

Multiplying Fractions

Facts Practice: Simplify 60 Improper Fractions (Test H in Test Masters)

Mental Math: How many millimeters are in a centimeter? How many centimeters are in a meter? Hold two fingers one centimeter apart. Hold your hands one meter apart.

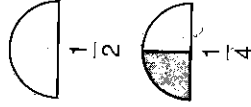
- a. CLXVI b. CXLIV c. 50% of \$5.00
 d. $1 - \frac{7}{12}$ e. $\sqrt{9} \times 9 + 1 + 4 + 3 \times 8 + 1 + 1 + 9$

Problem Solving: Copy this multiplication problem and fill in the missing digits.

$$\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$$

We have added and subtracted fractions. In this lesson we will multiply fractions. When we add and subtract fractions, we count how many of the same size parts there are. When we multiply fractions, the sizes of the parts change. Consider this multiplication problem: How much is one half of one half?

Using our fraction manipulatives, we show one half of a circle. To find one half of one half, we divide the half in half. We see that the answer is one fourth.



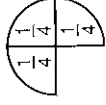
Written out, the problem looks like this.

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

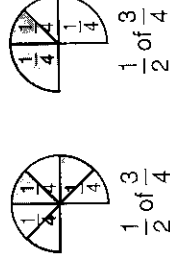
We find the answer to a fraction multiplication problem by multiplying the numerators to get the new numerator

Example 1 What fraction is one half of three fourths?

Solution First we show three fourths.



To find one half of three fourths, we may either divide each fourth in half or divide three fourths in half.



Since one half of one fourth is one eighth, one half of three fourths is three eighths. We may also find one half of three fourths by multiplying.

$$\begin{array}{r} \text{one half of three fourths} \\ \downarrow \quad \downarrow \\ \frac{1}{2} \times \frac{3}{4} = \frac{3}{8} \end{array}$$

We multiplied the numerators to find the numerator of the product, and we multiplied the denominators to find the denominator of the product.

Example 2 Multiply: $\frac{2}{3} \times \frac{4}{5}$

Solution We find two thirds of four fifths by multiplying.

$$\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$$

23. What does the machine do to the numbers that are put into it?
 (54)
- A. It adds 3. B. It doubles the number.
 C. It divides by 2. D. It multiplies by 3.
24. If Matthew puts in a 12, what number will come out?
 (54)
25. Matthew put in a number and 20 came out. What number did Matthew put in the machine?
 (54)

LESSON 87

Converting Units of Weight and Mass

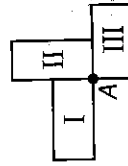
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Mental Math: How many centimeters are in a meter? How many millimeters are in a meter? Hold your fingers a centimeter apart. Hold your hands a meter apart.

a. CC

b. CXCIX

Problem Solving: If rectangle I is rotated a quarter of a turn clockwise around point *A* it will be in the position of rectangle II. If it is rotated again, it will be in the position of rectangle III. If it is rotated again, it will be in the position of rectangle IV. Draw the congruent rectangles I, II, III, and IV.



As you grow, there is more and more “of you.” How do you measure how much of you there is?

When you go to the doctor for a checkup, the doctor measures many things about you. The doctor measures