Name: _____                    Date: _____

# Mixed and Improper Fractions

When fractions are bigger than 1, they can be written as either **Improper Fractions** or **Mixed Fractions**.

An Improper Fraction has a numerator that is bigger than it's denominator.

For example,

$$\frac{7}{2}$$ ← Numerator
← Denominator

The Numerator can be any **Integer** value.

The Denominator can be any **non − zero Integer** value. This means, the bottom of a fraction **is never 0**.

Mixed Fractions will always have a whole number and a Proper Fraction.

For example,

$$3\frac{5}{8}$$ ← Reduced Proper Fraction

↑ Whole Number

Remember that a Proper Fraction has a numerator that is smaller than it's denominator.

## Converting a Mixed Fraction to an Improper Fraction

$$3\frac{5}{8}$$

First, we multiply the whole number (3) by the denominator (8) and eventually add it to the 5 in the numerator:

$$3\frac{5}{8} = \frac{(3)(8)+5}{8}$$

The denominator stays the same (8).

$$3\frac{5}{8} = \frac{24+5}{8}$$

$$3\frac{5}{8} = \frac{24+5}{8}$$

$$3\frac{5}{8} = \frac{29}{8}$$

So, $\frac{29}{8}$ is the Improper Fraction that is equivalent to $3\frac{5}{8}$.

## Converting an Improper Fraction into a Mixed Fraction

First, we have to figure out how many times 8 goes into 29.

(3)(8) = 24 and (4)(8) = 32, so 8 goes into 29 three times.

Next, we write 29 as:

So, $\frac{29}{8}$ can be written as: $\frac{29}{8} = \frac{24+5}{8}$

We want to write it like that because we can split the fraction when we have a sum in the numerator (never with the denominator!)

So, $\frac{29}{8} = \frac{24+5}{8} = \frac{24}{8} + \frac{5}{8}$

$$\frac{29}{8} = \frac{24+5}{8}$$

$$= \frac{24}{8} + \frac{5}{8}$$

We can now divide 24 by 8.

$$= 3 + \frac{5}{8}$$

$$\frac{29}{8} = 3\frac{5}{8}$$