

Lesson 38: Algebra-Solving Multiplication Equations

Objective Students will be able to solve equations by using the division property of equality.

Warm up

Write this problem on the chalkboard: $S \times 4 = 12$.

See the **Note about pre-algebra** on page 103.

THINK:

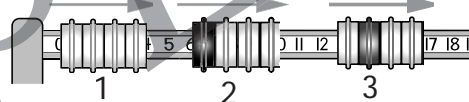
1. Ask, "What is known?"
2. What number (S) times 4 equals 12?
(S is unknown, it is the variable)
3. To get S by itself, **divide both sides of the equation by 4**.
(What is done to one side of the equation must be done to the other side to keep it equal)
4. Divide by 4 on MathLine and the answer shows itself. Count the groups.
(4's cancel out and $12 \div 4$ equals 3)
5. To check: Replace S with 3.

12 is the product that is known.



$$S \times 4 = 12$$

$$(S \times 4) \div 4 = 12 \div 4$$



$$S = 3$$

$$3 \times 4 = 12$$

Student Page

Read the Practice section aloud as students read it silently. Encourage them to model the problem using their MathLines. Have them complete the other activities independently.



Test Preparation

Pair students. Have one student write a multiplication equation on a piece of paper. Have the other student model it on MathLine and find the solution. Switch roles.

Extension

Have each student pick a number between 2 and 9. Then, have them write four multiplication equations that have the number as a solution.

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Practice

Solve the equation: $n \times 6 = 18$.

THINK:

1. What is known?
2. What number (n) times 6 equals 18?
(n is unknown, it is the variable)
3. To get n by itself, **divide both sides of the equation by 6**. (What is done to one side of the equation must be done to the other side to keep it equal)
4. Divide by 6 on MathLine and the answer shows itself. Count the groups. (6's cancel out and $18 \div 6$ equals 3)
5. To check: Replace n with 3.

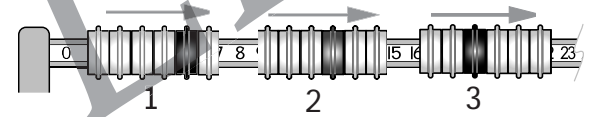
A variable is a symbol or letter, such as n, that represents an unknown number.

18 is the product that is known.



$$n \times 6 = 18$$

$$(n \times 6) \div 6 = 18 \div 6$$



$$n = 3$$

$$3 \times 6 = 18$$

Activities

Solve and check.

$n \times 8 = 16$
 $n = \underline{2}$
 check: $2 \times 8 = 16$

$y \times 4 = 32$
 $y = \underline{\hspace{2cm}}$
 check:

$6 \times n = 48$
 $n = \underline{\hspace{2cm}}$
 check:

$8 \times c = 64$
 $c = \underline{\hspace{2cm}}$
 check:

$3 \times b = 12$
 $b = \underline{\hspace{2cm}}$
 check:

$k \times 7 = 63$
 $k = \underline{\hspace{2cm}}$
 check:

Application

1. A botanist was measuring tree growth. A tree grew an average of 6 inches a year for a total of 36 inches. How many years has the tree been measured?

Challenge

1. Explain how to solve $n \times 9 = 27$.
2. Write a multiplication equation. Check it.