TYBA COACHING CENTRE, AJMER

RMS / RMC CLASS VI MATHEMATICS • CHAPTER 18: GEOMETRY: CIRCLES & QUADRILATERALS (वृत्त एवं चतुर्भुज) — SUMMARY

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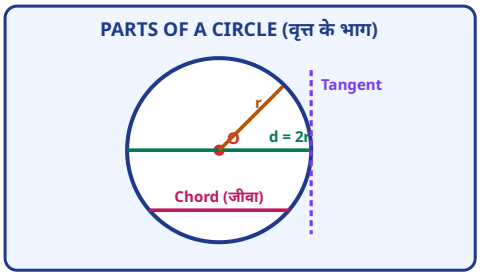

KEY CIRCLE FACTS (मुख्य तथ्य)

- Diameter (व्यास) = 2 × Radius (त्रिज्या)
- Longest Chord = Diameter (सबसे बड़ी जीवा)
- Sector (त्रिज्यखंड) = 2 Radii + Arc
- Segment (वृत्तखंड) = Chord + Arc
- Tangent touches at 1 pt; Secant cuts at 2 pts
- Angle in Semicircle = 90° | Total = 360°

Figure 1: Circle Components — Radius, Diameter, Chord, Tangent & Sector

1. CIRCLES — KEY DEFINITIONS & FORMULAS (वृत्त के प्रमुख सूत्र) — Circle Geometry

1.1 Essential Circle Terms:

- **Radius (त्रिज्या, r):** Distance from centre O to any point on the circle. **Diameter (व्यास, d) = 2r**.
- **Chord (जीवा):** Line segment joining any two points on the circle. **Diameter is the longest chord!**
- **Circumference (परिधि):** C = **2πr = πd** | **Area (क्षेत्रफल):** A = **πr²** (π = 22/7).
- **Secant (छेदक रेखा):** Cuts circle at 2 points | **Tangent (स्पर्श रेखा):** Touches circle at 1 point.

व्यास = 2 × त्रिज्या (सबसे बड़ी जीवा)। परिधि = 2πr; क्षेत्रफल = πr^2। छेदक रेखा 2 बिंदुओं पर काटती है; स्पर्श रेखा 1 बिंदु पर छूती है।

Golden Circle Rule: A circle has **infinitely many lines of symmetry** and **infinitely many diameters**. The angle in a semicircle is always **90°**!

एक वृत्त में अनंत सममित रेखाएँ (Lines of Symmetry) और अनंत व्यास होते हैं। अर्धवृत्त में बना कोण सदैव 90° होता है!

2. QUADRILATERALS — PROPERTIES & SOLVED EXAMPLES — Quadrilateral Geometry

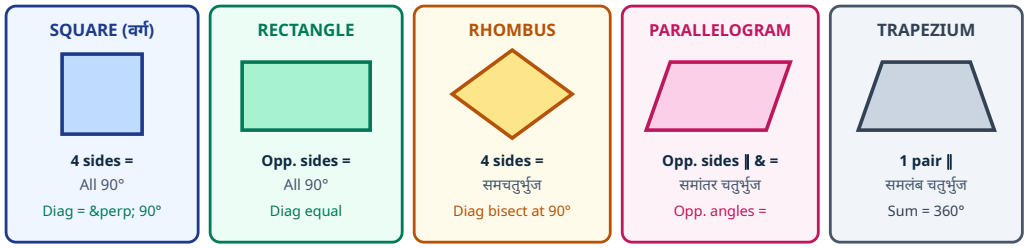

Figure 2: Five Major Quadrilaterals & Their Properties (चतुर्भुज के प्रकार)

Quadrilateral (चतुर्भुज)	Sides & Angles	Diagonals (विकर्ण)
Square (वर्ग)	All 4 sides equal; All angles 90°	Equal, bisect each other at **90°**
Rectangle (आयत)	Opposite sides equal & ∥; All angles 90°	Equal, bisect each other
Rhombus (समचतुर्भुज)	All 4 sides equal; Opp. angles equal	Unequal, bisect each other at **90°**
Parallelogram (समांतर)	Opp. sides equal & ∥; Opp. angles equal	Bisect each other (not equal)
Trapezium (समलंब)	Only **1 pair** of opposite sides parallel	Do not bisect each other

Quick Solved RMS Example	Formula & Solution
3 angles of a quadrilateral are 80°, 95°, 105°. Find 4th.	360° − (80° + 95° + 105°) = 360° − 280° = **80°**
Diagonals of a rhombus are 12 cm & 10 cm. Find Area.	Area = ½ × d_1 × d_2 = ½ × 12 × 10 = **60 sq. cm**
Circumference of a circle is 44 cm. Find diameter.	d = C ÷ π = 44 ÷ (22/7) = **14 cm** (r = 7 cm)

Narayan Sir's Mantra: Sum of all 4 interior angles of ANY quadrilateral = **360°**! Every square is a rhombus and a rectangle, but every rhombus is NOT a square.

किसी भी चतुर्भुज के चारों कोणों का योग 360° होता है। प्रत्येक वर्ग एक समचतुर्भुज व आयत होता है।