Comparing Strips of Unmeasured Lengths III

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Summary	This is the third lesson in the "Strips of Unmeasured Lengths" series that focuses directly upon the algebraic representation of measurements and their multiplicative relations. We will work with the relationship $B = 3S$, focusing on equations and their verbal descriptions and on true and false equations and statements.
Goals	1. To introduce children to algebraic notation for measurements and to argumentation on true and false statements.
Materials	Pairs of strips (strips should be of various lengths and each child will receive a pair of strips where the shorter one is one third the length of the longer one), Overheads, Handouts
Keywords	Compare/Contrast Functions Describing Magnitudes Fractions Function Representations Hands-On Activity Interpretation of Equations Interpretation of Stories Production of Equations Production of Stories Ratios
Notes	For a longer discussion guide about comparing lengths, see the lesson "Comparing Strips of Unmeasured Lengths – I"

Activity Plan:

1. Representing the relationship (Individual and Small Group/Whole Class)

   Give each child two strips of paper. The longer strip should be exactly *three times* the length of the shorter one.

   Suggest that the children represent the length of the short strip as S and the length of the long one as B. Ask them to suggest how to complete the following:

   $$S =$$

   $$B =$$

2. Discussing True/False Statements (Whole Class)

   Children will work with the relationship $B = 3S$. Write some of the following statements on the board and ask the children: Are they True or False? Why?

   $$3 \times S = B$$

   $$3B = S$$

   $$B/3 = S$$

   $$\frac{1}{2} S \times 2 = B$$

   $$3B = 3 \times S$$

3. Judging Statements

   Distribute Page 1 handout. Here the questions refer to three lengths: S, B, and L. Ask children to determine which statements about the relationship between the lengths of S, B, and L are true or false.

4. Homework - Judging Statements (Page 2)

   Children will determine which statements about the relationship between the lengths of S and B are true or false for the case where $B = 3S$.

Overhead and Handout **(Page 1)**

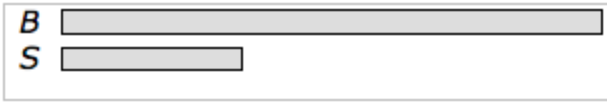
Name: _____ Date: _____

B is three times the length of *S*.
L is two times the length of *S*.

Formula	Verbal statement	True or False	Explain why you think it is true or false.
$S = B \div 3$			
	The length of *B* is equal to the length of *S* multiplied by three		
$B \times 3 = S$			
	Nine times *S*'s length is equal to three times *B*'s length		
	B's length is less than *S*'s length		
$S + S + S = B$			
$B - S = 2S$	*B*'s length minus *S*'s length is equal to 2 times *S*'s length		
	L's length is equal to 2 times *S*'s length		
$2 \times B = 3 \times L$			

Overhead and Homework **(Page 2)**

Name: _____ Date: _____



B is three times the length of *S*.

Formula	Verbal statement	True or False	Explain why you think it is true or false.
$S = B \div 3$			
	The length of *B* is equal to the length of *S* multiplied by three		
$B \times 3 = S$			
	Two times *S*'s length is equal to *B*'s length		
	B's length is less than *S*'s length		
$S + S + S = B$			
	B's length take away two times *S*'s length is equal to *S*'s length		