

GETTING STARTED WITH CUISENAIRE RODS

Created by Ann Elise Record for Build Math Minds

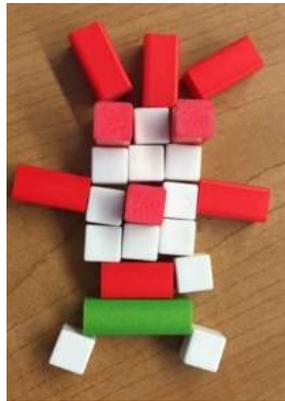
GETTING STARTED WITH CUISENAIRE RODS

One of the most versatile and powerful math tools we can use in our math classrooms is Cuisenaire Rods. From such early numeracy concepts as decomposing numbers through all the operations and then again for exploring fractions. They can be used in all classrooms. Because the Cuisenaire rods show amounts existing as a group rather than a collection of ones, they are a powerful tool to assist us as we provide opportunities for students to develop their computation past counting and into additive and then multiplicative thinking. You will most likely find some Cuisenaire rods buried in the back of your school closets under layers of dust, but it is time to get them out and into the hands of our students. I'm often asked by teachers what lessons can be done on Cuisenaire rods and my response is always, "Well, what math concept do you want to teach?" In order to help both teachers and students become more familiar with these powerful manipulatives, I've created this document to help you get started on your journey.

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PLAY!!

The very first step in exploring the Cuisenaire rods is to simply get them into the hands of the students and have them play. They will make designs that are flat to the table while others always love to build towers. I've had students write words with them and even Anna and Olaf from Frozen. The students' imaginations are limitless so let them have fun and get used to the rods. In fact, every single time I am using Cuisenaire rods in my lessons, I allow students 3 minutes to play. I tell them that I will set a timer on my phone and that at the end of the 3 minutes, the rods will then become math tools and we will no longer build with them. I also warn them that if they choose to build towers, they need to be aware that it is quite likely someone will hit the table accidentally which may knock down their tower. This not only gets the students' desire to play out of the way, but it also provides me the leverage later on when I catch someone building when we are actually exploring the math concept.



BUILDING THE STAIRCASE

Inevitably when I have students first build with the Cuisenaire rods, a couple of students will choose to take one rod of each color and build a staircase with them. This is a perfect lead in to the first official activity I have them do. I begin by asking them to find one of each color rod and arrange them from the smallest one to the largest one left to right. They will know if they have all the colors if they have 10.



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Once the staircases are built, I have students notice and wonder about the rods. These may be mentioned:

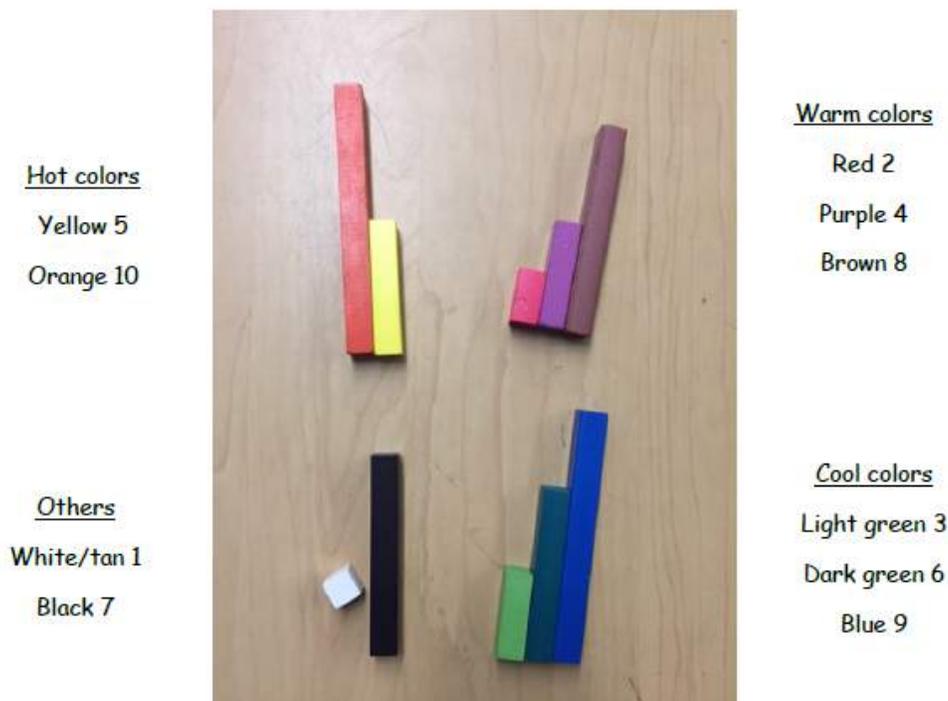
- they are different colors
- they are different sizes
- they are not in rainbow order

Here are two things I want to be sure are mentioned:

- each rod is one unit larger than the one to its left and one smaller than the one to its left
- no matter which color rod you choose, all the rods of that color will all be the same size

UNDERSTANDING THE COLORS

As a lover of rainbows, at first I didn't find the Cuisenaire rod staircases very appealing, but it turns out they are organized into smaller groups by color which is super helpful. I have labeled them here with the whole numbers 1-10, but please be aware that these same rods can be used to represent numbers 10-100, 100-1,000, .1 to 1, .01 to .1, and fractional amounts as well.



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LEARNING THE NUMBERS OF THE RODS

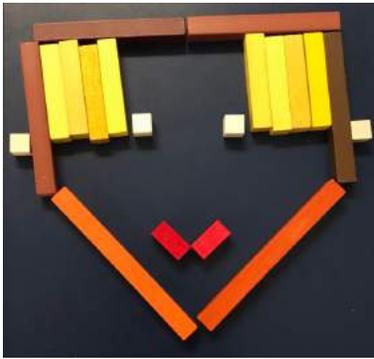
When I am first introducing these rods in any classroom, I have the rods represent the numbers 1-10 because I want to use them to help build basic fact fluency using strategies. Please be aware, though, that we are not limited to using them for the numbers 1-10. They can represent the numbers 10 – 100, 100 – 1,000, .1 to 1, .01 to .1, and so on. They are also excellent for exploring fraction relationships. At this point, though, I do want them to start by learning the rods by the 1 – 10 numbers. So, I point out that the benchmarks of 5 and 10 can once again help us. If they don't know which rod is the 6 rod, they can use the yellow 5 rod to help themselves which is more efficient than starting counting at 1 with the white cube and counting up to 6. Students are allowed to keep out staircases for as long as they wish which could be weeks. At some point, students will not need to build their staircase because they will have learned the color for each number. In my experience, the students learn the numbers of the rods faster than the teachers! To begin this part, I ask students to hold up the 5 rod from the pile of extra rods (not the staircase). They can certainly look at their staircases to help them. I then have them put that one down and I begin asking them to show me some other numbers that are pretty obvious like 1, 2, 9 and 10. I then move on to 3 and 4 since those are small enough you can almost tell how many cubes will fit inside and the 5 is so close. The 6, 7, and 8 rods are the toughest and will just need practice to learn them. The color families do help as well.

SOME INITIAL TOPIC IDEAS

100 FACES

@Simon_Gregg is a UK educator who posts a lot on Twitter about his students' explorations of Cuisenaire rods. One of my favorite activities he does is have his students build faces which have a value of 100. You can also extend this to any topic you want like animals or flowers. The idea would be to think of ways we can efficiently determine the total amount without having to count by ones. Students can then record their thinking in math journals as well. You can see lots of examples using the Twitter hashtag #hundredface.

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COMMUTATIVE PROPERTY

One of the fundamental properties we can begin exploring with students as young as kindergarten is the Commutative Property of Addition. We don't need to call it that, and we don't even need to record it as equations. We can simply say yellow and purple is the same as purple and yellow.



Some students may be ready to attach numbers as well as some math vocabulary like, “5 plus 4 is the same as 4 plus 5” or “5 plus 4 equals 4 plus 5. Again, it will be up to the readiness level of the individual student. Once we discuss this as a class, I then have them pick two favorite colors and build me another example of this situation.

Once it is built, I have them tell me the equivalency phrase again using colors or the numbers depending on the student.

NUMBER EQUATIONS

One of the first topics I like to explore are number sentence relationships related to math fact fluency. If I were working with students on the Plus 1 strategy, we might build this:

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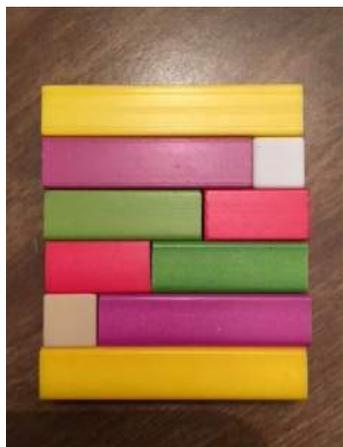


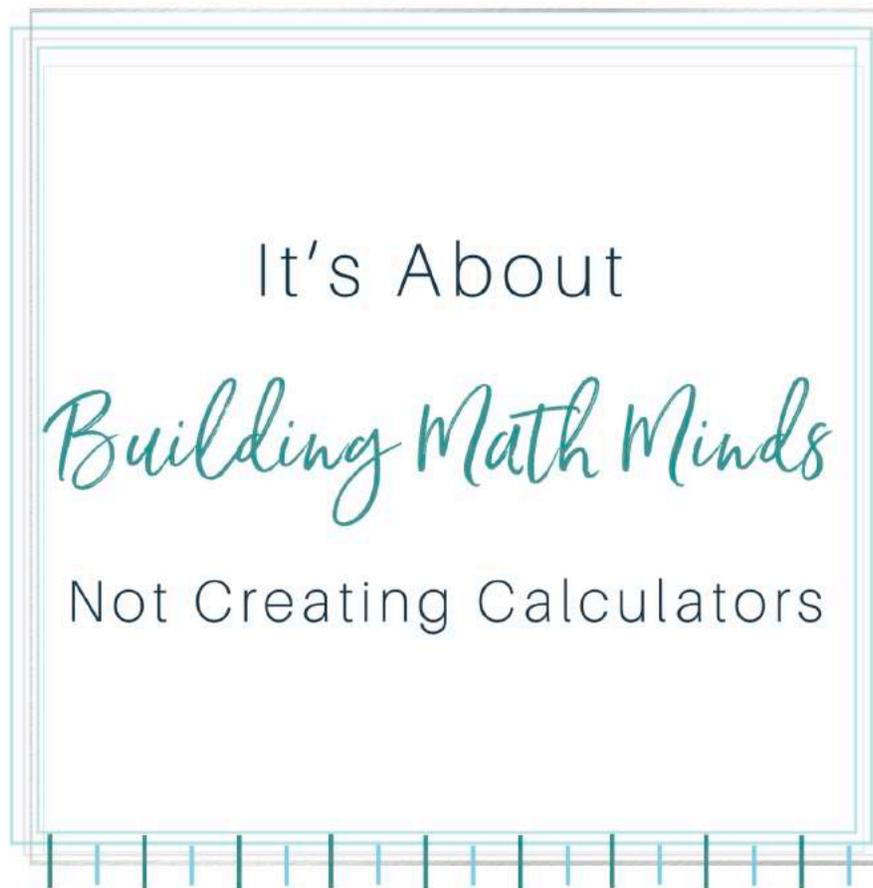
When we record the matching equation, it might look like this: $4 + 1 = 5$. But the possibilities don't end there. What about if we changed the order of the addends and wrote $1 + 4 = 5$? This is demonstrating the Commutative Property of Addition. Also, what if I recorded $5 = 4 + 1$. That's a valid equation for this situation because the value on both sides of the equal sign are the same. I could also write $5 = 1 + 4$. In 1st grade we officially begin exploring the concept of equality with students. It is super important, then, that students see equations written with the answers on the left side of the equal sign as often as they do with the answers on the right. If we don't do this, we run the risk of students thinking that the equal sign is an action symbol and that when they see it they need to calculate something. Instead, the equal sign is a relational symbol...the value on the left must be the same as the value on the right.

DECOMPOSING NUMBERS

Cuisenaire rods are the perfect math tool for exploring the decomposition of numbers including fractions and decimals down the road. Students are able to see all the combinations of two addends that make up the original one. They can also see the underlying patterns of one being taken from one and given to the other. Students will notice the upside down staircase and exactly where the Commutative Property enters the situation. With even numbers, you can also see a doubles fact so you know the total number must be even. One of the word problem types we need to explore with children is part-part-whole where both parts are unknown. Cuisenaire rods are perfect for exploring these situations so students can feel confident that they have found all the possible combinations by systematically exploring the pairs of addends that make up the whole amount.

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Teaching math isn't easy and for a lot of teachers, it isn't fun...like AT ALL!! Especially in this era of education, there are a lot of unknowns about what and how we should be teaching. You are NOT alone. With the implementation of new standards, assessments, and (for some) new curriculum, teachers are feeling bogged down and yet left out on their own to make sense of it all. Build Math Minds is here to help with that.

The Build Math Minds site has professional development videos for elementary teachers on all topics of mathematics. You can earn PD credits from the comfort of your home, at times that are convenient for you. Inside the BMM site, we focus on building Content, Community, and Your Confidence.

Build Math Minds is designed to build your Content Knowledge, your Confidence in teaching math, and give you a Community of like-minded educators that understand what you are going through as you try to build math-thinkers, not calculators.