

ALIKE AND DIFFERENT

NUMBER

- Comparing
- Counting
- Spatial visualization

Getting Ready

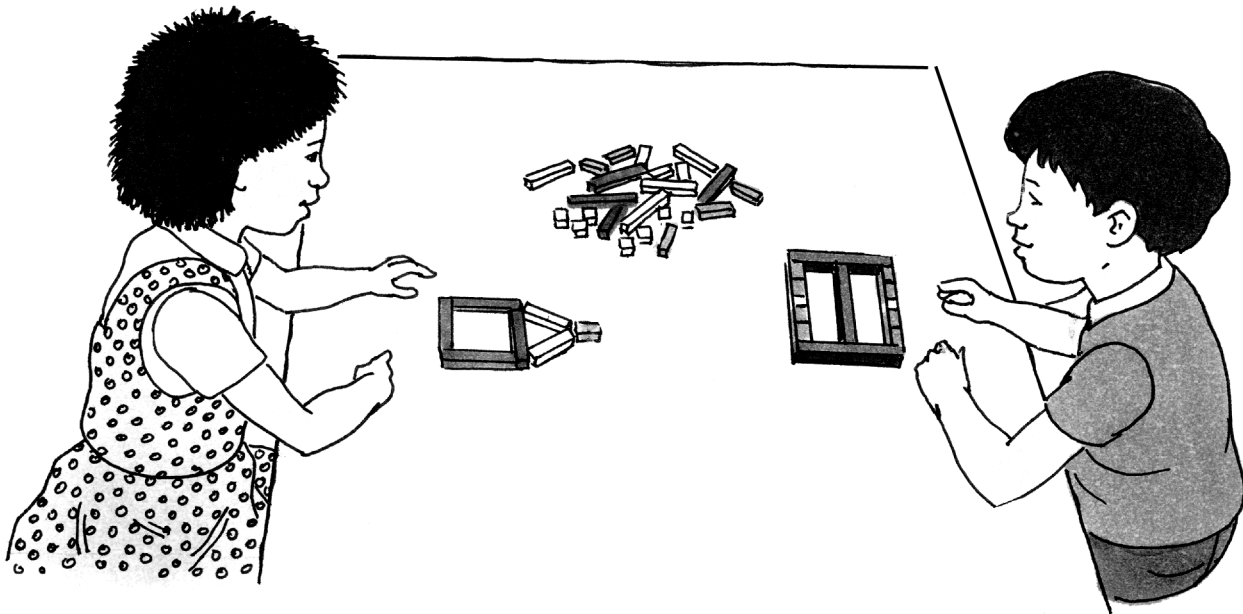
What You'll Need

Cuisenaire Rods, 1 set per pair
Overhead Cuisenaire Rods (optional)

Overview

Children make shapes from Cuisenaire Rods of their own choosing. Then they compare their shapes and discuss how the shapes are alike and how they are different. In this activity, children have the opportunity to:

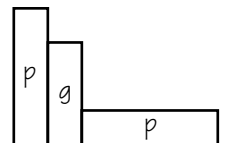
- ◆ recognize how shapes can be described in relation to other shapes
- ◆ understand the meanings of *alike* and *different*
- ◆ develop and use language related to geometry concepts



The Activity

Introducing

- ◆ Display this arrangement of Cuisenaire Rods.
- ◆ Tell children to take three of the same rods. Ask them to use these rods to make a new shape that is like yours in some way yet different from it in another way.
- ◆ Invite volunteers to share their new shapes, describing how each is like the shape you modeled and how it is different.
- ◆ Create a new arrangement of rods and have children repeat the activity until you feel that children are ready for *On Their Own*.



On Their Own

How can a Cuisenaire Rod shape that you make be the same as a shape your partner makes? How can these shapes be different?

- Work with a partner. Each of you take groups of the same Cuisenaire Rods. Use your rods to make a shape that you like.
- Put your shape next to your partner's. Look at both shapes carefully.
- Talk to your partner about the ways your shapes are alike. Talk about how they are different from one another.
- Find a way to record your shapes.
- Set up a chart like this. Work together to fill the chart with words that tell about your shapes.

How Our Shapes Are...	
Alike	Different

- Be ready to share your shapes and your chart.

The Bigger Picture

Thinking and Sharing

Invite a pair to post their recordings side by side. Then ask them to read their charts. Ask the other children if they can suggest additional likenesses and differences.

Use prompts such as these to promote class discussion:

- ◆ What did you notice first about your shape and your partner's?
- ◆ Are any pairs' shapes exactly alike? Are any almost alike? How?
- ◆ Would any of the posted shapes become exactly alike if some of the colors were exchanged? Explain.
- ◆ How are all the posted shapes alike? Are they all different in any way? How?

Extending the Activity

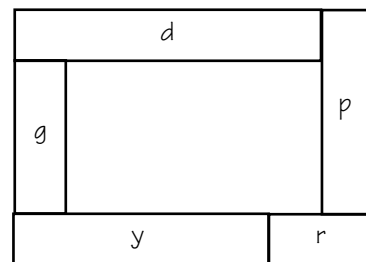
Have children do the activity again, but this time have them build their shapes from a specific number of Cuisenaire Rods.

This open-ended activity stresses both oral and written communication in mathematics. Children can choose the color of the rods and the number of rods, then use them to create shapes limited only by their imagination. As partners compare their two shapes, the process of writing down similarities and differences forces children to think about what they see and leads them to notice small distinctions. Later, when children listen to the lists of likenesses and differences, they may be alerted to different ways of describing those that they observed in their own work.

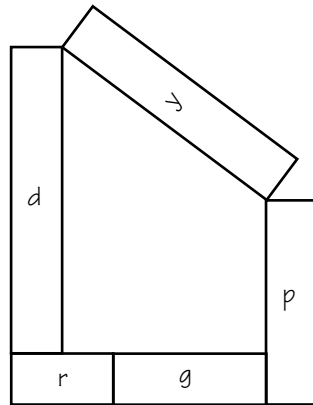
Many children will begin their lists by noting likenesses, making comments such as “have the same color” and “use the same number of rods.” After that, they note the differences, which are likely to form a much longer column. Some children will use their rods to create recognizable shapes, such as houses and boats, while other children will create free-form imaginary shapes.

Children begin to realize how much there is to say about even the simplest shape as they hear descriptive words and phrases that relate to lengths of sides, types of angles, area, slant of the lines, numbers of sides and angles, and so on. Children's charts may include words of comparison, such as *bigger*, *smaller*, *taller*, *longer*, and *wider*. Charts are also likely to include words and phrases indicating direction, such as *on the right*, *at the top*, *underneath*, and *above*. Making the lists will help children see how the use of precise language improves communication.

Children are apt to do a fair amount of counting as they find the number of sides and angles for each shape. As they record this kind of information on their charts, children can begin to see the value of numbers as descriptors. Be on the lookout for children who may confuse the number of rods used to make the shape with the number of sides of the shape. For example, this figure has four sides but children may mistakenly think it has five, since the bottom is composed of two rods.



Children may be surprised to see how different two shapes with the same number of sides can look. The orientation and right angles in this trapezoid makes it appear quite different from the rectangle shown on the previous page.



As a pre-assessment tool, you can use this lesson to learn what children already know about shapes and geometric terms. For instance, they might use the term “square corners” to describe right angles or “has four sides” to describe a rectangle. On the other hand, you can use this lesson as a post-assessment tool for checking children’s use of the precise geometric terms that you have been using in class.