

FRACTIONS

Piece you are looking for

Whole

Proper Fraction: Top number (numerator) is smaller than the bottom number (denominator). ex - $\frac{1}{3}$

Improper Fraction: Numerator is bigger than the denominator

$$\frac{3}{2}$$

OR

Numerator and denominator are the same

$$\frac{3}{3}$$

Mixed Fraction: A "mixture" of a whole number and a fraction.

$$3\frac{1}{2}$$

Change a mixed number to an improper number: Multiply the denominator by the whole number and add the numerator. This is the NEW numerator. The denominator stays the same.

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

Improper number to mixed number: Just divide!

$$\frac{7}{2} = 2 \overline{) \frac{3}{7} \frac{1}{2}} = 3\frac{1}{2}$$

2 goes into 7 three whole times with one left over. Denominator stays the same.

FRACTIONS

Reduce proper fractions: Find a number that divides evenly into *BOTH* the denominator and the numerator. You must divide by the same number!

$$\frac{4}{6} \div \left(\begin{array}{c} 2 \\ 2 \end{array} \right) = \frac{2}{3}$$

Basic rule: Whatever you do to the bottom number (denominator), you must do the exact same to the top number (numerator).

(see circled numbers above)

Adding and subtracting: You **MUST** have a common denominator (bottom number of each fraction). Then only add or subtract the numerators (top number of each fraction).

$$\begin{array}{r} \frac{3}{7} \\ + \frac{2}{7} \\ \hline \frac{5}{7} \end{array}$$

FRACTIONS

Adding and subtracting with different denominators: You MUST find a common denominator. Remember your "Basic rule" from the previous page. See the example and follow the instructions below.

$$\begin{array}{r} \frac{1 \times 1}{4 \times 1} = \frac{1}{4} \\ + \frac{1 \times 2}{2 \times 2} = \frac{2}{4} \\ \hline \frac{3}{4} \end{array}$$

1. Look at the biggest denominator which is 4
2. 4 goes evenly into 4, does 2 go evenly into 4?
3. YES! I will use 4 as my common denominator.
4. Look at the example above for how to multiply. Remember the "Basic rule."

$$\begin{array}{r} \frac{1 \times 3}{4 \times 3} = \frac{3}{12} \\ + \frac{2 \times 4}{3 \times 4} = \frac{8}{12} \\ \hline \frac{11}{12} \end{array}$$

1. Look at the biggest denominator which is 4
 2. If the other number doesn't go evenly into it, use the multiples of the biggest number. 4, 8, 12, 16, 20, 24,...
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FRACTIONS

Multiplication: Multiply straight across the top and the bottom.

$$\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$$

Division: Find the reciprocal of the second fraction (flip it upside down). Then follow your multiplication rule from above and simplify/reduce if necessary.

$$\frac{1}{2} \div \frac{3}{4}$$

$$\frac{1}{2} \times \frac{4}{3} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$