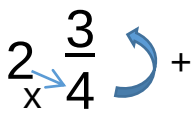
Fraction Guide

Converting Between Mixed Numbers and Improper Fractions

- Changing an improper fraction to a mixed number is a division problem.

$$\frac{9}{4} = 9 \div 4 = 2\frac{1}{4}$$

- Changing a mixed number to an improper fraction – use multiplication and addition.



$$2\frac{3}{4} = \frac{(2 \times 4) + 3}{4} = \frac{11}{4}$$

Adding Mixed Numbers

Add the whole numbers. Add the fractions.
If the fraction is improper you need to change it to a mixed number and add it to the whole number.

$$3\frac{5}{8} + 4\frac{6}{8} = 7\frac{11}{8} \Rightarrow \frac{11}{8} = 1\frac{3}{8}$$

$$7 + 1\frac{3}{8} = 8\frac{3}{8}$$

Multiplying Fractions

Multiply the whole number by the numerator. The denominator does not change.

$$6 \times \frac{3}{5} = \frac{18}{5} = 3\frac{3}{5}$$

Making an Equivalent Fraction

Multiply the numerator and denominator by the same number.

$\frac{1}{5}\ \overset{x3}{=}\ \frac{3}{15}$ $\qquad$ $\frac{2}{3}\ \overset{x5}{=}\ \frac{10}{15}$

Comparing Fractions

Same denominator

When the fraction has the same denominator you can just compare the numerators.

$\frac{1}{9} < \frac{4}{9}$ $\qquad$ $\frac{6}{7} > \frac{3}{7}$

Same numerator

When the fraction has the same numerator you need to think about how many pieces there are.

It's the opposite thinking from comparing whole numbers because the *smaller* denominator is the *bigger* part.

½ (one out of two pieces) is a lot more than 1/10 (one out of ten pieces).

This is divided into 7 pieces, so the pieces are larger. → $\frac{6}{7} > \frac{6}{9}$ ← *This is divided into 9 pieces, so the pieces are smaller.*

Different numerators and denominators

When the denominators are different you can solve the problem by cross multiplying.

You have to multiply from the bottom up. The side with the greater product is greater.