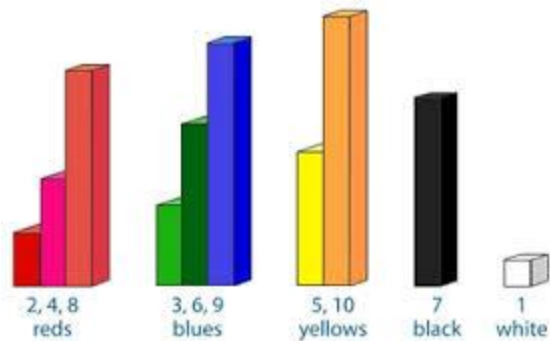


## Learning the number bonds to 10 with Cuisenaire rods



The rods are in the sizes of 1 through 10 cm. and are colored according to groups:



The rods are mostly used to represent the number of their length for addition and subtraction, laid out as a train for skip counting or in an area model for multiplication but can they also be used to represent other quantities, work on fractions, and proportions.

The number bonds are a key component of the basic number facts and can best be memorized using multi-sensorial activities, so by handling the actual rods first.

Number magnitude knowledge is the core of arithmetic and connecting a number with it's size is directly related to that. Number lines are based on this concept: a longer rod represents a larger number and it takes you to a larger distance from the starting point, the zero. Being able to visualize the size connected with a number can lay the foundation of an internal number line.

**Goal :** learning the number bonds of the numbers to 10, by visualizing their sizes

**Materials:** several of each color of the rods, coloring pencils in the Cuisenaire colors, printed pages

**Activity:** start by laying out the rods in an ascending stair format from white through orange.

Take two purple rods and think of them as slices of bread that make a sandwich, make all combinations of 2 colors that fit between them as 'fillings' (white-light green, red-red, and light green-white)

Take two yellow rods and make all combinations of 2 colors that fit between them (white-purple, red-light green, light green-red, purple-white), etc. for the dark green, black, brown, blue, and orange rods.

Take two dark green rods and make all combinations of 2 colors that fit between them (white-yellow, red-purple, light green-light green, purple-red, yellow-white) etc. for two black, brown, blue, and orange rods.

After the learner is familiar with this activity and can make the number bond combinations independently based on the size of the rods, you can start connecting the numbers to the rods.

To memorize the number bonds with numerals color in the numbers on the next pages.

Draw attention to the system by covering up the colored in pages except for the last number in the sequence and ask the learner to retrieve the combinations in order, revealing each combination after it has been mentioned. Example: cover all numbers except the 10, ask for it neighbors [9+1], show them, ask for the next neighbors [8+2], show etc. Have fun with this colorful activity!

Color - Size - Number combinations for the 10-bonds with the Cuisenaire colors

