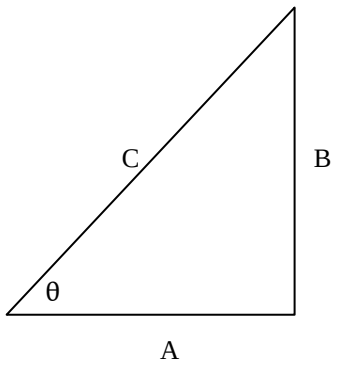
Addition	$\frac{a}{b} + \frac{c}{d} = \frac{ad + cb}{bd}$
e.g.	$\frac{1}{2} + \frac{3}{4} = \frac{1 \cdot 4 + 2 \cdot 3}{2 \cdot 4} = \frac{4 + 6}{8} = \frac{10}{8} = \frac{5}{4} = 1\frac{1}{4}$
Subtraction	$\frac{a}{b} - \frac{c}{d} = \frac{ad - cb}{bd}$
Multiplication	$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$
Division	$\frac{a/b}{c/d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$
e.g.	$\frac{1/2}{3/4} = \frac{1}{2} \cdot \frac{4}{3} = \frac{4}{6} = \frac{2}{3}$
Exponents	$a^2 = a \cdot a$ $a^3 = a \cdot a \cdot a$ $a^{1/2} = \sqrt{a}$ $a^{1/b} = \sqrt[b]{a}$ $a^{-b} = \frac{1}{a^b}$ $a^{-1} = \frac{1}{a}$
Trigonometry	$A^2 + B^2 = C^2$ $C = \sqrt{A^2 + B^2}$ $\sin\theta = \frac{opposite}{hypotenuse}$ $\cos\theta = \frac{adjacent}{hypotenuse}$ $\tan\theta = \frac{opposite}{adjacent}$ *Therefore,* $x = y\sin\theta = A = B\sin\theta$ $y = x\cos\theta = B = A\cos\theta$ $\theta = \tan^{-1}\frac{y}{x} = \tan^{-1}\frac{B}{A} = \arctan\frac{B}{A}$ 

Algebra Rule: Whatever you do for one side of an equation, do the same for the other side.

Solve for x

$$a = \frac{x}{c}$$

multiply both sides by c

$$c \cdot a = \frac{x}{c} \cdot c$$

$$\therefore\ x = ac$$

Solve for x

$$y = mx + b$$

subtract b from both sides

$$y - b = mx + b - b$$

$$y - b = mx$$

divide both sides by m

$$\frac{y - b}{m} = \frac{mx}{m}$$

$$\frac{y - b}{m} = x$$

Solve for x

$$a = \frac{b - c}{d - x}$$

$$(d - x)a = \left(\frac{b - c}{d - x}\right) \cdot (d - x)$$

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

$$(d - x) - d = \left(\frac{(b - c)}{a}\right) - d$$

$$-x = \left(\frac{(b - c)}{a}\right) - d$$

$$(-1)(-x) = \left(\left(\frac{(b - c)}{a}\right) - d\right) \cdot (-1)$$

$$x = \frac{c - b}{a} + d$$