Cuisenaire® Rods
Connecting

Small Group Set

Set of 155 rods

Connecting Cuisenaire® Rods are a collection of rectangular rods of 10 lengths and 10 colors, each color corresponding to a different length. The smallest rod is 1 cm long; the longest rod is 10 cm. Rods connect at their ends. Each rod has lines on one side that divide the rod into sections. By counting the sections, children see how many white rods make up each rod.

One small group contains 155 rods: 10 orange, 9 blue, 8 brown, 7 black, 8 dark green, 10 yellow, 12 purple, 16 light green, 25 red, and 50 white. One set is sufficient for three to four students.

Connecting Cuisenaire® Rods are appropriate for grades K through 8. They help students explore:

- whole numbers
- addition and subtraction
- multiplication and division
- fractions and ratio
- three-dimensional geometry
- symmetry
- measurement
- patterns and functions

Connecting Cuisenaire® Rods provide a *continuous* number model, rather than a fixed model. They allow you to assign a value to one rod, and then to determine the values of the remaining 9 rods by using the relationships between the rods. For example, when the white rod has the value of 1, the orange rod, which is 10 times as long, has a value of 10; if the white rod is 2, the orange rod is 20; if the orange rod is 1, the white rod is $\frac{1}{10}$.

EXPLORATION

Provide students with opportunities for exploration with the rods. Encourage them to connect rods as well as match trains of rods to each other. Provide guided exploration by asking students to lay one rod of each color flat on their desks to make a "staircase." Have them discuss in their small groups what they notice and then report to the class.

WHOLE NUMBERS

Show students that the white rod measures 1 cm by 1 cm by 1 cm. Ask, "If the white rod represents 1, what are the values of the other rods? If the white rod is named 2, what is the new value of each rod? If the orange rod is 1, what are the values of the other rods?"

BUILDING TRAINS

Ask students to build "trains" (rods connected end-to-end) of rods equal to other rods. They should find all the possible combinations of rods that are the length of a particular rod in order to investigate addends, patterns, and permutations. Ask them to write the number sentences the rods represent. Then, ask students to choose a rod and find all the one-color trains that can match the length of that rod. This can lead to a discussion about multiplication and factors. Ask them to write the number sentences the rods represent.

SYMMETRY

Build a "picture" with 4 different rods and ask students to create the mirror image. Use a mirror to show what that would be and talk about mirror symmetry being a flip of the image.

FRACTIONS

Show students one orange and two yellow rods side-by-side. Show them that one yellow is ½ of one orange. Ask them to find other ½ relationships.