Converting Mixed Numbers and Improper Fractions

A mixed number is made up of a whole number and a fraction.

An improper fraction is a fraction in which the numerator is greater than the denominator.

$$2\frac{3}{4} = \frac{11}{4}$$

Numerical Method for converting a mixed number to an improper fraction:

1. The mixed fraction $2\frac{3}{4}$ can be written as 2 + $\frac{3}{4}$.

2. Change the whole number to an equivalent fraction which has the same denominator as the original fraction part: $2 \bullet \frac{4}{4} = \frac{8}{4}$

3. Add the two fractions which now have the same denominator: $\frac{8}{4} + \frac{3}{4} = \frac{11}{4}$.

4. Note: a short way to represent this longer method is $2\frac{3}{4} = \frac{(4\bullet 2)}{4} + \frac{3}{4} = \frac{11}{4}$, in which you multiply the denominator of the fractional part by the whole number part, and add the result to the numerator of the fractional part. But be sure that you can precisely explain why this works.

Numerical method for changing an improper fraction to a mixed number:

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

1. Find how many "wholes" are in $\frac{10}{3}$: $3\overline{)10}$ R1

2. Rewrite: $\frac{10}{3} = \frac{9}{3} + \frac{1}{3}$

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

3. A short way is to divide 3 into 10, to get 3 wholes. The remainder 1 represents that extra $\frac{1}{3}$ in step 1, and you put the remainder over the divisor.