Lesson: Fractions

A fraction is made up of two parts. The top of the fraction is called the **NUMERATOR** and the bottom of the fraction is called the **DENOMINATOR**. If the numerator is greater than the denominator, the fraction is called an **improper** (Example: $\frac{8}{3}$). These types of fractions can also be written as a whole number and a fraction. This is called a **mixed fraction** (Example: $2\frac{2}{3}$).

Reducing Fractions to Lowest Terms

When using fractions, your solutions must always be given in lowest terms.

In order to reduce a fraction to lowest terms, you have to find the greatest common factor (GCF) of (the greatest number that divides evenly into) the numerator and denominator.

Example 1: $\frac{9}{12} = \frac{9 \div 3}{12 \div 3} = 3/4$	Example 2: $\frac{27}{45} = \frac{27 \div 9}{45 \div 9} = \frac{3}{5}$
The factors of 9 are: { 1, ③, 9 } The factors of 12 are: { 1, 2, ③, 4, 6, 12 }	The factors of 27 are { 1, 3, ⑨, 27 } The factors of 45 are { 1, 3, 5, ⑨, 15, 45 }
The GCF is __3__. Simply divide the numerator and denominator by this number. These two fractions are also known as <u>equivalent fractions.</u>	The GCF is __9__.

Try these:

a. $\frac{7}{21} = \frac{7 \div 7}{21 \div 7} = 1/3$ GCF = 7

b. $\frac{8}{12} = \frac{8 \div 4}{12 \div 4} = 2/3$ GCF: 4

c. $\frac{11}{12} = \frac{11}{12}$ GCF = 1

d. $\frac{24}{32} = \frac{24 \div 8}{32 \div 8} = \frac{3}{4}$ GCF = 8

e. $\frac{18}{72} = \frac{18 \div 18}{72 \div 18} = \frac{1}{4}$ GCF = 18

Converting Mixed Numbers into Improper Fractions

To convert mixed numbers to improper fractions: $w\frac{n}{d} = \frac{w \times d + n}{d}$ or $-w\frac{n}{d} = -\left(\frac{w \times d + n}{d}\right)$

Example 3: $2\frac{3}{5} = \frac{2 \times 5 + 3}{5}$ $= \frac{10+3}{5}$ $= \frac{13}{5}$	Example 4: $-1\frac{5}{6} = -\left(\frac{1 \times 6 + 5}{6}\right)$ $= -\left(\frac{6+5}{6}\right)$ $= -\left(\frac{11}{6}\right)$ $= -\frac{11}{6}$

Try these: ³²

a. $4\frac{7}{8} = \frac{4 \times 8 + 7}{8}$
 $= \frac{39}{8}$

b. $3\frac{1}{2} = \frac{3 \times 2 + 1}{2}$
 $= \frac{7}{2}$

c. $5\frac{11}{12} = \frac{5 \times 12 + 11}{12}$
 $= \frac{71}{12}$

d. $-2\frac{4}{7} = -\left(\frac{2 \times 7 + 4}{7}\right)$
 $= -\left(\frac{18}{7}\right)$
 $= -\frac{18}{7}$

e. $-3\frac{1}{5} = -\left(\frac{3 \times 5 + 1}{5}\right)$
 $= -\frac{16}{5}$