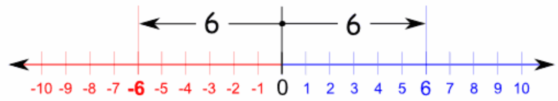
Absolute Value means ...
... only how far a number is from zero:



"6" is 6 away from zero, and "−6" is also 6 away from zero.

a + b = b + a	commutative law for addition
ab = ba	commutative law for multiplication
a+(b+c)=(a+b)+c	Associative law for addition
a(bc) = (ab)c	associative law for multiplication
a(b + c) = ab + ac	distributive law
a(b − c) = ab – ac	distributive law
a − (b + c) = a − b – c	distributive law
a − (b − c) = a − b + c	distributive law

Power Rules

General notation (n is a whole number): $a^n = a * a * a * \ldots * a$ (n times)

Special cases:

$a^0 = 1$	read: a-to-the-zero
$a^1 = a$	is just itself 'a'
$a^2 = a * a$	read: a-squared
$a^3 = a * a * a$	read:a-cubed

$(ab)^n = ab * ab * ab * \ldots * ab$ n times

$(ab)^n = (a * a * a * \ldots * a)(b * b * \ldots * b)$ n times

$(ab)^n = a^n b^n$

$a^n a^m = (a * a * \ldots * a)(a * a * \ldots * a)$ n and m times respectively

$a^n a^m = a * a * a * a \ldots * a$ n+m times

$a^n a^m = a^{n+m}$

$\frac{a^n}{a^m} = a^{n-m}$

$a^n = \frac{1}{a^{-n}}$

$a^{-n} = \frac{1}{a^n}$

$\sqrt{ab} = \sqrt{a}\sqrt{b}$

$\sqrt{a} = a^{\frac{1}{2}}$

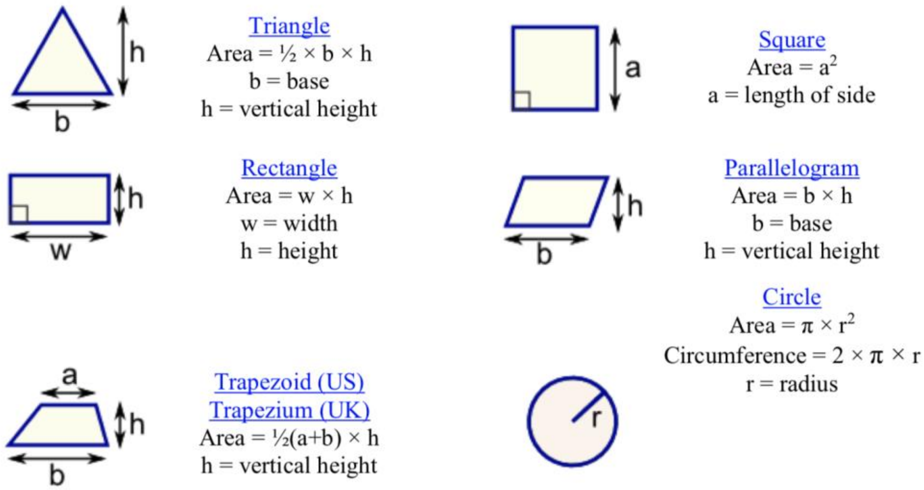
Difference of squares formula: $(x - a)(x + a) = x^2 - a^2$

Square of the difference formula: $(a - b)(a - b) = a^2 - 2ab + b^2$

Square of the sum formula: $(a + b)(a + b) = a^2 + 2ab + b^2$

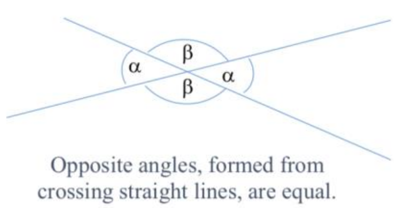
Powers of 2

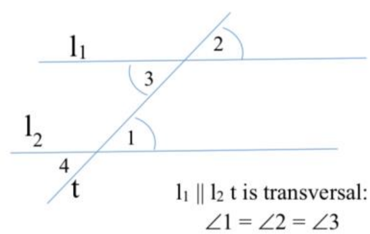
n	0	1	2	3	4	5	6	7	8	9
2^n	1	2	4	8	16	32	64	128	256	512



Theorem (Pythagorean theorem). In a right triangle with legs a, b and hypotenuse c, one has:

$$a^2 + b^2 = c^2$$





$\angle\alpha = \angle\alpha$ – opposite

$\angle\alpha + \angle\beta = 180^0$ – on a straight line,

Or complementary angles

$\angle 1 = \angle 3$ = alternate interior angles

$\angle 1 = \angle 2$ = corresponding angles

$\angle 4 = \angle 2$ = alternate exterior angles

Rule 1 (Side-Side-Side rule). If $AB = A'B'$, $BC = B'C'$ and $AC = A'C'$ then $\Delta ABC \cong \Delta A'B'C'$. This rule is commonly referred to as the ***SSS*** rule.

Rule 2 (Angle-Side-Angle Rule). If $\angle$ A = $\angle$ A', $\angle$ B = $\angle$ B' and AB = $A'B'$, then ΔABC≅ $\Delta A'B'C'$. This rule is commonly referred to as ASA rule.

Rule 3 (SAS Rule). If AB = $A'B'$, AC = $A'C'$ and $\angle$ A = $\angle$ A', then ΔABC≅ $\Delta A'B'C'$.
These rules – and congruent triangles in general – are very useful for proving various properties of geometric figures. As an illustration, we prove the following useful result.

Probability

$$P(A) = \frac{number\ of\ outcomes\ giving\ A}{total\ number\ of\ outcomes}$$

$P(A\ or\ B) = P(A) + P(B)$ (mutually exclusive events)

$P(notA) = 1 - P(A)$

The probability of two non-mutually exclusive events is denoted by:
P(Y or Z) =P(Y) + P(Z) − P (Y and Z)

The probability of two independent events is denoted by: P (Y and Z) = P(Y) * P(Z)

Speed, time, distance

S = V * t, where S – distance, V -speed, t -time