

MAKING SHAPES

• **Materials:** *Smooth rope or thick yarn about 15 feet long*

Vocabulary:
See reverse

Location: *Space in classroom/yard; large enough for 8 children on a 15 foot loop*

Group Size: 8

INSTRUCTIONS:

1. *Making Shapes* provides an opportunity for children to use gross motor skills to create closed-figure geometric shapes with a large loop of rope. What follows are directions and questions to engage the children in thinking about 2-dimensional shapes. As you give children directions, make sure you use the vocabulary provided (in dark green bolded italics). **Make sure that children pull the rope taut after every move or addition of a child.** Note that you can start with up to eight children, and add them one by one as the number of angles (represented by children holding the rope) increase. In a larger classroom, you can have 2-3 groups start at the same time. Because the rope cannot create true angles (they are more like tight curves), discuss this with the children. Discuss the difference between angles and curves. A statement like, “These curves are pretty close to angles, as close as we can get, so we’ll pretend that they are angles.” can help children gain knowledge about shape attributes and learn how to assess shapes in their environments.
2. *Triangles*
 - a. With three children, have them take *equally spaced* positions *around* the loop and pull the rope *taut* (this will create an equilateral triangle – with sides that are of equal length).
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?
 - b. Ask one of the children to slide to the left or right.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?
 - c. Ask one of the children to slide until they are right next to another child.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make? What do all of these *shapes* have *in common*? (Answer: three sides and three angles). What must every triangle have? (Answer: *closed figure, three sides and three angles*).
3. *Rectangles/Square*
 - a. Help four children take positions around the loop to create opposing sides that are the same length and right angles (the angle should look like an “L” – and the shape will be a rectangle with two short sides and two long sides). You can use your index finger and thumb to show them what a *right angle* looks like.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?
 - b. Have the children slide so that they create another *rectangle* but with different length sides from the first one.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make? What do these two *shapes* have *in common*? (Answer: four sides and four right angles). What *must* every rectangle have? (Answer: *closed figure, four sides and four right angles*). Note, rectangles do not have to have two short sides and two long sides!!!
 - c. Have the children slide along the rope so that they are equally spaced on the loop. Ask them to create four right angles.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make? What must every rectangle have? (Answer: *closed figure, four sides and four right angles*). Did you know that a *square* is a special type of *rectangle*?
4. *Pentagon/Hexagon/Septagon/Octagon*
 - a. With five/six/seven/eight children, have them take *equally spaced* positions *around* the loop and pull the rope *taut*. This will create an equilateral (also called regular) pentagon/hexagon/septagon/ octagon – with sides that are of equal length.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?
 - b. Now have some of the children move so that they are not equally spaced. (this will create an *irregular pentagon/hexagon/septagon/octagon* – with sides that are of different lengths)
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?
 - c. As children’s attention permits, take off and add children (stop game when children begin to lose attention). As you adjust the number of children on the rope, ask questions.
 - i. Questions: How many *angles* are there? How many *sides* are there? What *shape* did you make?

PLAN AND DIFFERENTIATE

SCAFFOLD DOWN: Use smaller groups of children. Make more triangles/rectangles until they understand the attributes of each shape.

SCAFFOLD UP: Have children take turns giving each other directions and figuring out what shapes are created.

VOCABULARY AND DEFINITIONS

1. **Attributes:** Qualities (usually used with geometry) of a figure. Includes sides, size, angles, etc.
 - a. **Angle:** Two lines that meet to make a corner.
 - b. **Face:** Side of a three dimensional shape.
 - c. **Equilateral:** Sides that are the same length
 - d. **Parallel:** Two lines in a two-dimensional space that do not meet (example: opposite sides of a square)
A parallelogram has two sets of parallel lines.
 - e. **Side:** Line segments in geometric figures
 - f. **Size:** Terminology to describe the dimensions of an object or set. With young children, the terms *large, medium, small, taller, shorter, longer, less than* and *great than* are all appropriate.
 - g. **Vertex/Vertices:** Also known as corner/corners. The point at which two sides (two-dimensional figure) or two edges meet (three-dimensional figure).
2. **Two-Dimensional Figures:**
 - a. **Circle:** Two-dimensional shape in which all points on the curved line are equidistant from a center point.
 - b. **Triangle:** Closed figure with three sides.
 - c. **Rectangle:** Two-dimensional closed four-sided figure with four right angles.
 - d. **Rhombus:** A closed four-sided figure with parallel opposite sides. A square is a special kind of rhombus. Sometimes called a diamond.
 - e. **Square:** A special type of rectangle that has equilateral (same length) sides. Opposite sides are parallel.
 - f. **Pentagon:** Closed figure with five sides.
 - g. **Hexagon:** Closed figure with six sides.
 - h. **Septagon/ Heptagon:** Closed figure with seven sides.
 - i. **Octagon:** Closed figure with eight sides.