TYBA COACHING CENTRE, AJMER

RMS / RMC CLASS VI MATHEMATICS • CHAPTER 16: PERIMETER, AREA & VOLUME (परिमाप, क्षेत्रफल एवं आयतन) — SUMMARY

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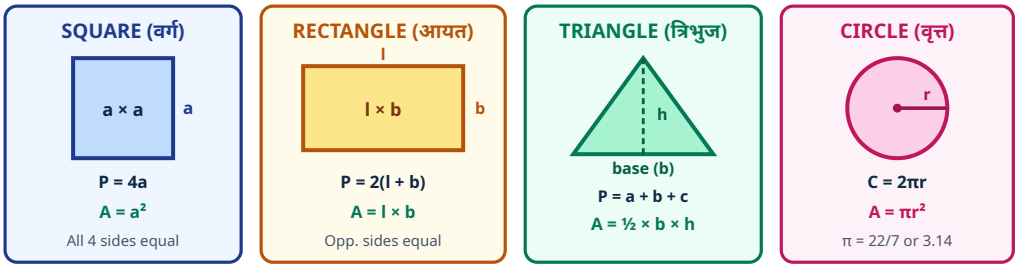

Figure 1: 2D Shapes — Perimeter (परिमाप) & Area (क्षेत्रफल) Formulas at a Glance

1. PERIMETER & AREA OF 2D FIGURES (2D आकृतियों का परिमाप और क्षेत्रफल) — 2D Mensuration

1. What are Perimeter, Area & Volume? (परिमाप, क्षेत्रफल व आयतन):

• **Perimeter (परिमाप):** Total length of the outer boundary of a closed 2D figure (units: cm, m, km). Used for **fencing, framing, running around a track**.

• **Area (क्षेत्रफल):** Total flat surface enclosed inside a closed 2D figure (units: sq. cm, sq. m, hectare). Used for **tiling, painting, carpeting, ploughing**.

• **Volume (आयतन):** Space occupied by a 3D solid (units: cu. cm, cu. m, litres). Used for **water tank capacity, boxes, bricks**.

परिमाप = बाहरी सीमा की कुल लंबाई (बाड़ लगाना/चक्कर); क्षेत्रफल = भीतर की सतह (टाइल/पेंट); आयतन = 3D वस्तु द्वारा घेरा गया स्थान (टंकी क्षमता)।

Shape (आकृति)	Perimeter / Circumference (परिमाप)	Area (क्षेत्रफल)	Reverse Formula (उल्टा सूत्र)
Square (वर्ग)	4 × side (4a)	side × side (a^2)	side = Perimeter ÷ 4 ; side = √Area
Rectangle (आयत)	2 × (l + b)	l × b	l = Area ÷ b ; b = (P ÷ 2) – l
Triangle (त्रिभुज)	a + b + c (Equilateral: 3a)	½ × base × height	height = (2 × Area) ÷ base
Circle (वृत्त)	2πr or πd (π = 22/7)	πr^2	r = C ÷ (2π) ; d = 2r

Golden RMS Unit Rule: 1 m^2 = 10,000 cm^2 | 1 Hectare = 10,000 m^2 | 1 m^3 = 1,000 Litres | 1,000 cm^3 = 1 Litre!

1 वर्ग मीटर = 10,000 वर्ग सेमी | 1 हेक्टेयर = 10,000 वर्ग मीटर | 1 घन मीटर = 1,000 लीटर | 1,000 घन सेमी = 1 लीटर!

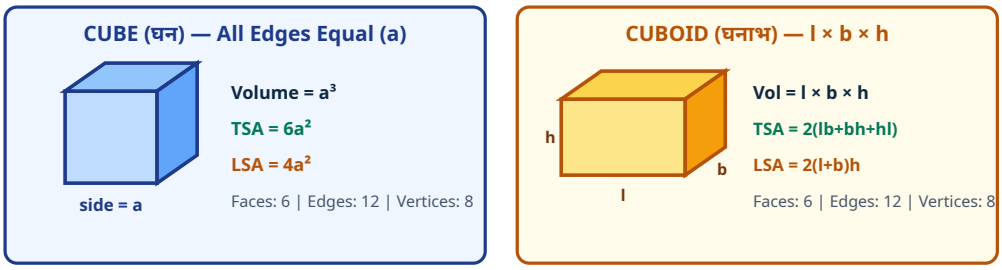

Figure 2: 3D Solids — Cube (घन) & Cuboid (घनाभ) Volume & Surface Area Formulas

3D Solid (ठोस)	Volume (आयतन)	Lateral / 4-Wall Area	Total Surface Area (कुल पृष्ठीय क्षेत्रफल)
Cube (घन)	$a \times a \times a = a^3$	$4a^2$	$6a^2$
Cuboid (घनाभ)	$l \times b \times h$	$2(l + b) \times h$	$2(lb + bh + hl)$

Quick Solved RMS Example	Formula & Step-by-Step Solution
Perimeter of square is 48 cm. Find Area.	Side = 48 ÷ 4 = 12 cm → Area = 12 × 12 = **144 sq. cm**
Tank is 5 m × 4 m × 2 m. Capacity in litres?	Volume = 5 × 4 × 2 = 40 m^3 → 40 × 1000 = **40,000 Litres**
Tiles of 20 cm × 20 cm for 4 m × 3 m floor?	(400 × 300) ÷ (20 × 20) = 1,20,000 ÷ 400 = **300 tiles**
Radius of circle is 7 cm. Find Circumference & Area.	C = 2 × (22/7) × 7 = **44 cm**; A = (22/7) × 7 × 7 = **154 cm^2**

Narayan Sir's Mantra: Before multiplying or dividing, always convert all lengths into the **SAME UNIT** (all in cm or all in m)! Remember: **Number of Tiles/Cubes = Total Area or Volume ÷ One Tile/Cube Area or Volume**.

गणना से पहले सभी मापों को एक ही इकाई (सेमी या मीटर) में बदलें! टाइलों/घनों की संख्या = कुल क्षेत्रफल (या आयतन) ÷ एक टाइल (या घन) का क्षेत्रफल (या आयतन)।