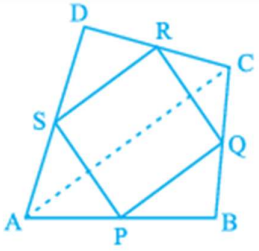
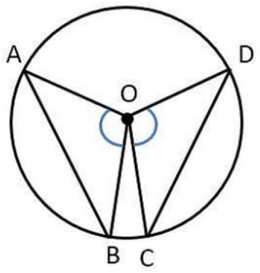
Marking scheme of Class IX Mathematics

Model Paper(SEE) (2024-25)

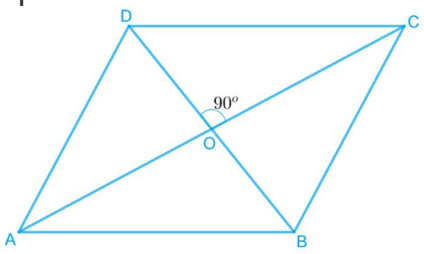
Q.no	Answer	Marks
1.	(b) 2/3	1
2.	(c) 1/4	1
3.	(d) -8, 10	1
4.	(c) Infinite rational numbers	1
5.	(b) 4	1
6.	(b) 2	1
7.	(a) Cubic	1
8.	(c) (4,0)	1
9.	(d) 8	1
10.	(c) Parallel	1
11.	(c) Diameter	1
12.	(d) 120º	1
13.	(c) Complementary angles	1
14.	(a) 9600 m^2	1
15.	(d) $100\sqrt{3}$ m^2	1
16	(a) 2	1
17.	(a) 1:4	1
18.	(d) 26	1
19.	(b) **Both assertion (A) and reason (R) are true and reason (R) is the not the correct explanation of assertion (A).**	1
20.	(a) **Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).**	1
21.	$\frac{1}{\sqrt{6}-\sqrt{5}} \times \frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}-\sqrt{5}} = \frac{\sqrt{6}+\sqrt{5}}{(\sqrt{6})^2-(\sqrt{5})^2} = \frac{\sqrt{6}+\sqrt{5}}{6-5} = \frac{\sqrt{6}+\sqrt{5}}{1} = \sqrt{6}+\sqrt{5}$ OR $2^{\frac{2}{3}+\frac{1}{3}} / 2^{-1} = 2^{3/3} / 2^{-1} = 2^{1+1} = 2^2 = 4$	2
22.	$4y^2-2y-2y+1$ $= 2y(2y-1) -1 (2y-1)$ $= (2y-1) (2y-1)$	1 1

23.	It can be observed that , x+y+z+w = 360°(Complete angle) It is given that , x+y = z+w ∴ $x+y+x+y=360°$ 2(x+y)= 360°,x+y=180°,Since x and y form a linear pair,AOB is a line.	2
24.	Let the common ratio between the angles be x.Therefore,the angles will be 3x,5x,9x and 13x respectively. As the sum of all interior angles of a quadrilateral is 360°. ∴ $3x+5x+9x+13x=360°$ 30x=360° x= 12° Hence the angles are 3x= 3x12 = 36° 5x= 5x12= 60° 9x = 9 x 12 = 108° 13x = 13 x 12 =156°	 1 1
25.	Volume of the Cone = $\frac{1}{3}\pi r^2$h = $\frac{1}{3}$ x $\frac{22}{7}$ x 6cm x 6cm x 7cm = 12cm x 22cm = 264 cm^3	1 1
26.	= $(-5a)^3 + 3(-5a)^2 x3 +3(-5a)x3^2 + 3^3$ = $(-5a +3)^3$ [∵ $(a+b)^3= a^3+b^3+3a^2b+3ab^2$]	2 1
27.	Taking x = 0, we get 3y = 12, i.e., y = 4. So, (0, 4) is a solution of the given equation. Similarly, by taking y = 0, we get x = 3. Thus, (3, 0) is also a solution.	1 ½ 1 ½

28.	As the sum of all interior angles of a triangle is 180°, Therefore, for△XYZ, ∠X + ∠XYZ + ∠XZY = 180° 62° + 54° + ∠ XZY = 180° ∠ XZY = 180° - 116° ∠ XZY = 64° ∠ OZY = 64/2=32°(OZ is the angle bisector of ∠ XZY) Similarly, ∠ OYZ = 54/2= 27° Using angle sum property for △OYZ,we obtain △OYZ+△YOZ+△OZY= 180° 27°+△YOZ+32°= 180° △YOZ= 180°- 59° △YOZ = 121°	1 1 1
29.	 In △ACD,S & R are the mid-point of AD and DC respectively. ∴ SR||AC & SR=1/2 AC - 1 (from mid point property) Similarly in △ABC, PQ||AC & PQ=1/2 AC - 2 (from mid point property) From 1 and 2 SR|| & = PQ So, PQRS is a parallelogram. **OR** To Prove: $\angle B = \angle C$ Construction : Draw AP ⊥ BC Proof: In right triangle APB and right triangle APC, Hyp . AB = Hyp. AC | Given	1 2 1

	Side AP = Side AP | Common $\therefore \triangle APB \cong \triangle APC$ |RHS Rule $\therefore \quad \angle ABP = \angle ACP$ |C.P.C.T $: \angle B = \angle C$ Hence Proved	2
30.	 In ΔAOB and ΔCOD, AB=CD (Given) AO=CO (radius) OB=OD (radius) By S.S.S congruency, ΔAOB≅ΔCOD ⇒∠AOB=∠COD. Proved	**1** **1** **1**
31.	Let x be common ratio ∴ Sides of triangle will be: 12x,17x and 25x ⇒Perimeter =540 cm(given) ⇒12x+17x+25x=540 cm, ⇒54x=540 cm ⇒x=10 cm ∴ Sides of triangle: a=120 cm, b=170 cm, c=250 cm ⇒2S=540 ⇒S=270 cm A=$\sqrt{\boldsymbol{s(s-a)(s-b)(s-c)}}$ =$\sqrt{\boldsymbol{270(270-120)(270-170)(270-250)}}$ cm^2 =$\sqrt{\boldsymbol{270\times150\times100\times20}}$ cm^2 A=9000 cm^2	**1** **1** **1**

32.(i)	$=(3+\sqrt{3})(2+\sqrt{2})$ $=3(2+\sqrt{2}) + \sqrt{3}(2+\sqrt{2})$ $= 6 + 3\sqrt{2} + 2\sqrt{3} + \sqrt{6}$	**2.5**
32.(ii)	$(\sqrt{5}+\sqrt{2})^2$ $= (\sqrt{5})^2 + 2 . \sqrt{5} . \sqrt{2} + (\sqrt{2})^2$ $= 5 + 2\sqrt{10} + 2$ $= 7 + 2\sqrt{10}$	**2.5**
33.	Taking the RHS and evaluating, R.H.S. = 1/2 (x + y + z) [(x - y)² + (y - z)² + (z - x)²] = 1/2 (x + y + z) [(x² - 2xy + y²) + (y² - 2yz + z²) + (z² - 2zx + x²)] = 1/2 (x + y + z) [2x² + 2y² + 2z² - 2xy - 2yz - 2zx] = 1/2 (x + y + z) (2) [x² + y² + z² - xy - yz - zx] = x[x² + y² + z² - xy - yz - zx] + y[x² + y² + z² - xy - yz - zx] + z[x² + y² + z² - xy - yz - zx] = x³ + xy² + xz² - x²y - xyz - x²z + x²y + y³ + yz² - xy² - y²z - xyz + zx² + y²z + z³ - xyz - yz² - xz² On simplifying, = x³ + y³ + z³ - 3xyz = LHS	**1 ½** **1 ½** **2**
34.	Figure - Given to prove, construction Proof	**1** **1** **1** **2**
35.	Given: The diagonals of a quadrilateral bisect each other at right angles. To show that a given quadrilateral is a rhombus, we have to show it is a parallelogram and all the sides are	**1**

	equal.  Let ABCD be a quadrilateral, whose diagonals AC and BD bisect each other at the right angle. So, we have, OA = OC, OB = OD, and ∠AOB = ∠BOC = ∠COD = ∠AOD = 90°. To prove ABCD a rhombus, we have to prove ABCD is a parallelogram and all the sides of ABCD are equal. In ΔAOD and ΔCOD, OA = OC (Diagonals bisect each other) ∠AOD = ∠COD = 90° (Given) OD = OD (Common) ∴ ΔAOD ≅ ΔCOD (By SAS congruence rule) ∴ AD = CD (By CPCT) .....(1) Similarly, it can be proved that AD = AB and CD = BC .....(2) From Equations (1) and (2), AB = BC = CD = AD Since opposite sides of quadrilateral ABCD are equal, it can be said that ABCD is a parallelogram. Since all sides of a parallelogram ABCD are equal, it can be said that ABCD is a rhombus.	**1** **3**

<table>
<tr>
<td>36.</td>
<td>(i) (-2) + (-5) = -7
(ii) Area = l x b = 3 x 2 = 6 sq unit
(iii) A' (-2,-3) ; B' (-5,-3) ; C' (-5,-1) ; D' (-2,-1)
or
(iii) A(3,3) , B(0,3) , C(0,1) , D(3,1)</td>
<td>1
1
2</td>
</tr>
<tr>
<td>37.</td>
<td>(i) c Rectangle
(ii) d 4/3 π r^3
(iii) b 288 π cm^3
Or
(iii) a 144 π cm^2</td>
<td>1
1
2</td>
</tr>
<tr>
<td>38.</td>
<td>(i) 5 and 78
(ii)73
(iii)
<table>
<tr><td>Class Interval</td><td>Frequency</td></tr>
<tr><td>0-10</td><td>2</td></tr>
<tr><td>10-20</td><td>4</td></tr>
<tr><td>20-30</td><td>1</td></tr>
<tr><td>30-40</td><td>10</td></tr>
<tr><td>40-50</td><td>1</td></tr>
<tr><td>50-60</td><td>2</td></tr>
<tr><td>60-70</td><td>5</td></tr>
<tr><td>70-80</td><td>5</td></tr>
</table>
Or,
(iii) Number of students who got less than 50 marks is 18.</td>
<td>1
1
2</td>
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