Adding and Subtracting Fractions

Make Sure the Denominators are the Same

You can only add or subtract fractions with the same denominator.
If the denominators are not the same, you have to find a common denominator for your fractions first.
Then you add or subtract the numerators only, like before.

EXAMPLE: What is $\frac{1}{2} + \frac{1}{3} - \frac{1}{4}$?

First find equivalent fractions with the same denominator for each.

2, 3 and 4 are all factors of 12, so use 12 as a common denominator.

$\frac{1}{2} = \frac{6}{12}$ (×6 top, ×6 bottom)

$\frac{1}{3} = \frac{4}{12}$ (×4 top, ×4 bottom)

$\frac{1}{4} = \frac{3}{12}$ (×3 top, ×3 bottom)

Now add and subtract the numerators to get the answer:

$$\frac{1}{2} + \frac{1}{3} - \frac{1}{4} = \frac{6}{12} + \frac{4}{12} - \frac{3}{12}$$

$$= \frac{6 + 4 - 3}{12} = \frac{7}{12}$$

Change Mixed Numbers to Improper Fractions

EXAMPLE: The film 'Space Cow Returns' is $1\frac{1}{3}$ hours long. Jack watches two fifths of it. How much of the film is left?

You want to find out $1\frac{1}{3} - \frac{2}{5}$

The easiest way to do this calculation is to convert $1\frac{1}{3}$ to an improper fraction first.

$$1\frac{1}{3} = \frac{3}{3} + \frac{1}{3} = \frac{4}{3}$$

Now find equivalent fractions.
3 and 5 are factors of 15, so use 15 as the common denominator.

$\frac{4}{3} = \frac{20}{15}$ (×5 top, ×5 bottom)

$\frac{2}{5} = \frac{6}{15}$ (×3 top, ×3 bottom)

Now that the denominators are the same, you can subtract the numerators.

$$1\frac{1}{3} - \frac{2}{5} = \frac{20}{15} - \frac{6}{15} = \frac{20 - 6}{15} = \frac{14}{15}$$

"I can add and subtract fractions by finding a common denominator."