Try Straws or Tri-Straws

Learner Expectation(s):

Model geometric shapes using a variety of materials.

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Purpose of Activity:

Students will construct a triangle using various materials and explain why the shape is or is not a triangle.

Description of Activity

Students will cut straws and feed kite string through them to investigate making triangles.

Materials and Preparations:

- 6 large straight non-flexible plastic drinking straws per student
- 2 pieces of kite string for each student. The string should be as long as 4 drinking straws.
- scissors and rulers
- transparency of the triangle examples and recording chart
- work mats made from laminated construction paper
- for the demonstration three straws and an 18-inch piece of string.

Approximate Time Needed For Activity: 50 minutes

Directions/Procedures:

Role of the Teacher:

- Introduce the concept of triangle and
- Demonstrate how to make a triangle from straws and string
- Assist students with cutting and stringing of straws and tying of strings
- Monitor individual and group progress

TN Content Standard(s):

In order to develop Spatial Sense and an understanding of Geometric Concepts, the mathematics curriculum must include problems which require students to explore geometric properties and relationships and to investigate, model, and analyze one-, two-, and three-dimensional figures.

TN Process Standard(s):

Effective Teaching of Spatial Sense and Geometric Concepts involves creating an environment in which the learners are engaged in significant problem solving, in reasoning, in communication, and in making connections.

Role of the Students:

- Works cooperatively in groups
- Present shape to class and identify shape and explain whether the figure is a triangle

Show the students the transparency with a variety of triangles. Ask students to describe how the shapes are alike and how they are different. Conclude that all the shapes are triangles.

Demonstrate how to measure and cut the straws and string to make a triangle. Cut one straw to a length of 3 inches. Cut another straw 4 inches long. Cut another straw 5 inches long. String the three pieces of straw together. Holding the straw vertically, put the end of the string into the top of the straw and feed it through until it comes out the bottom of the straw. Repeat with the other two straws. Tie the ends of the string together so that all the straws are touching. This should form a right triangle.

Tell students to cut the straws to different lengths to try to make their own triangles. Warn them that sometimes they will NOT get a triangle. Ask them to try to make one shape that is a triangle and one that is not a triangle. Students should share their findings. Record everyone's results on the transparency. Students should try to predict whether a particular combination of lengths will form a triangle. [Note: Students might discover that to make a triangle, when the two shortest pieces are put together, their total length must be longer than the longest piece.]

Suggestions for Evaluation of Activity:

Things to look for:
- Students can recognize a variety of triangles--not just equilateral triangles
- Students can predict whether a triangle can be formed from a given set of straws.

Adaptations:

- Let students who cannot measure cut the straws at random lengths and decide whether the figure formed is a triangle. Do not use the recording form.
- Students who are more sophisticated should try to verbalize a test for whether the given lengths can form a triangle without building the triangle.
- Record the lengths of the three pieces on the chart and put Yes in the column on the right
- Let students try making squares using four straws cut at various lengths.

Shortest Piece	Middle-Sized Piece	Longest Piece	TRIANGLE?