Unit: Properties of Triangles

Objective: The student will discover that in a triangle, the side opposite the smallest angle of is the smallest side, and the side opposite the largest angle is the largest side. (Discover a relationship)

**NYSED Standards:**

Students will identify and justify geometric relationships formally and informally

G.G.34 Determine either the longest side of a triangle given the three angle measures or the largest angle given the lengths of three sides of a triangle.

Connections Strand:

Students will recognize and use connections among mathematical ideas.

G.CN.1 Understand and make connections among multiple representations of the same mathematical idea.

Problem Solving Strand:

Students will solve problems that arise in mathematics and in other contexts.

G.PS.2 Observe and explain patterns to formulate generalizations and conjectures

P.PS.3 Use multiple representations to represent and explain problem situations (e.g., spatial, geometric, verbal, numeric algebraic, and graphical representations)

**NCTM Standards:**

Instructional programs from prekindergarten through grade 12 should enable all students to:

Analyze characteristics and properties of two- and three- dimensional geometric shapes and develop mathematical arguments about geometric relationships.

In grades 6-8 all students should:

Understand relationships among angles, side lengths, perimeters, areas, and volumes of similar objects.

Activity: Relationships between angles and side lengths

Directions: Find the measurements of the angles and the sides of different triangles. Either use the triangles on the attached sheet or you may use triangles seen in the classroom. Use the chart below to record your findings.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Triangle | Measure of angle a | Measure of angle b | Measure of angle c | Length of side A | Length of side B | Length of side C |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Questions:

1. What are some patterns you noticed as you measured the angles and sides of the triangles?

2. Make a conjecture about the relationship you have found.

3. Do you think this theory will be true for other polygons? Why or why not?