Multiplying Fractions

Objective: To multiply fractions & mixed numbers
Multiplying Fractions:

To multiply fractions, multiply the numerators and multiply the denominators. Then simplify if possible.

Example:

\[
\frac{4}{5} \times \frac{3}{7} = \frac{4 \times 3}{5 \times 7} = \frac{12}{35}
\]
Your Turn:

Solve each problem. Simplify if possible.

a) \[
\frac{4}{7} \times \frac{2}{3} = \frac{8}{21}
\]

b) \[
\frac{2}{9} \times \frac{1}{5} = \frac{2}{45}
\]
Multiplying with Whole Numbers:

When multiplying a fraction with a whole number, change the whole number into a fraction by putting 1 as its denominator.

**Example:**

\[
\frac{3}{11} \times (-4) = \frac{3}{11} \times (-\frac{4}{1}) = -\frac{12}{11} \quad \text{or} \quad -1 \frac{1}{11}
\]
Your Turn:

Solve each problem. Simplify if possible.

c) $-5 \times \frac{2}{3} = -\frac{10}{3} \text{ or } -3 \frac{1}{3}$

d) $-\frac{4}{9} \times (-11) = \frac{44}{9} \text{ or } 4 \frac{8}{9}$
Multiplying with Mixed Numbers:

Before multiplying a mixed number, you must **change it into an improper fraction**.

**Example:**

\[
3 \frac{2}{5} \times \frac{5}{5} = \frac{5 \times 3 + 2}{5} = \frac{17}{5}
\]
Examples:

Solve each problem. Simplify if possible.

e) \[
\frac{1}{5} \times 2 \frac{2}{3} = \frac{1}{5} \times \frac{8}{3} = \frac{8}{15}
\]

f) \[
4 \frac{1}{2} \times 1 \frac{2}{5} = \frac{9}{2} \times \frac{7}{5} = \frac{63}{10} \text{ or } 6 \frac{3}{10}
\]
Simplifying:

When the numerator and denominator of either fraction have a common factor, you can simplify before multiplying.

Example:

\[
\frac{2}{7} \times \frac{2}{3} \quad = \quad \frac{2}{7} \times \frac{2}{1} = \frac{4}{7}
\]
Your Turn:

Solve each problem. Simplify if possible.

\[ g) \quad -\frac{1}{4} \times \left( -\frac{8}{9} \right) = \left( \frac{2}{9} \right) \]

\[ h) \quad -1\frac{3}{4} \times 6 = -\frac{21}{2} \quad or \quad -10\frac{1}{2} \]
Homework:

Homework: Pg. 315-316 #1-17 (all)
Pg. 318 #32-38 (evens)