

Fraction Operations

Add

Same Denominators

Add Numerators

$$\frac{a}{c} + \frac{b}{c} = \frac{(a + b)}{c}$$

Same Denominator Denominator stays the same

Different Denominators

$$\frac{a}{c} + \frac{b}{d} = \frac{(ad + bc)}{cd}$$

Different Denominators

Subtract

Same Denominators

Subtract Numerators

$$\frac{a}{c} - \frac{b}{c} = \frac{(a - b)}{c}$$

Same Denominator Denominator stays the same

Different Denominators

$$\frac{a}{c} - \frac{b}{d} = \frac{(ad - bc)}{cd}$$

Different Denominators

Multiply

Fraction x Fraction

Multiply Numerators

$$\frac{a}{c} \times \frac{b}{d} = \frac{ab}{cd}$$

Multiply Denominators

Whole Number x Fraction

$$a \times \frac{b}{c}$$

$$= (a \times b) \div c \text{ or }$$

$$= (a \div c) \times b$$

Divide

Fraction/ Fraction

Multiply Numerators with Opposite Denominators.

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

$a \times d$
 $b \times c$

Whole Number/ Fraction

$$a \div \frac{b}{c}$$

$$= (a \times c) \div b \text{ or }$$

$$= (a \div b) \times c$$