

## *Mathematics: The Language of STEM*

Polygon Art

Burden

### **CONTENT AND TASK DECISIONS**

**Grade Level(s):** K

**Description of the Task:** Fairy Tale Engineering – 3 Pigs House

Students will test, design, and construct a scale house using given materials to withstand high wind as we simulate the “Big Bad Wolf”.

#### **Indiana Mathematics Content Standards:**

3.G.2 – Understand that shapes may share attributes, and that the shared attributes can define a larger category. Recognize and draw rhombuses, rectangles, and squares as examples of quadrilaterals.

Recognize and draw examples of quadrilaterals that do not belong to any of these subcategories.

3.G.3 – Identify, describe and draw points, lines and line segments using appropriate tools, and use these terms when describing two-dimensional shapes.

3.M.7 – Find perimeters of polygons given the side lengths or by finding an unknown side length.

#### **Indiana Mathematics Process Standards:**

PS.1 – Make sense of problems and persevere in solving them.

PS.2 – Reason abstractly and quantitatively.

PS.4 – Model with mathematics.

PS.5 – Use appropriate tools strategically.

PS.7 – Look for and make use of structure.

#### **Mathematics Content Goals:**

Students will create shapes using Sphero robotics. In extension, comparisons of shapes will be done by finding the perimeters of the different polygons.

#### **Language Objectives:**

Students will identify the different polygons correctly based on their attributes and use the vocabulary associated with the descriptions as appropriate to math.

#### **Materials:**

Sphero robots and meter sticks.

### **THE LESSON**

#### **Before:**

Students will learn the coding basics to making Sphero move based on the Sprk EDU app along with the parameters that control Sphero’s movements.

#### **During:**

Students will begin by creating line segments. Then building from line segments we will bring in creating polygons. Students will work in pairs and the option on including paint to “draw” out the line segments of the polygons can make the project even more of visual.

**After:**

Students will then measure out the lengths of the different polygons they create in their code as well as changes to compare similar polygons based on their perimeters. Presenting shapes drawn with the robot will give another assessment as a teacher to affirm correct language use.

**ASSESSMENT****Observe:**

The drawn polygons will be evidence of student math work as well as their presentations of their work.

**Ask:**

Probing questions to seek critical differences in the attributes of polygons.