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Multiplying Fractions and Mixed Numbers

When multiplying two fractions, the operation is very straightforward. Multiply the numerator by the numerator, and the denominator by the denominator.

Examples:

$$\frac{2}{3} * \frac{1}{4} = \frac{2 * 1}{3 * 4} = \frac{2}{12} = \frac{1^*}{6}$$

*Be sure to write answers in simplest form.

$$\frac{5}{3} * \frac{8}{5} = \frac{5 * 8}{3 * 5} = \frac{40}{15} = \frac{8}{3}$$

Note: When the numerator and denominator share a common factor, those can be directly eliminated like so

$$\frac{5}{3} * \frac{8}{5} = \frac{5 * 8}{3 * 5} = \frac{5 * 8}{5 * 3} = \frac{8}{3}$$

When multiplying mixed numbers, it is important to first convert a mixed number to an improper fraction.

Example:

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

What we are going to do to convert this to an improper fraction is multiply the constant term (1) by the denominator (4) and then add it to the numerator (3).

$$(1 * 4) + 3 = 7 = \text{numerator}$$

New fraction: $\frac{7}{4}$

Note: The denominator does NOT change with this procedure.

Once both mixed numbers are converted to improper fractions, we can multiply using the same method as proper fractions

Example:

$$2\frac{5}{7} * 4\frac{1}{2}$$

$$\frac{(2*7)+5}{7} * \frac{(4*2)+1}{2}$$

$$\frac{19}{7} * \frac{9}{2} = \frac{171}{14} = 12\frac{3}{14}$$