Using Cuisenaire® Rods

Fractions & Decimals

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Exploring with Cuisenaire® Rods

A versatile collection of 10 colored rectangular rods, Cuisenaire® Rods are used to develop a variety of math skills. Each rod's color corresponds to a different length. The shortest rod, the white, is 1 centimeter long; the longest, the orange, is 10 centimeters long. When the rods are arranged in order of length into a pattern commonly called a “staircase,” each rod differs from the next by 1 centimeter. This allows you to assign a value to one rod and then assign values to the other rods based on the relationships between the rods. One set contains 74 rods, distributed in the quantities shown below. The 10 colors are referred to as follows:

- o = orange (4)
- e = blue (4)
- n = brown (4)
- k = black (4)
- d = dark green (4)
- y = yellow (4)
- p = purple (6)
- g = light green (10)
- r = red (12)
- w = white (22)

Using letters to represent the rods exposes students to the kind of symbolic thinking they will use later in algebra.

With Cuisenaire Rods, students can explore spatial relationships by making flat designs on a table or by stacking them to make three-dimensional designs. They soon discover how some combinations of rods are equal in length to other, single rods. This understanding provides a context for investigating symmetry.

Older students may focus on comparing the lengths of the rods and recording the results on grid paper. This helps them visualize the inherent “structure” of a design and gives them practice in using grade-appropriate arithmetic and geometric vocabulary. Though students need to explore freely, some may appreciate specific challenges, such as being asked to make designs that show fractional equivalence between two groups of rods.

Working with Cuisenaire Rods

Cuisenaire Rods provide a basic model for the numbers 1 to 10. The white rod can stand for 1, and the red rod can stand for 2 because the red rod has the same length as a “train” of two white rods. The rods from light green through orange are assigned values from 3 through 10, respectively. The orange and white rods provide a model for place value. For example, a “train” of 4 orange rods (“tens”) and 3 white rods (“ones”) is 43 white rods long.

Students enjoy a hands-on approach to solving mathematical problems. The rods make these concepts easier to grasp.
Teaching Fractions with Cuisenaire Rods
To introduce your students to fractions and Cuisenaire® Rods, start with Pairing Off on page 8. Students will gain practice in recognizing the proportional relationships between the rods before moving on to more challenging activities. Next, Name That Fraction exposes students to the equivalence between fractions. Let’s Go Shopping! introduces students to the relationship between fractions and monetary amounts. Race to the Finish requires students to use what they know about fractions to be the first to fill a game card with rods that stand for particular fractions.

Similarly, Fraction Hunt asks students to use their growing understanding to build Cuisenaire Rod trains illustrating specific fractions. The final activity, Riddle This!, requires students to apply all they have learned about the proportional relationship between the rods. In it, they write and solve riddles about fractions using rods to represent the answer to each riddle.

Teaching Decimals with Cuisenaire Rods
Even though Name That Fraction teaches fractions specifically, it has an extension that allows you to find teachable moments for decimals in your classroom.

The third activity, Let’s Go Shopping!, exposes students to decimals in the form of money, extending students’ understanding of the relationships between the decimal numbers that represent amounts of money. The final activity, Riddle This!, asks students to write and solve riddles about decimals using rod trains as visual representations.

Cuisenaire Rods and the NCTM Standards
The activities in Using Cuisenaire® Rods: Fractions & Decimals are consistent with the vision of mathematics teaching described in the Principles and Standards for School Mathematics published by the National Council of Teachers of Mathematics. All of these activities involve the use of the Process Standards: Problem Solving, Reasoning and Proof, Communication, Connections, and Representation. Each activity also focuses on one or more of the following Content Standards: Number and Operations, Algebra, Geometry, Measurement, or Data Analysis and Probability.

Depending on your students’ needs and levels, you may decide to convert any of the other activities in this book to a straightforward decimal lesson. This can be done by replacing all of the fractions in the lesson or game with decimal equivalents. Using Cuisenaire Rods books allow you the flexibility to adjust your lessons as needed.

Where Do We Go from Here?
Cuisenaire Rods are also effective models for investigating more math operations and concepts, including basic operations, Geometry, Measurement, Number Patterns, and Logical Reasoning. Look for these other titles in the Using Cuisenaire® Rods series:

LER 7527 Using Cuisenaire® Rods: Addition & Subtraction
LER 7528 Using Cuisenaire® Rods: Multiplication & Division
LER 7530 Using Cuisenaire® Rods: Geometry & Measurement
In each of the following problems, a particular rod color has been assigned the value of 1. Fill in the fraction name of the requested rod for each problem. If there is more than one name, record all that apply.

1. If y = 1, o = ____________ .

2. If d = 1, k = ____________ .

3. If n = 1, d = ____________ .

4. If r = 1, o = ____________ .

5. If p = 1, d = ____________ .

6. If p = 1, r = ____________ .

7. If g = 1, d = ____________ .

8. If e = 1, p = ____________ .

9. If g = 1, e = ____________ .

10. If o = 1, r = ____________ .
Using Cuisenaire® Rods
Fraction & Decimals, Grades 3-6
LER 7529

Discover hundreds of classroom applications for the most versatile hands-on math tool! This expansive series provides step-by-step teaching strategies and all the reproducible resources you’ll need to present major math concepts to students in Grades 1 through 6. Developed by educators to conform to the NCTM’s latest content strands and topics, each 48-page book’s six field-tested, comprehensive units include:

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