1. **GRADE LEVEL: Grade 7**

Subject Area: Mathematics

Quarter 1 – Week   
Duration: 45 minutes

1. **LEARNING OBJECTIVES**

Learners are expected to:

1. Students will be able to construct triangles given two angles and an included side (ASA)
2. Students will be able to draw quadrilaterals with specified angle measures
3. Students will be able to create regular polygons using a central angle and a circle.
4. **CONTENT**

* Title: The Angle Architect: Constructing Polygons
* Learning Competency: draw triangles, quadrilaterals, and regular polygons (5, 6, 8, or 10 sides) with given angle measures.
* Particular Focus: This lesson emphasizes the construction of polygons based on angle properties, moving from simple triangles to more complex regular polygons.

1. **LEARNING RESOURCES**

1. Teacher's Guide
2. Textbook on Geometry
3. Protractors, rulers, and compasses
4. Online interactive geometry software (e.g., GeoGebra)
5. PPT: 'Constructing Shapes with Angles'
6. **PROCEDURE**

**Introduction:**

Review angle types (acute, obtuse, right) and how to measure them with a protractor. Pose a question: 'If I know the angles of a triangle, do I know its exact shape? What about its size?' Lead a brief discussion on similarity vs. congruence.

**Presentation:**  
Teacher demonstrates constructing a triangle with given angles (e.g., 45-45-90). Then, model drawing a quadrilateral (e.g., a kite) with one line of symmetry and specific angles. Finally, show how to use a circle and a central angle (360/n) to construct a regular pentagon, emphasizing the connection between the central angle and the number of sides.

**Practice:**  
Students will complete a three-part task sheet: 1. Draw a triangle with angles 60, 60, and 60 degrees. 2. Draw a quadrilateral with two 80-degree angles and two 100-degree angles. 3. Construct a regular octagon using the central angle method within a circle of a given radius.

**Integration:**  
Connect to drafting and engineering where precise angle-based constructions are critical. Discuss how artists use perspective, which relies on angles, to create realistic drawings. Values: Appreciating the order and predictability found in geometric constructions.

**Assessment:**  
['1. What is the sum of angles in any quadrilateral? (360 degrees)', ' 2. To construct a regular decagon, what would the central angle measure be? (36 degrees)', ' 3. True or False: If you know all three angles of a triangle, you can determine its exact side lengths. (False)', ' 4. Draw a triangle with angles 50, 70, and 60 degrees.']

**Enrichment:**  
['Remediation: Provide worksheets with the initial circle and center point already drawn for the regular polygon construction. Focus on constructing triangles first to build confidence.', ' Enhancement: Challenge students to construct a complex shape (like a star) by combining different polygons with specific angle requirements.']  
**Asignment:**  
Design a simple blueprint for a room or a small house, labeling the angle measures at each corner of the rooms.

1. **EVALUATION TOOLS**

A checklist rubric will be used to assess the accuracy of the constructions (correct angles, straight lines, correct number of sides). Peer feedback session where students check each other's drawings against the given angle measures. Teacher observation of student proficiency with protractors and compasses.

1. **REMARKS**

Have extra protractors and compasses available as they can break easily. Pre-teach the term 'central angle' and its calculation (360/n). For virtual learners, ensure they have access to and know how to use an online geometry tool.

1. **REFLECTION**

['The central angle method for regular polygons was a breakthrough for many students', " it felt less tedious than measuring each interior angle. Some students were confused when their quadrilaterals didn't close properly due to inaccurate angle drawing. For the next lesson, I will incorporate a self-checking mechanism, like ensuring the sum of angles matches the formula, to help them catch errors earlier."]