



numerator  
denominator

**Proper Fractions:** The numerator is smaller than the denominator.

Examples:  $\frac{1}{2}, \frac{1}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$

**Improper Fraction:** The numerator is larger than the denominator.

Examples:  $\frac{17}{2}, \frac{7}{3}, \frac{15}{4},$

Rules for MULTIPLICATION & DIVISION fractions:

To multiply and simplify:

1. Write the products in the numerator and the denominator, but do not carry them out.
2. Factor the numerator and the denominator.
3. Factor the fraction to remove a factor of 1, if possible.
4. Carry out the remaining products.

We proceed as follows:

$$1. \quad \frac{3}{8} \cdot \frac{4}{9} = \frac{3 \cdot 4}{8 \cdot 9}$$

We write the products in the numerator and the denominator, but we do not carry them out.

$$2. \quad = \frac{3 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$$

Factoring the numerator and the denominator

$$3. \quad = \frac{3 \cdot 2 \cdot 2 \cdot 1}{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$$

Using the identity property of 1 to insert the number 1 as a factor

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

Factoring the fraction

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

$$4. \quad = \frac{1}{2 \cdot 3}$$

Removing a factor of 1

$$= \frac{1}{6}$$

To divide fractions, multiply the dividend by the reciprocal of the divisor:

$$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \cdot \frac{4}{3} = \frac{2 \cdot 4}{5 \cdot 3} = \frac{8}{15}$$



Multiply by the reciprocal of the divisor.