

Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Law of Cosines

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

Pythagorean Theorem

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

Area of Equilateral Triangle

$$\text{Area} = h^2 (\tan 30^\circ)$$

$$\text{Area} = \frac{s^2 \sqrt{3}}{4}$$

Side-Side-Side Formula (SSS)

$$s = \frac{a + b + c}{2}$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

Area of any Regular Polygon

$$\text{Area} = \frac{n(b^2)}{4 \tan\left(\frac{\pi}{n}\right)}$$

Area of any Regular Polygon

$$\text{Area} = \frac{pa}{2}$$

$p = \text{perimeter}$
 $a = \text{apothem}$

1 gross = 144

1 mile = 1.609 km

2 cups = 1 pint

2 pints = 1 quart

4 quarts = 1 gallon

16 ounces = 1 pound

2000 pounds = 1 ton

1 acre = 640 acres

1 gal = 231 in³

Consecutive integers

$$(x) + (x+1) + (x+2) + \dots$$

Even consecutive integers

$$(2x) + (2x+2) + (2x+4) + (2x+6) + \dots$$

Prime twin = prime number that differs from another prime number by two. (Examples: (3,5), (5,7), (11,13), (17,19))If $f(x) = 7x^2 + 8x - 10$ and $g(x) = x - 8$, find $f(g(-8))$.

Then:

$$g(-8) = -8 - 8$$

$$= -16$$

$$f(-16) = 7(-16)^2 + 8(-16) - 10$$

$$= 1654$$

How many subsets does a set of 6 elements have?

$$2^6 = 64$$

How many proper subsets does a set of 6 elements have?

$$2^6 - 1 = 63$$

Sum of interior angles of a polygon is $(n-2)(180)$ Slope of a line when given 2 points on that line: (x_1, y_1) and (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

How many different ways can 3 class officers be elected from a class of 63 students?

$$\binom{63}{3}$$

$$63 \text{ E}$$

$$3 \text{ } {}_n P_r$$

or

$$\frac{63!}{60!}$$

Sum of exterior angles of a polygon = 360°

$$\text{Triangular number} = \frac{n(n+1)}{2}$$

$$\text{Distinct diagonals} = \frac{n(n-3)}{2}$$

Fibonacci Sequence = 1, 1, 2, 3, 5, 8, 13, . . .

$$\# \text{ of lines determined by points} = \frac{n(n-1)}{2}$$

$$\text{Additive Inverse} = x + -x$$

$$= 0$$

$$\text{Multiplicative Inverse} = \left(\frac{x}{1}\right)\left(\frac{1}{x}\right)$$

$$= 1$$

$$\text{Geometric mean} = \left[(x_1)(x_2)(x_3)\dots(x_n)\right]^{\frac{1}{n}}$$

$$= \sqrt[n]{(x_1)(x_2)(x_3)\dots(x_n)}$$

$$\text{Area of an ellipse} = \pi r_1 r_2$$

Discriminate of the quadratic equation

$$= b^2 - 4ac$$

Simple Interest

$$\text{Interest} = prt$$

 p = original amount of money r = interest rate as a decimal t = time in years**Compound Interest**

$$A = P(1 + r)^t$$

 P = original amount of money r = interest rate as a decimal divided by the number of compounded periods t = time in years**Inner Diagonal of a rectangular prism**

$$d = \sqrt{L^2 + W^2 + H^2}$$