🔺 1. Basic Geometrical Properties

🔷 Sum of angles at a point = 360°

Explanation: The angles around a single point form a full circle.

Example: If three angles around a point are 120°, 110°, and 90°, find the unknown angle.

- Sum = 120° + 110° + 90° = 320°
- Unknown angle = 360° − 320° = **40°**

🔷 Sum of angles on a straight line = 180°

Explanation: Adjacent angles on a straight line are supplementary.

Example: If one angle is 130°, the other angle on the straight line is:

- 180° − 130° = **50°**

🔷 Vertically opposite angles are equal

Explanation: When two straight lines intersect, the opposite angles are equal.

Example: If angle A = 70°, then the vertically opposite angle is also:

- **70°**

🔷 Angle sum of a triangle = 180°

Explanation: The interior angles in every triangle always add up to 180°.

Example: If two angles are 65° and 45°, the third angle is:

- 180° − (65° + 45°) = 180° − 110° = **70°**

2. Angles in Parallel Lines

Let's consider two **parallel lines** cut by a **transversal**.

◆ Corresponding angles are equal

Explanation: They are in matching corners ("F" shape).

Example: If one corresponding angle is 110°, the angle in the matching corner is also:

- **110°**

◆ Alternate angles are equal

Explanation: They are on opposite sides of the transversal ("Z" shape).

Example: If one alternate angle is 75°, then the angle on the other side is also:

- **75°**

◆ Co-interior (same-side interior) angles sum to 180°

Explanation: These angles lie on the same side of the transversal inside the parallel lines ("C" shape).

Example: If one co-interior angle is 115°, the other is:

- 180° − 115° = **65°**

◆ Angle sum of a quadrilateral = 360°

Explanation: The sum of the interior angles of any four-sided shape is 360°.

Example: If three angles are 100°, 85°, and 95°, the fourth angle is:

- 360° − (100° + 85° + 95°) = 360° − 280° = **80°**

⬠ 3. Angle Properties of Polygons

◆ Interior angle of a regular polygon:

$$\text{Interior angle} = \frac{(n-2) \times 180^\circ}{n}$$

Where n = number of sides.

Example: A regular hexagon (6 sides):

$$\text{Interior angle} = \frac{(6-2) \times 180}{6} = \frac{720}{6} = **120^\circ**$$

◆ Exterior angle of a regular polygon:

$$\text{Exterior angle} = \frac{360^\circ}{n}$$

Example: A regular octagon (8 sides):

$$\text{Exterior angle} = \frac{360}{8} = **45^\circ**$$

◆ Sum of interior angles of any polygon:

$$\text{Sum} = (n-2) \times 180^\circ$$

Example: A 7-sided polygon:

$$\text{Sum} = (7-2) \times 180 = **900^\circ**$$

◆ 3-Letter Notation:

Use it to describe angles clearly, e.g., ∠ABC means the angle at point B, between line segments AB and BC.