UNIT 1: SHAPES AND DESIGN STUDY GUIDE

I can identify the special relationships among angles.

1. What are the common properties of all polygons? Explain.

2. Write the definitions to the following vocabulary words
   a. Regular Polygon: ____________________________
      ____________________________
   b. Concave Polygon: ____________________________
      ____________________________
   c. Convex Polygon: ____________________________
      ____________________________
   d. Irregular Polygon: ____________________________
      ____________________________

3. Sketch, identify and label two different Polygons.
4. Identify if the angle is \textit{acute, obtuse, or right.}

5. List the strategies that can be used to estimate angle measures?

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**I can define the properties needed to construct polygons.**

1. How is the number of sides related to the sum of the interior angles in a polygon?

2. If a \textbf{regular polygon} has 17 sides, what is the sum of interior angles for that polygon?  
   What is the measurement of an individual angle for that polygon?  
   \( S = (n-2) \times 180 \) and \( A= ((n-2) \times 180) \div n) \)
3. Identify the missing angles. (Remember you need to know the sum of the interior angles for that particular polygon).

\[ x = ____ \]

\[ x = ____ \]

4. What is the exterior angle sum of any polygon?

5. Which polygons can be used to tile a flat surface without overlaps or gaps (Sketch those shapes)?

6. Why can some polygons be used to tile a flat surface without overlaps or gaps?
For problems 13-14, sketch a triangle with the side lengths (if possible). If a triangle is not possible, explain why.

7. 6, 6, 9

8. 4, 8, 6


10. What is the best way to describe the following triangle with fewest amount of directions.

For problems 17-18, sketch a quadrilateral with the side lengths (if possible). If a quadrilateral is not possible, explain why. (2 points each)

11. 6, 5, 4, 10

12. 1, 2, 3, 4
I can identify appropriate tools required to solve problems with polygons.

13. Use a protractor to find the measure of each angle:

14. Find the measures of all the labeled angles in the following diagram (2 points):

15. Write the definitions to the following vocabulary words
   a. Parallel Lines: _____________________________________________________________
      _____________________________________________________________

   b. Vertical Angles: _________________________________________________________
      _________________________________________________________