 8x = 7(x + y) - 9$ when expressed in the form of $ax + by + c = 0$, then find value of a, b and c

2

- 24 Prove that every line segment has one and only one mid-point using Euclid's axiom or postulate

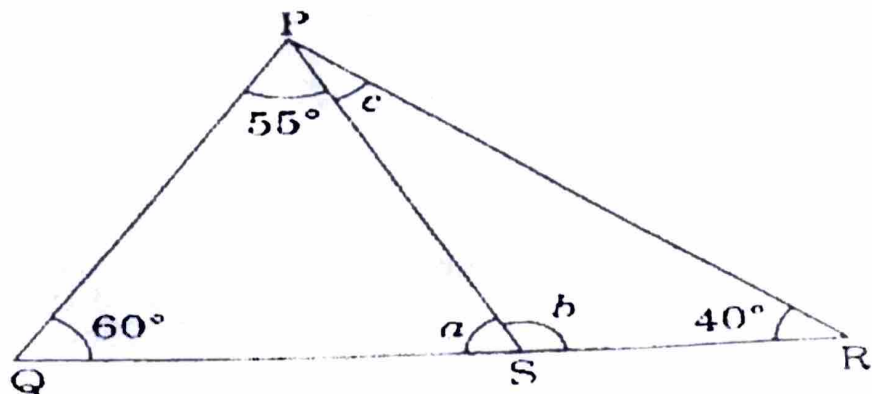
2

- 25 Represent $\sqrt{6.5}$ on number line

2

SECTION - C

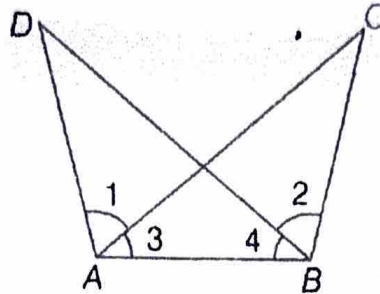
Q. No.	Question	Marks
26	If $a = 9 - 4\sqrt{5}$ find value of $\left[a + \frac{1}{a}\right]^2$	3
27	The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of ₹ 210 per 100 m^2	3
28	In triangle PQR, find value of a, b and c	3



29

In the given figure, $\triangle ABC$ and $\triangle ABD$ are such that $AD=BC$, $\angle 1=\angle 2$ and $\angle 3=\angle 4$. Prove that $BD=AC$

3



30

Factorise :

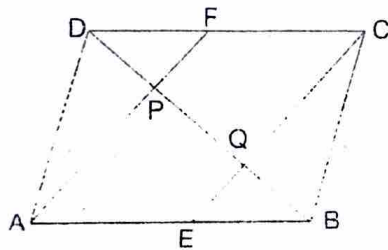
$$x^3 - 3x^2 - 9x - 5$$

3

31

In parallelogram ABCD, E and F are midpoints of sides AB and CD respectively. Show that line segment AF and EC trisect the diagonal BD.

3



SECTION - D

Q. No.	Question	Marks																
32	Determine rational numbers p and q if $\frac{7+\sqrt{5}}{7-\sqrt{5}} = p-\sqrt{5}q$	5																
33	Expand: i) $(6x - 5y)^3$ Factorise: ii) $343x^3 - 8y^3$	5																
34	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Class interval</th> <th style="width: 50%;">Frequency</th> </tr> </thead> <tbody> <tr> <td>0 - 10</td> <td>12</td> </tr> <tr> <td>10 - 20</td> <td>30</td> </tr> <tr> <td>20 - 30</td> <td>40</td> </tr> <tr> <td>30 - 40</td> <td>65</td> </tr> <tr> <td>40 - 50</td> <td>45</td> </tr> <tr> <td>50 - 60</td> <td>25</td> </tr> <tr> <td>60 - 70</td> <td>18</td> </tr> </tbody> </table> <p>Draw frequency polygon for the above data.</p>	Class interval	Frequency	0 - 10	12	10 - 20	30	20 - 30	40	30 - 40	65	40 - 50	45	50 - 60	25	60 - 70	18	5
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50 - 60	25																	
60 - 70	18																	

35	Three girls, Rashima, Salma and Mandeep, are playing a game by standing on a circle of radius 5m drawn in a park. Rashima throws a ball to Salma, Salma to Mandeep, Mandeep to Rashima. If the distance between Rashima and Salma and between Salma and Mandeep is 6m each, what is the distance between Rashima and Mandeep?	5
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Section E

Question numbers 36 to 38 are Case-based questions.

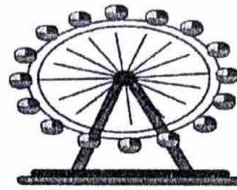
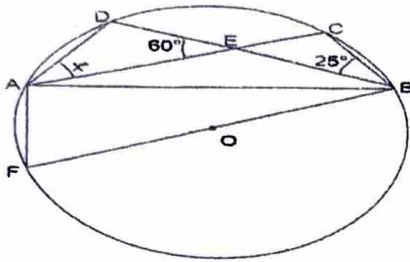
Q. No.	Question	Marks
36	<p>The great stupa of Sanchi is one of the oldest stone structures in India and an important monument of Indian architecture. It's nucleus was a simple hemispherical brick structure which is built over the relics of the Buddha. It is a perfect example of combination of solid figures. A big hemispherical dome with the cuboidal structure mounted on it. From the above information answer the following questions .</p> <p>Q1 calculate the volume of the hemispherical dome if the height of the dome is 21 meters.</p> <p>Q2 Find the base area of the hemispherical dome if radius of the base is 14 m</p> <p>Q3 Find area of cloth required to cover the hemispherical dome if the radius of its base is 14 m.</p> <div style="text-align: center;"> </div>	4 (1,1,2)

37

Ferrys wheel is an amusement ride consisting of a rotating upright wheel with multiple passengers carrying components referred as passenger cabins attached to the Rim in such a way that as the wheel turns they are kept upright usually by gravity. After taking the ride, sonal was curious about the different angles and measures formed in the circle. she forms the figure as given below.

4

(1,1,2)



As per the diagram, i) Find angle FAB ii) Find angle ADB

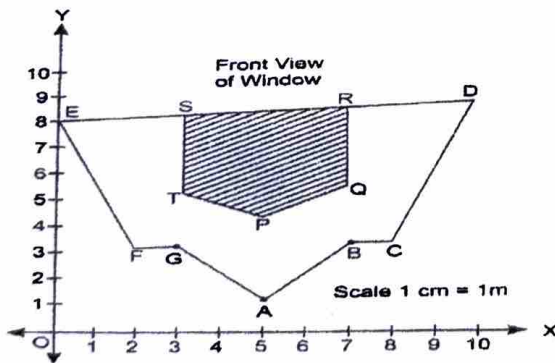
iii) If ADBF is a cyclic quadrilateral Find degree measure of angle AFB

38

The diagram shows the front view of a window. It will be built onto the wall of a house. Answer the following questions:

4

(1,1,2)



- What shape does the shaded portion PQRS represent?
- Find value of difference of ordinate of E - abscissa of G
- Write coordinates of B.

'The End''