

CLASS 10 MATHS – CHAPTER 6

TRIANGLES – ALL FORMULAE

Basic Idea

- Polygon with 3 sides
- 3 vertices & 3 angles
- Interior angle sum = 180°
- Exterior angle sum = 360°
- Basic geometry concept
- Used in construction & design
- Foundation for similarity
- Important for proofs

Types Of Triangles

- Scalene \rightarrow all sides unequal
- Isosceles \rightarrow two sides equal
- Equilateral \rightarrow all sides equal
- Acute \rightarrow all angles $< 90^\circ$
- Right \rightarrow one angle = 90°
- Obtuse \rightarrow one angle $> 90^\circ$
- Based on sides & angles
- Equilateral \rightarrow each angle 60°

Similarity

- Same shape, size may differ
- Corresponding angles equal
- Corresponding sides proportional
- Notation: $\triangle ABC \sim \triangle DEF$
- All congruent \rightarrow similar
- Not all similar \rightarrow congruent
- Ratio remains constant
- Important for comparisons

Similarity Clarity

- AAA / AA \rightarrow angles equal
- SSS \rightarrow sides proportional
- SAS \rightarrow sides ratio + angle equal
- Used to prove similarity
- Must match corresponding parts
- Order of vertices important
- Common in proofs
- Key exam concept

BPT Theorem

- Line \parallel side of triangle
- Divides other sides proportionally
- $AD/DB = AE/EC$
- Used in proofs
- Converse also true
- Helps prove parallel lines
- Important for numericals
- Based on similarity

Pythagoras

- Right triangle only
- $c^2 = a^2 + b^2$
- c = hypotenuse
- $a, b \rightarrow$ other sides
- Converse also true
- Used to find missing side
- Check right triangle
- Important formula

Important Results

- Area ratio = (side ratio)²
- Altitudes in same ratio
- Medians proportional
- Perpendicular creates similar triangles
- Right triangle \rightarrow 3 similar triangles
- Used in geometry problems