

3.3 & 3.4 Multiplying Fractions & Multiplying Mixed Numbers

Friday, October 16, 2015 8:34 AM

Unit 3: Operations with Fractions

Math 8

Name _____

3.3 Multiplying Fractions

To multiply fractions without using a model, multiply the numerators and multiply the denominators.

numerator
denominator

$$\rightarrow \frac{3}{4} \times \frac{2}{5} = \frac{3 \times 2}{4 \times 5} = \frac{6}{20} \div 2 = \frac{3}{10} \leftarrow \text{lowest terms}$$

If the numerators and the denominators have common factors, divide by the common factors before multiplying.

$$\frac{5}{12} \times \frac{8}{15} = \frac{\cancel{5}^1 \times \cancel{8}_2}{\cancel{12}_3 \times \cancel{15}_3} = \frac{1 \times 2}{3 \times 3} = \frac{2}{9}$$

$\frac{5}{12} \div 5 = 1$	$\frac{8}{15} \div 4 = 2$
$\frac{12}{15} \div 4 = 3$	$\frac{15}{12} \div 5 = 3$

common factor
common factor

Try these:

$$1. \frac{3}{5} \times \frac{6}{7} = \frac{18}{35}$$

$$2. \frac{\cancel{2}^1 \times \cancel{6}_2}{\cancel{5}^1 \times \cancel{15}_3} = \frac{2 \times 2}{5 \times 7} = \frac{4}{35}$$

$$3. \frac{\cancel{8}^2 \times \cancel{9}_3}{\cancel{18}_2 \times \cancel{16}_4} = \frac{1 \times 1}{2 \times 2} = \frac{1}{4}$$

3.4 Multiplying Mixed Numbers

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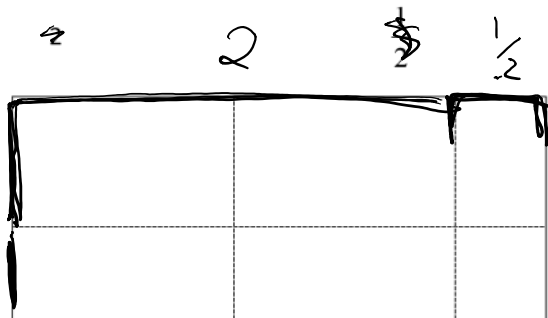
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An area model is often useful for visualizing multiplication of mixed numbers.

$$\begin{aligned}
 2\frac{1}{2} \times 1\frac{3}{4} &= (2 \times 1) + \left(\frac{1}{2} \times 1\right) + \left(2 \times \frac{3}{4}\right) + \left(\frac{3}{4} \times \frac{1}{2}\right) \\
 &= 2 + \frac{1}{2} + \left(\frac{3}{2}\right) + \left(\frac{3}{8}\right) \\
 &= \frac{16}{8} + \frac{4}{8} + \frac{12}{8} + \frac{3}{8} \\
 &= \frac{35}{8} = 4\frac{3}{8}
 \end{aligned}$$



Another way to multiply mixed numbers is to first convert to improper fractions.

$$\begin{aligned}
 1\frac{1}{5} \times 3\frac{1}{8} &= \frac{6}{5} \times \frac{25}{8} \\
 &= \frac{3 \times 5}{1 \times 4} \\
 &= \frac{15}{4} \\
 &= 3\frac{3}{4}
 \end{aligned}$$

How do we convert a mixed number to an improper fraction?

Remember the checkmark method!

$$\begin{array}{r}
 5 \\
 \checkmark 2 \\
 \checkmark 6
 \end{array}$$

Multiply the denominator by the whole number and add the numerator.

$$\begin{array}{r}
 12 + 5 \\
 = 17 \\
 \hline
 6
 \end{array}$$

$$\text{So, } 2\frac{5}{6} = \frac{17}{6}$$

① Assignment: 3.1-3.4 Review Handout for marks due in class

② Pg 118-120 #4,5a,7,9(just solve), 12, 15, 18

Pg 125-126 #4-6, 9-11, 13

③ Quiz Wednesday 3.1-3.4