



Assignment – 2

Subject: Mathematics

Class: IX

July 2026

Chapter: EXPLORING ALGEBRAIC IDENTITIES

Q1. Without finding cubes, find the value of the following:

- a. $(x-y)^3 + (y-z)^3 + (z-x)^3$
- b. $(0.2)^3 + (-0.3)^3 + (0.1)^3$
- c. $(x-2y)^3 + (2y-3z)^3 + (3z-x)^3$

Q2. The length of a rectangle is $(x + 7)$ cm and its breadth is $(x - 7)$ cm. Find its area using an identity. For what value of x does the area become zero?

Q3. Using proper identities, factorise the following:

- a. $a^3 - 2\sqrt{2}b^3$
- b. $x^4 + 125xy^3$

Q4. If $x - \frac{1}{x} = 5$. Find the value of

- a. $x^2 + \frac{1}{x^2}$
- b. $x^4 + \frac{1}{x^4}$
- c. $x^3 - \frac{1}{x^3}$

Q5. If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove $a^3 + b^3 + c^3 - 3abc = -25$

Q6. Factorise: $27x^3 + \frac{1}{64}y^3 + 27x^2/4y + 9x/16y^2$

Q7. Expand : $(4e+7f-9g)^2$

Q8. Using identity, find the value of the following:

- a. $(703)^2$
- b. $(104)^3$

Q9. Find possible expressions for the length and breadth of a rectangle whose area is given by $x^2 - 22x + 72$

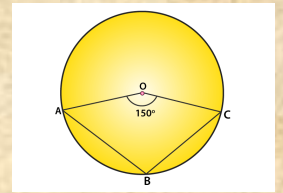
Q10. Find possible expressions for the length, breadth and height of cuboid whose volume is given by $9a^3 - 36a$

Chapter: I'M UP AND DOWN AND ROUND AND ROUND

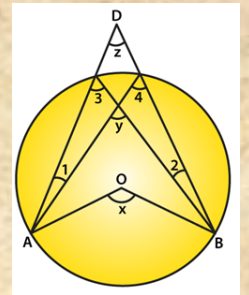
Q1. Three girls Ishita, Isha and Nisha are playing a game by standing on a circle of radius 20 m drawn in a park. Ishita throws a ball to Isha, Isha to Nisha and Nisha to Ishita. If the distance between Ishita and Isha and between Isha and Nisha is 24 m each, what is the distance between Ishita and Nisha.

Q2. A circular park of radius 40 m is situated in a colony. Three boys Ankur, Amit and Anand are sitting at equal distance on its boundary each having a toy telephone in his hands to talk to each other. Find the length of the string of each phone.

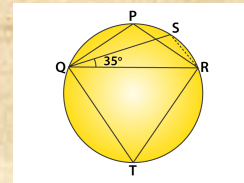
Q3. In figure, it is given that O is the centre of the circle and $\angle AOC = 150^\circ$. Find $\angle ABC$.



Q4. In figure, O is the centre of the circle, then prove that $\angle x = \angle y + \angle z$.



Q5. In figure, ΔPQR is an isosceles triangle with $PQ = PR$ and $\angle PQR = 35^\circ$. Find $\angle QSR$ and $\angle QTR$.



Q6. In a cyclic quadrilateral ABCD, if $\angle A = 3(\angle C)$. Find $\angle A$.

Chapter: MEASURING SPACE : PERIMETER AND AREA

Q1. A wheel has diameter 84cm. Find how many complete revolutions must it make to cover 792 metres.

Q2. Area of a sector of a circle is $\frac{1}{6}$ to the area of circle. Find the degree measure of its minor arc

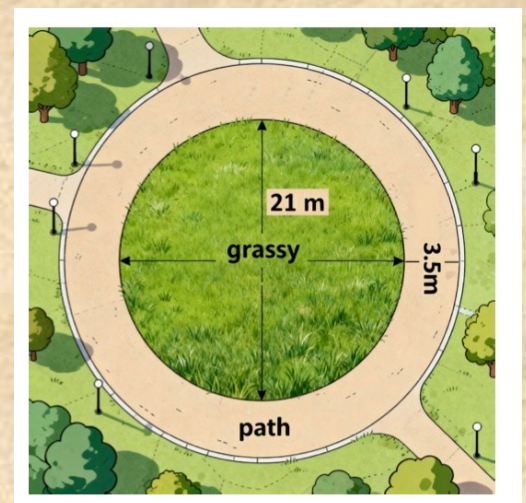
Q3. The area of quadrant is 154sq cm. Find its perimeter.

Q4. The length of the minute hand of a clock is 7cm. How much area does it sweep in 20minutes?

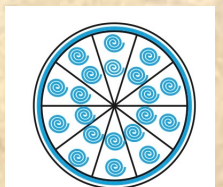
Q5. CASE STUDY BASED QUESTION: A circular park has a radius of 21m. A concrete path of width 3.5 m is built around the park along its boundary. Many children from nearby localities play inside the grassy part of the park (without the path).

Based on the above information, answer the following questions using $\pi = \frac{22}{7}$

- Find the area of the grassy part (without the path).
- Find the area of the concrete path.
- If the path is to be covered with tiles costing 120 per sq m? find the total cost.
- If a circular fountain of radius 3.5 m is built at the centre of the grassy part, then find the remaining area of grass.

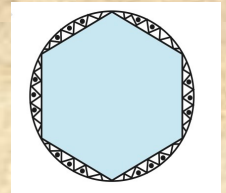


Q6. A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors as shown in the figure . Find :

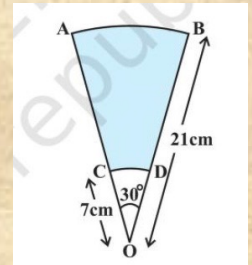


- (i) the total length of the silver wire required.
(ii) the area of each sector of the brooch.

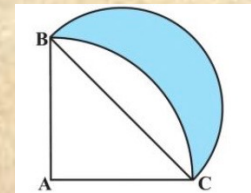
Q7. A round table cover has six equal designs as shown in Figure. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of 7 per per cm? (Use $\sqrt{3}=1.7$)



Q8. AB and CD are respectively arcs of two concentric circles of radii 21 cm and 7 cm and centre O. If $\angle AOB = 30^\circ$, find the area of the shaded region.



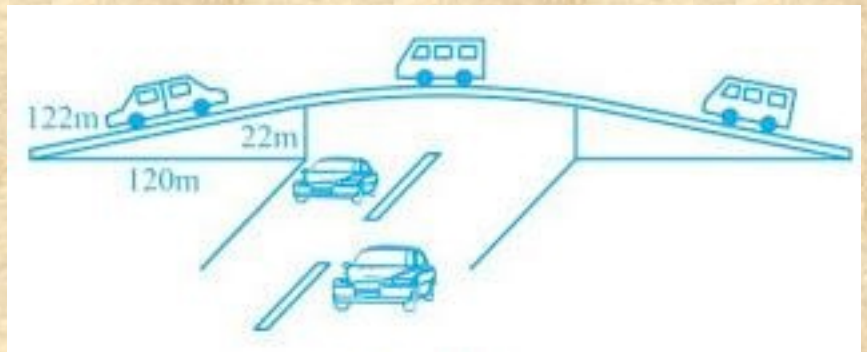
Q9. In Fig., ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.



Q10. Find the area of a triangle two sides of which are 18 cm and 10 cm and the perimeter is 42 cm

Q11. The perimeter of a triangular field is 540 m, and its sides are in the ratio 25:17:12. Find the area of the triangle.

Q12. The triangular side walls of a flyover have been used for advertisements. The sides of the walls are 122 m, 22 m and 120 m (see Figure). The advertisements yield an earning of ₹5000 per m² per year. A company hired one of its walls for 3 months. How much rent did it pay?



Q13. Find the area of equilateral triangle with side 15m.