

FINDING LENGTHS OF TRAINS

Materials:

Cuisenaire® Rods for each child
Cuisenaire® Rods for the teacher

Settings:

A small group led by the teacher
A whole class led by the teacher

Learning Experience:

Ask the children to place a yellow rod and a red rod end-to-end. Then ask the children to find a one-car train that matches this two-car train. Some children may try several rods beside the two-car train before they find the black rod that matches exactly. The results can be stated in an addition sentence: yellow plus red equals black. The cars in the two-car train are called addends, and the one-car train that matches is called the sum.

Y	R
K	

Also when a third rod matches a two-car train, this configuration is called a rod triple or a triple of rods. Ask the children to build several rod triples like this. Have the children choose the two-car trains from the five smallest rods so that the result is always a one-car train. For example:

1. white plus red equals green.
2. green plus green equals dark green.
3. yellow plus green equals brown.
4. purple plus green equals black.

Students will enjoy creating problems for the class to solve and verifying the results. Once they've worked with the smallest rods, consider giving them other examples where longer rods are used, but results will still be a one-car train. For example:

1. dark green plus white equals black.
2. dark green plus red equals brown.
3. black plus green equals orange.
4. blue plus white equals orange.

If the students try something like black plus yellow, simply say that the sum is longer than an orange rod, or that it is more than orange. Please note that "Orange plus" stories for sums greater than orange are developed on pages 31 and 57. Sums greater than 10 are developed on page 58.



Underlying Mathematics Related to NCTM Standards:

Recognition of equivalencies of lengths
Use of the terms rod triple or triple of rods
Meaning of addition
Use of the terms addend and sum
Association of sums with addends
Visual thinking
Communication and verbalization of ideas
Reasoning and proof

INTRODUCING THE PLUS SIGN

Materials:

Cuisenaire® Rods for each child

Settings:

A small group led by the teacher
A whole class led by the teacher

Learning Experience:

Ask the children to make all the two-car trains for the purple rod and to describe each train in words.

P		purple
W	G	white plus green
R	R	red plus red
G	W	green plus white

The children should say the colors that correspond to the codes. The use of coding doesn't need to be viewed as algebraic. The letter should be read as a color name and not as an alphabet name. For example, D + P is read as "dark green plus purple." The purpose of the coding is to provide a shorthand way to share the information in writing. At this stage, children do not need to match each train with a single rod to find the sum. The purpose of this activity is to just introduce the plus sign.

Now introduce the symbol "+" for "plus," and record each two-car train with coding:

$$W + G \quad R + R \quad G + W$$

Ask the children to make all the two-car trains for the yellow rod and record each train with coding (W + P, R + G, G + R, P + W). Then, write these plus stories on the board and have the children build the trains:

$$\begin{array}{lll} R + D & G + Y & D + G \\ E + W & P + Y & K + R \\ N + R & W + Y & R + K \end{array}$$

W	for	<u>W</u> hite
R	for	<u>R</u> ed
G	for	<u>G</u> reen
P	for	<u>P</u> urple
Y	for	<u>Y</u> ellow
D	for	<u>D</u> ark Green
K	for	blac <u>K</u>
N	for	brow <u>N</u>
E	for	blu <u>E</u>
O	for	<u>O</u> range



Underlying Mathematics Related to NCTM Standards:

- Recognition of equivalencies of lengths
- Association of codes with rods
- Association of rods with codes
- Association of codes with color names
- Meaning of addition
- Use of the plus sign
- Communication and verbalization of findings

WORKSHEET ON PRACTICING THE PLUS SIGN

Name: _____

Date: _____

Color the train picture for each plus story.

W	for	<u>W</u> hite	D	for	<u>D</u> ark Green
R	for	<u>R</u> ed	K	for	<u>b</u> lack
G	for	<u>G</u> reen	N	for	<u>b</u> row <u>N</u>
P	for	<u>P</u> urple	E	for	<u>bl</u> u <u>E</u>
Y	for	<u>Y</u> ellow	O	for	<u>O</u> range

1 P + Y

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2 D + R

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3 G + K

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

4 K + E

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

5 N + D

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

6 Y + D

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--