Session 27: Angles of Polygons

| Session Title	Interior Angles of Polyg...
Objective	- Students will explore and understar... - The sum of interior angles in a triar... - The sum of interior angles in a rect... square is 360°. - Students will derive and use the for... - Sum of Interior Angles = (n - 2) × 1...
Topics	1. Sum of interior angles of a triangle and a square 2. How to find the interior angles of a...
Materials Required	1. Pre-cut paper triangles, rectangles, squares 2. Glue or tape 3. Paper polygons (triangle, quadrilate... pentagon, hexagon, etc.) 4. Rulers, scissors, colored pencils 5. Protractors (optional) 6. Worksheet to record observation
Methodology	learning through activity
Session Duration	90 Minutes

Introduction Activity (30 minutes)

Ask students:

- "What do we mean by the interior of a shape?"(triangle, rectangle, square…)
- "How many corners or angles does a triangle/square/rectangle have?"
- "Do you know the sum of angles in any of these shapes?"
- "Today we will explore the sum of interior angles of triangles, rectangles, and squares—not by memorizing—but by doing an activity!"

Teacher divide students into small group

Triangle Angle Discovery
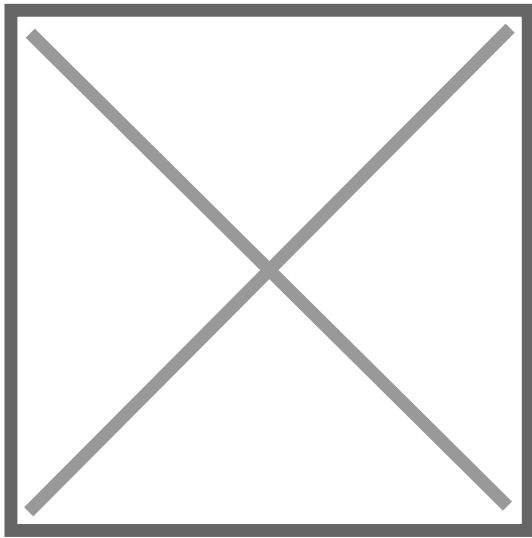
Instructions:

1. Hand out a triangle template to each student (variety: scalene, isosceles, right-angled).
2. Ask students to cut out the triangle.
3. Label each corner A, B, C.
4. Tear or cut the corners (angles) of the triangle.
5. Arrange the three angles next to each other on a straight line.

Observation & Conclusion:

- Ask students: "What do you notice when the angles are placed together?"
- They will observe that they form a straight line (180°).
- Conclude: Sum of interior angles of a triangle is 180°.

Rectangle Angle Discovery
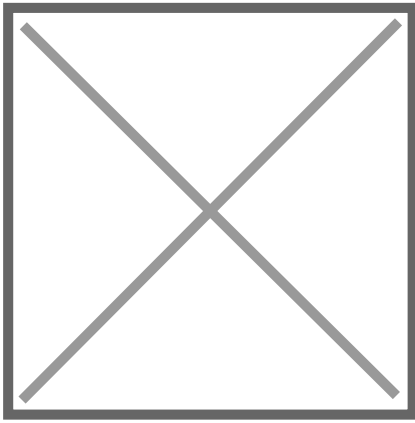
Instructions:

- 1. Distribute rectangle templates.
- 2. Students cut out the rectangle and label corners A, B, C, D.
- 3. Tear or cut the corners and paste them around a point (like a puzzle).
- 4. Alternatively, measure each angle using a protractor (all will be 90°).

Observation & Conclusion:

- 90° × 4 = 360°
- Conclude: Sum of interior angles of a rectangle is 360°.

Square Angle Confirmation
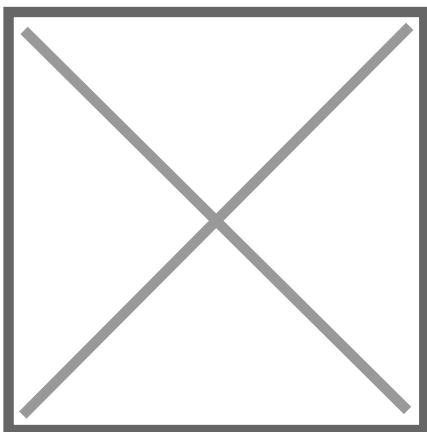
Repeat the same steps with a square.

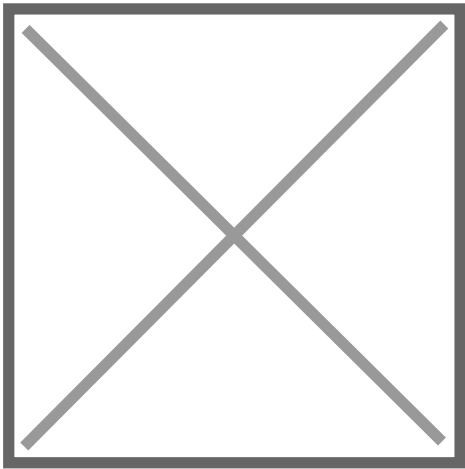**Observe:** All angles are also 90°.

Conclusion:

- 90° × 4 = 360°
- A square is a special rectangle.
- Guiding Questions:
- What do you notice when you add the angles?
- Do all triangles give the same sum? What about is discovery

Main Activity (50 minutes)

"Polygon Puzzle Teams"(25 min)

Instructions:

1. Give each group different polygons (triangle, quadrilateral, pentagon, etc.).
2. From one vertex, draw diagonals to divide each shape into triangles.
3. Count the number of triangles inside each shape.
4. Multiply number of triangles by 180° to find total interior angles.
5. Record findings in a table:
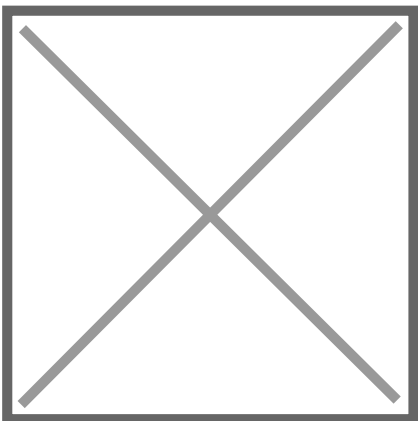
6. As a class, guide students to notice the pattern:

(Number of Sides – 2) × 180 = Total Interior Angles

Class Discussion & Application (15 minutes)

Write and explain the formula:

Sum = (n - 2) × 180°

Use it to calculate:

6-sided shape (hexagon)

10-sided shape (decagon)

Review Questions (10 minutes)

- What is the formula for finding the sum of the interior angles of a polygon?
- How does the number of sides in a polygon affect the sum of its interior angles?

Follow up Tasks (10 min)

1. If a shape has 12 sides, what's the sum of its interior angles?
2. Find the sum of interior angles of a 9-sided polygon.

Expected Learning Outcome:

Knowledge building

- Will to calculate sum of interior angles of any polygons.

Skill Building

Students will practice teamwork, communication, and respect while collaborating.