VOCABULARY AND FORMULAS

The following list is representative of terminology used in the problems but should not be viewed as all-inclusive. It is recommended that coaches review this list with their Mathletes.

absolute value
abscissa
acute angle
additive inverse (opposite)
adjacent angles
algorithm
alternate interior angles
alternate exterior angles
altitude (height)
area
arithmetic mean
arithmetic sequence
base 10
binary
bisect
box-and-whisker plot
center
chord
circle
circumscribe
circumference
coefficient
collinear
combination
common divisor
common denominator
common factor
common fraction
common multiple
complementary angles
composite number
compound interest
concentric
cone
congruent
convex
coordinate plane/system
coordinates of a point
corresponding angles
counting numbers
counting principle
cube
cylinder
data
decimal
degree measure
denominator
diagonal of a polygon
diagonal of a polyhedron
diameter
difference
digit
direct variation
dividend
divisible
divisor
edge
endpoint
equation
equiangular
equidistant
equilateral
evaluate
exponent
expression
exterior angle of a polygon
factor
factorial
Fibonacci sequence
finite
formula
frequency distribution
frustum
function
geometric sequence
height (altitude)
hemisphere
hexagon
hypotenuse
image(s) of a point(s) (under a transformation)
improper fraction
inequality
infinite series
inscribe
integer
interior angle of a polygon
intersection
inverse variation
irrational number
isosceles
lateral surface area
lateral edge
lattice point(s)
linear equation
mean
median of a set of data
median of a triangle
midpoint
mixed number
mode(s) of a set of data
multiple
multiplicative inverse (reciprocal)
natural number
numerator
obtuse angle
octagon
octahedron
opposite of a number (additive inverse)
ordered pair
ordinate
origin
palindrome
parallel
parallelogram
Pascal's triangle
pentagon
percent increase/decrease
perimeter
permutation
perpendicular
planar
polygon
polyhedron
prime factorization
prime number
principal square root
prism
probability
product

proper divisor
proper factor
proper fraction
proportion
pyramid
Pythagorean triple
quadrant
quadrilateral
quotient
radius
random
range of a data set
rate
ratio
rational number
ray
real number
reciprocal (multiplicative inverse)
rectangle
reflection
regular polygon
relatively prime
remainder
repeating decimal
revolution
rhombus
right angle
right circular cone
right circular cylinder
right polyhedron
right triangle
rotation
scalene triangle
scientific notation
segment of a line
semicircle
sequence
set
similar figures
simple interest
slope
slope-intercept form
solution set
sphere
square
square root
stem-and-leaf plot
sum
supplementary angles
system of equations/inequalities
tangent figures
tangent line
term
terminating decimal
tetrahedron
total surface area
transformation
translation
trapezoid
triangle
triangular numbers
trisect
union
unit fraction
variable
vertical angles
vertex
volume
whole number
x-axis
x-coordinate
x-intercept
y-axis
y-coordinate
y-intercept

The list of formulas below is representative of those needed to solve MATHCOUNTS problems but should not be viewed as the only formulas that may be used. Many other formulas that are useful in problem solving should be discovered and derived by Mathletes.

CIRCUMFERENCE

Circle	$c = 2 \cdot \pi \cdot r = \pi \cdot d$

AREA

Square	$A = s^2$
Rectangle	$A = l \cdot w$
Parallelogram	$A = b \cdot h$
Trapezoid	$A = \frac{1}{2} \cdot (b_1 + b_2) \cdot h$
Circle	$A = \pi \cdot r^2$
Triangle	$A = \frac{1}{2} \cdot b \cdot h$
Triangle	$A = \sqrt{s(s-a)(s-b)(s-c)}$ with semiperimeter s and sides a, b and c
Equilateral triangle	$A = \frac{s^2\sqrt{3}}{4}$
Rhombus	$A = \frac{1}{2} \cdot d_1 \cdot d_2$

SURFACE AREA & VOLUME

Sphere	$SA = 4 \cdot \pi \cdot r^2$
Sphere	$V = \frac{4}{3} \cdot \pi \cdot r^3$
Rectangular prism	$V = l \cdot w \cdot h$
Circular cylinder	$V = \pi \cdot r^2 \cdot h$
Circular cone	$V = \frac{1}{3} \cdot B \cdot h$
Pyramid	$V = \frac{1}{3} \cdot B \cdot h$

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

Counting/Combinations $C^n_r = {}_nC_r = \binom{n}{r} = \frac{n!}{r!(n-r)!}$