

Title: Rulers of Logarithms

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Topics: Some properties of logarithms

Connection to Core Curriculum: None specified

Overview: Students will use rulers to learn about a few of the different logarithm properties.

Objectives: Students will learn the addition, subtraction and multiplication properties of logarithms.

Material Needed: Regular rulers, and modified rulers. Enough for two rulers of each kind per group. A doc cam, and a white board.

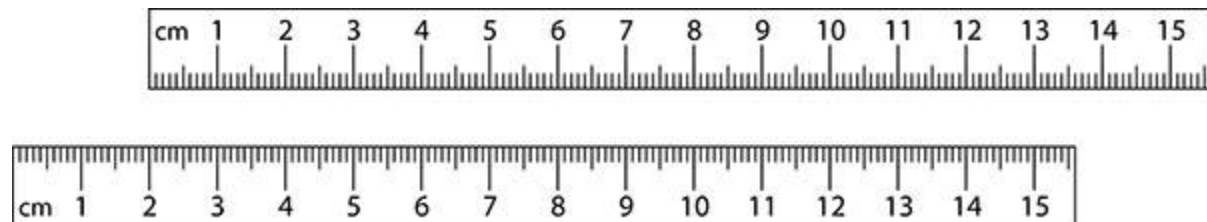
Web Reference: <http://illuminations.nctm.org/lesson.aspx?id=3024>

Logarithms Demystified

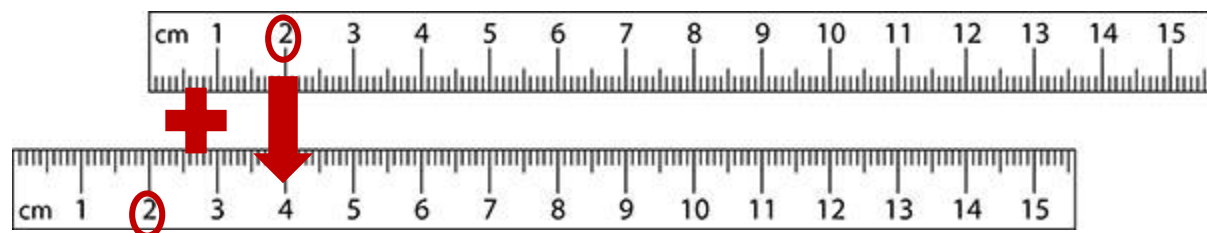
Authors: Ellen R. S. Bush and Baton Rouge, LA

Activity Plan:

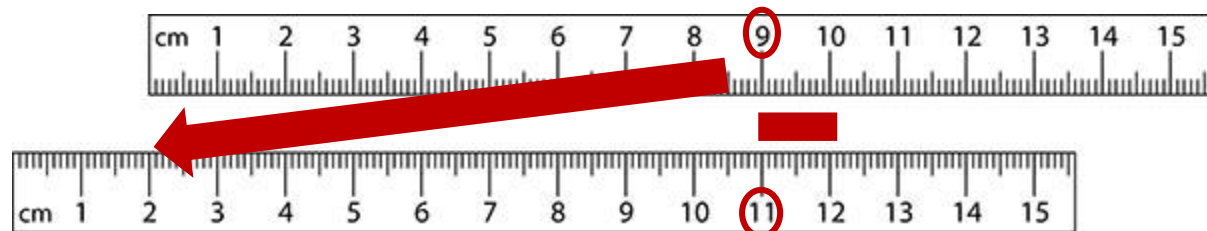
1. Hand out the regular rulers and demonstrate on the doc cam with rulers how to set the rulers up for addition. Below, the rulers are set up for the addition of 2 with another value.



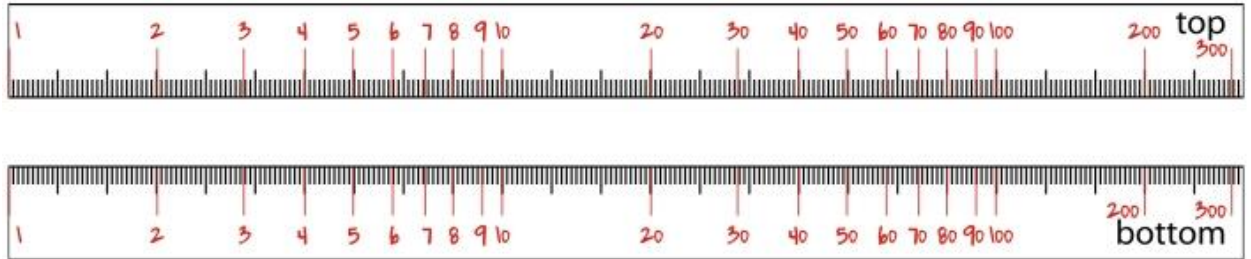
Show the students how it works for  $2+2=4$



Show students that this also works for subtraction, such as  $11-9$ .

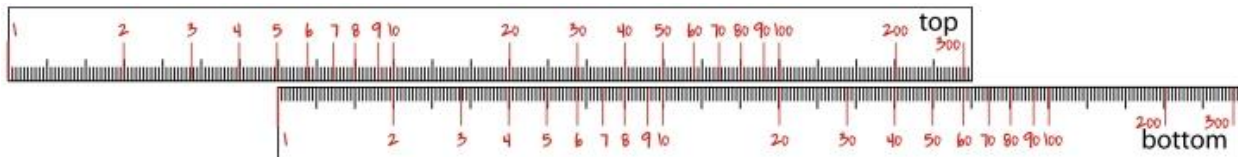


- Let the students play around with this for a moment on their own until you feel like they understand the concept. If desired, put a few prompts on the board for them to complete on their own.
- Then hand out the logarithm rulers such as the ones below.



First, have the students examine the ruler. Talk about the distance between each of the numbers. Write down some attributes of these rulers together as a class on the board.

- Have the student line up the rulers as they did before as if for addition, offset by some number. For example:

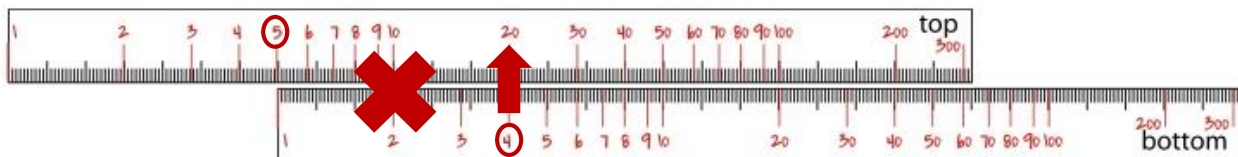


So this would be 5 over and then concentrate on the values on the bottom ruler and how they line up with the values on the top ruler.

Have students play around with these numbers and relationships between them for a while.

- Then pull the class together and ask if there are any conjectures for what the relationship between the two sets up number could be.

Some students should be able to explain that the two numbers are being multiplied to obtain the new value. For example:



- Hand out the worksheet Logarithms and have them work through the questions using their calculators and their rulers.
- Pull the class together to discuss the logarithm properties that the worksheet prompted the students to discover.

References: See Web References above.