

NAME: _____

DATE: _____

BLOCK: _____

Lesson 12 - Multiplication & Division of Fractions

Rules for multiplying fractions:

1. Convert all mixed fractions into improper fractions.
2. Reduce the fractions if possible.
3. Multiply the numerators (top #s) together.
4. Multiply the denominators (bottom #s) together.
5. Convert your fraction to mixed fractions and reduce if necessary.

Example #1: $\frac{3}{4} \times \frac{14}{15} = \frac{42}{60}$ } Proper Fraction
therefore, all we need to do
is reduce/simplify it.

$\frac{42 \div 2}{60 \div 2} = \frac{21 \div 3}{30 \div 3} = \boxed{\frac{7}{10}}$

Handwritten multiplication steps:

$$\begin{array}{r} 14 \\ \times 3 \\ \hline 42 \end{array}$$

$$\begin{array}{r} 15 \\ \times 4 \\ \hline 60 \end{array}$$

Example #2: $2\frac{1}{2} \times 3\frac{3}{4}$

(#1) $2\frac{1}{2} = \frac{5}{2}$

(#2) $3\frac{3}{4} = \frac{15}{4}$

(#3) $\frac{5}{2} \times \frac{15}{4} = \frac{75}{8}$ } Improper Fraction
convert to mixed fraction

Handwritten division steps:

$$\begin{array}{r} 9 \text{ R } 3 \\ 8 \overline{) 75} \\ \underline{-72} \\ 3 \end{array}$$

Mixed fraction result: $\boxed{9\frac{3}{8}}$

Rules for dividing fractions:

1. Convert all mixed fractions to improper fractions.
2. Method #1: Write the reciprocal or multiplicative inverse of the divisor. (Flip the second fraction!) OF Method #2: cross multiply
3. Proceed as you would in a multiplication question.

Example #1: $\frac{4}{9} \div \frac{10}{12}$

Method #1: Flip the 2nd fraction

$$\frac{4}{9} \times \frac{12}{10} = \frac{48}{90} \div 2 = \frac{24}{45} \div 3 = \boxed{\frac{8}{15}}$$

Method #2: Cross multiply

$$\frac{4}{9} \div \frac{10}{12} = \frac{48}{90} = \boxed{\frac{8}{15}}$$

Example #2: $3\frac{1}{3} \div 2\frac{2}{5}$

#1 Turn mixed fractions into improper fractions

$$3\frac{1}{3} = \frac{10}{3}$$

$$2\frac{2}{5} = \frac{12}{5}$$

#2 Flip the second fraction

$$\frac{10}{3} \div \frac{12}{5} = \frac{10}{3} \times \frac{5}{12}$$

$$\frac{10}{3} \times \frac{5}{12} = \frac{50}{36}$$

Improper Fraction

Convert to a mixed fraction

#3

$$\frac{50}{36} = 1\frac{14}{36} \div 2 = \boxed{1\frac{7}{18}}$$

$$\begin{array}{r} 4 \overline{) 50} \\ - 36 \\ \hline 14 \end{array}$$