



## TEACHER PAGE

### Lesson: Sum of Interior/Exterior Angles with Wilbur

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**New Arizona Math Strand 4 Geometry and Measurement      Grades 9-12**  
**Articulated 4MH4-08** Find the sum of the interior and exterior angles of a polygon.

#### **Learning Objectives: The students will be able to:**

- identify the formula for determining the sum of interior angles of a polygon.
- explain the formula for determining the sum of the interior angles of a polygon.
- demonstrate and explain the use of the formula above on polygons with few and many angles.
- explain the method and results for determining the sum of exterior angles of a polygon.

#### **Overview and content:**

Students observe that the shape of a polygon has no affect on determining the sum of interior angles. Also there is a method of determining the sum of the interior angles without drawing pictures of a polygon and its angles. Students are given opportunity for practice determining the sum of interior angles on polygons with few angles, such as the pentagon and octagon, to polygons with many angles such as the pentadecagon and hexadecagon. The content of this lesson assists mastery of Performance Objective **4M84-05**, despite a different focus.

#### **Engage students:**

Students are given illustrations of polygons inside which they are to draw, filling the space, triangles that connect at one vertex. The point is to determine the sum of all the angles by hand. This exercise is to help them realize there must be an easier method of determining the sum of the interior angles, (not exterior: this comes up in DIG DEEPER).

#### **Follow-up and extensions:**

**SO WHAT!** leads students to the Pentagon in Washington DC and Wilbur to contemplate determining security measures for the many angled building. In **DIG DEEPER** students find the secret of determining the sum of exterior angles of a polygon--not controlled by its complexity. **TALK ABOUT IT!** combines science and math in the search of the sum of the interior angles of the molecular structure of compounds.

#### **Assessment:**

Students will use the formula to correctly determine the sum of interior angles of polygons.

