□ 1. What is a Triangle?

- A triangle is a closed figure with three sides, three angles, and three vertices.
- Denoted by □ABC where A, B, and C are vertices.

□ 2. Types of Triangles

(a) Based on Sides:

Type	Description
Scalene	All sides are of different lengths
Isosceles	Two sides are equal
Equilateral	All three sides are equal

(b) Based on Angles:

Type	Description
Acute-angled	All angles < 90°
Right-angled	One angle = 90°
Obtuse-angled	One angle > 90°

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3. Angle Sum Property of Triangle

- The sum of all interior angles of a triangle is 180°.

□ □A + □B + □C = 180°

□ 4. Exterior Angle Property

- An exterior angle is equal to the sum of the two opposite interior angles.

□ □Exterior = □Interior 1 + □Interior 2

□ 5. Congruence of Triangles

Two triangles are congruent if all corresponding sides and angles are equal.

Criteria for Congruence:

Rule	Meaning
SSS	All three sides equal
SAS	Two sides and the included angle equal
ASA	Two angles and the included side equal
AAS	Two angles and a non-included side equal
RHS	Right angle, Hypotenuse, one Side equal (for right triangles)

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6. Properties of Triangle

- In a triangle, the sum of the lengths of any two sides is greater than the third side.

- In a triangle, the greater angle lies opposite the longer side.

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7. Inequalities in a Triangle

For any triangle with sides a, b, and c:

- a + b > c
- b + c > a
- c + a > b

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8. Medians and Altitudes

- Median: A line from a vertex to the midpoint of the opposite side.
- Altitude: A perpendicular from a vertex to the opposite side.

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9. Mid-point Theorem (Class 9 Focus)

If a line is drawn joining the mid-points of two sides of a triangle:

- It is parallel to the third side
- It is half the length of the third side.

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10. Common Exam Questions

- Prove the angle sum property.
- Prove congruence using SSS/SAS/ASA.
- Use the exterior angle theorem to find unknown angles.
- Explain and use the mid-point theorem.