Adding And Subtracting Fractions:

A. The conventional way of adding and subtracting fractions is by changing the fractions to have the same denominators, otherwise known as the LCM or Least Common Multiple (see LCM in *Miscellaneous*).

Ex [1] $\frac{1}{3}+\frac{1}{2}=$ _____ (fraction)

Since $^1/_3$ and $^1/_2$ can not be added directly, each fraction needs to be changed to have a common denominator of 6.

a) $^1/_3 = {}^2/_6$ and $^1/_2 = {}^3/_6$.

b) $^2/_6 + {}^3/_6 = {}^5/_6$.

c) The answer is $^5/_6$.

B. Another way of adding and subtracting fractions is using the following rule from algebra (sometimes called cross-multiplication):

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{b\cdot d}$$

Ex [2] $\frac{2}{7}-\frac{1}{6}=$ _____ (fraction)

a) $\frac{2}{7}-\frac{1}{6}=\frac{2\cdot 6-1\cdot 7}{6\cdot 7}$

b) $\frac{2\cdot 6-1\cdot 7}{6\cdot 7}=\frac{12-7}{42}=\frac{5}{42}$

c) The answer is $^5/_{42}$.

C. There are several precautions and suggestions that should be considered when adding and subtracting fractions.

1. Before using the method in part B, first look to see if one denominator is a multiple of the other. If it is, the method in part A is faster.
2. Before writing down the answer, make sure the fraction is reduced to its simplest form.
3. Always know what the question is asking for. Sometimes the answer can be given in improper fractions, while other times mixed numbers should be given.