Subject: H.S. Geometry

**Lesson Plan**

**Discovering the Formula for the Sum of the Measures of the Interior Angles of Polygons**

**Objective:** Students will be able to use the sum of the measures of the interior angles of a triangle to discover the formula for calculating the sum of the measures of the interior angles of a polygon when given only the number of sides of the polygon.

**Standards: 4.8.6** Form generalizations and validate conclusions about geometric figures and their

properties.

**4.12.6** Solve problems using complementary and supplementary angles, congruent angles, vertical angles, angles formed when parallel lines are cut by a transversal and angles in polygons.

**I Can: 1.** I can determine the sum of the measures of the interior angles of a polygon by using the sum of the measures of the angles in a triangle.

 **2.** I can calculate the sum of the measures of the interior angles of a polygon given only the number of sides.

**Materials:** Worksheets, pencil, rulers

**Procedure:** **1.** Review the sum of the measures of the interior angles of a triangle is 180º.

 **2.** Using the worksheet, “Sum of the Measures of the Interior Angles of Polygons”, students will begin with the quadrilateral and draw in the diagonals.

 **3.** Have students count the number of triangles formed.

 **4.** Using the number of triangles, have students calculate the sum of the measures of the interior angles of the quadrilateral.

 **5.** Repeat steps 2-4 with a pentagon, hexagon, and decagon.

 **6.** Have students use the data to predict a formula for finding the sum of the measures of the interior angles of a polygon by using only the number of sides of the polygon.

 **7.** Practice using the formula derived in step 6 giving students only the number of sides of a polygon.

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Sum of the Measures of the Interior Angles of Polygons

|  |  |  |  |
| --- | --- | --- | --- |
| POLYGON | NUMBER OF SIDES | NUMBER OF TRIANGLES | SUM OF THE TRIANGLE MEASURES |
| Triangle |  |  |  |  |
| Quadrilateral |  |  |  |  |
| Pentagon | http://upload.wikimedia.org/wikipedia/commons/thumb/0/04/Pentagon.svg/588px-Pentagon.svg.png |  |  |  |
| Hexagon |  |  |  |  |
| Octagon |  |  |  |  |
| Formula for finding the sum of the measures of the interior angles of a polygon |  |
| POLYGON | NUMBER OF SIDES | SUM OF THE INTERIOR ANGLES |
| Decagon | decagon 1... |  |  |
| Dodecagon | shapes cl... |  |  |
| 15-gon(Pentadecagon) | 15-sided Polygon |  |  |