

## CUISENAIRE RODS

### Background:

Georges Cuisenaire (a Belgian Primary School teacher) first promoted the use of the rods through the book, *Numbers in Colour*, in the 1950s, which was written with Caleb Gattegno. There are 10 rods ranging in size from white (1cm) to orange (10cm). They are also called coloured rods or relational rods.



### Information:

Today, many mathematics' equipment suppliers package Cuisenaire rods (or coloured rods) in mixed containers (between 150 and 250 rods). To use the rods with students you will need approx.1500 rods (10 standard containers) for a whole class.

### Activities:

The rods can be used for a range of investigations, from partitioning numbers, to working with the four operations, to investigating patterns. As the rods are relational, any rod can be the unit. For example, traditionally the white rod will represent one so the orange rod will represent ten. Instead, if we think of the white rod as representing two, the orange rod would represent 20. Alternatively, if the white rod represented one-half, the orange rod would represent ten halves or 5, etc. When working with the rods, students will often place the rods into rows. These are often referred to as *trains*.



### Partitioning Numbers:

Use the rods to show all the ways to represent a certain number. For example, show all the ways to make 5.

### Difference:

Find pairs of rods that have the same difference. For example, find pairs of rods that have a difference of 3.



### Multiplication:

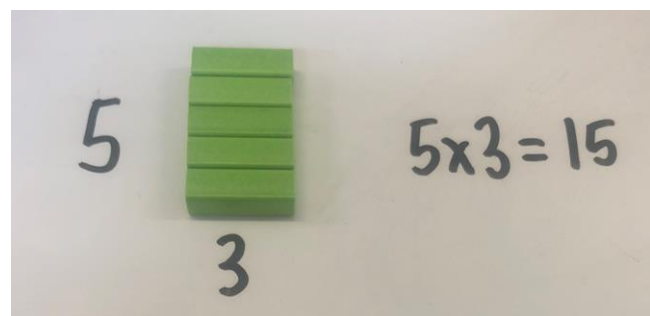
The rods can be used to make Factor trains, i.e. use rods of the same colour to try and make the rod (number) you are investigating. Rods that can only be made with the white rods are the prime numbers.

The rods can be used to represent multiplication facts either as a row or as an array. Students will be able to link these representations to the symbols. For example, use the rods to show  $5 \times 3$ .

Double-digit multiplication can also be modelled using the rods.

### Division:

Choose the number you wish to investigate, then use rods of the same colour to create a series of trains. This process will help show which numbers divide equally and which numbers will leave a remainder.



### Patterns & Algebra:

Use the rods to create, continue and investigate different number patterns. For example, choose rods of only one colour and create a square that shows 100. Which colours will work? Does the colour (number) need to be a factor of 100?

**More Information:**

AMSI Calculate

<https://calculate.org.au/>

NRICH: Playing with Cuisenaire

<https://nrich.maths.org/14506>

NRICH: Cuisenaire Environment

(online version of Cuisenaire rods)

<https://nrich.maths.org/4348>

Maximising math mentality (Sarasota County Schools):

Cuisenaire rods – Teacher tools and videos

<http://math.sarasotacountyschools.net/cuisenaire-rods/>

Following Learning (Simon Gregg's blog): Cuisenaire Squares

<http://followinglearning.blogspot.com/2015/01/cuisenaire-squares.html>

Following Learning (Simon Gregg's blog): Hundred Faces

<http://followinglearning.blogspot.com/2015/12/hundred-faces.html>

Spatial Puzzles: Cuisenaire Cover-ups (Mark Chubb)

<https://buildingmathematicians.wordpress.com/2019/09/25/spatial-puzzles-cuisenaire-cover-ups/>

Skyscraper Templates – for Relational Rods (Mark Chubb)

<https://buildingmathematicians.wordpress.com/2018/12/20/skyscraper-templates-for-relational-rods/>

National Centre for Excellence in the Teaching of Mathematics (NCETM): What are Cuisenaire rods?

[Video] <https://vimeo.com/362787043>

Association of Teachers of Mathematics (ATM): Cuisenaire Rods with Helen Williams & Mike Ollerton

[Video] [https://youtu.be/1RUQbKU\\_FhY](https://youtu.be/1RUQbKU_FhY)

ATM: Working with Rods and why [pdf]

[https://www.atm.org.uk/write/MediaUploads/Resources/Cuisenaire\\_Rods\\_and\\_Why\\_book.pdf](https://www.atm.org.uk/write/MediaUploads/Resources/Cuisenaire_Rods_and_Why_book.pdf)

ATM: Cuisenaire Rods - Gattegno and other films [video]

<https://www.atm.org.uk/Cuisenaire-Rods---Gattegno-and-other-films>

**References:**

Cuisenaire, G. & Gattegno, C. (1959). *Numbers in colour: A new method of teaching arithmetic in primary schools*. Surrey, Great Britain: Heinemann.

Gattegno, C. (1961). *Arithmetic: A teacher's introduction to the*

*Cuisenaire-Gattegno method for teaching arithmetic*. Retrieved from

<https://eclass.uoa.gr/modules/document/file.php/ECD390/Gattegno%20-%20Arithmetic%20-%20A%20Teachers%20Introduction%20to%20Cuisenaire-Gattegno%20Methods.pdf>

