

Cheatography

Prealgebra, Algebra I and II, Geometry Cheat Sheet

by meanshape101 (PokemonTrainerGold) via cheatography.com/143048/cs/35798/

Prealgebra 1

Pre-Algebra Sheet 1

Area and Volume
 $A = \frac{1}{2}bh$
 $A = l \cdot w$
 $V = lwh$

Order of Operations
 Please: PARENTHESIS
 Exponents
 Multiplication
 Division
 Addition
 Subtraction

Properties
 Commutative (addition) $a + b = b + a$
 Associative (multiplication) $(a \cdot b) \cdot c = a \cdot (b \cdot c)$
 Distributive $a(b + c) = ab + ac$
 Identity $a + 0 = a$
 Inverse $a + (-a) = 0$
 Zero Property $a \cdot 0 = 0$

Graphing
 Plotting coordinates
 Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$
 Point-Slope $y - y_1 = m(x - x_1)$
 Slope-Intercept $y = mx + b$

Distance Formula
 $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint
 $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Algebra I 1

Algebra I Sheet 1

Adding & Subtracting positive and negative numbers
 SAME SIGN ADD
 DIFFERENT SIGN SUBTRACT

Multiplying & Dividing positive and negative numbers
 SAME SIGN POSITIVE +
 DIFFERENT SIGN NEGATIVE -

Order of Operations
 PEMDAS
 Please (Parentheses)
 Exponent (Exponents)
 Multiply (Multiplication)
 Divide (Division)
 Add (Addition)
 Subtract (Subtraction)

Properties of Exponents
 $a^m \cdot a^n = a^{m+n}$
 $\frac{a^m}{a^n} = a^{m-n}$
 $(a^m)^n = a^{m \cdot n}$

Order of Operations
 PEMDAS
 Please (Parentheses)
 Exponent (Exponents)
 Multiply (Multiplication)
 Divide (Division)
 Add (Addition)
 Subtract (Subtraction)

Geometry 1

GEOMETRY Sheet 1

Area of 2D Shapes
 Parallelogram $A = bh$
 Triangle $A = \frac{1}{2}bh$
 Trapezoid $A = \frac{1}{2}(b_1 + b_2)h$
 Circle $A = \pi r^2$
 Rhombus/Kite $A = \frac{1}{2}d_1d_2$
 Regular Polygon $A = \frac{1}{2}P \cdot a$

Volume
 Prism/Cube $V = Bh$
 Cylinder $V = \pi r^2h$
 Pyramid $V = \frac{1}{3}Bh$
 Sphere $V = \frac{4}{3}\pi r^3$

Surface Area
 Prism/Cube $SA = 2lw + 2lh + 2wh$
 Cylinder $SA = 2\pi r^2 + 2\pi rh$
 Pyramid $SA = B + \frac{1}{2}Pl$
 Sphere $SA = 4\pi r^2$

Angles
 Complementary: $\angle A + \angle B = 90^\circ$
 Supplementary: $\angle A + \angle B = 180^\circ$
 Vertical Angles: $\angle A = \angle B$
 Corresponding Angles: $\angle A = \angle B$

Algebra II 1

Algebra II Sheet 1

Real Numbers
 Natural Numbers: \mathbb{N}
 Integers: \mathbb{Z}
 Rational Numbers: \mathbb{Q}
 Irrational Numbers: \mathbb{I}
 Real Numbers: \mathbb{R}

Properties of Exponents
 $a^m \cdot a^n = a^{m+n}$
 $\frac{a^m}{a^n} = a^{m-n}$
 $(a^m)^n = a^{m \cdot n}$

Factoring
 GCF
 Difference of Squares
 Trinomial

Complex Numbers
 $i^2 = -1$
 $a + bi$
 $(a + bi)(a - bi) = a^2 + b^2$

Logarithms
 $\log_a a = 1$
 $\log_a 1 = 0$
 $\log_a x^y = y \log_a x$
 $\log_a \frac{x}{y} = \log_a x - \log_a y$
 $\log_a xy = \log_a x + \log_a y$

Prealgebra 2

Pre-Algebra Sheet 2

Adding, Subtracting Integers
 SAME SIGN ADD (+ means add)
 DIFFERENT SIGN SUBTRACT (- means subtract)
 sign of the larger number is the sign of the answer

Multiplying, Dividing Integers
 SAME SIGN POSITIVE (+ means positive)
 DIFFERENT SIGN NEGATIVE (- means negative)

Order of Operations
 PEMDAS

Properties of Exponents
 $a^m \cdot a^n = a^{m+n}$
 $\frac{a^m}{a^n} = a^{m-n}$
 $(a^m)^n = a^{m \cdot n}$

Order of Operations
 PEMDAS

Algebra I 2

Algebra I Sheet 2

Graphing
 Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$
 Point-Slope $y - y_1 = m(x - x_1)$
 Slope-Intercept $y = mx + b$

Solving Equations
 Linear Equations
 Quadratic Equations
 Inequalities

Graphing Inequalities
 Linear Inequalities
 Quadratic Inequalities

Absolute Value Equations
 $|x - a| = b$

Midpoint Formula
 $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Distance Formula
 $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Geometry 2

GEOMETRY Sheet 2

Angles
 Complementary: $\angle A + \angle B = 90^\circ$
 Supplementary: $\angle A + \angle B = 180^\circ$
 Vertical Angles: $\angle A = \angle B$
 Corresponding Angles: $\angle A = \angle B$

Triangle Congruency
 SSS, SAS, AAS, ASA, HL

Similar Figures
 AA, SAS, SSS

Area of Similar Figures
 $\frac{A_1}{A_2} = \left(\frac{s_1}{s_2} \right)^2$

Volume
 Prism/Cube $V = Bh$
 Cylinder $V = \pi r^2h$
 Pyramid $V = \frac{1}{3}Bh$
 Sphere $V = \frac{4}{3}\pi r^3$

Algebra II 2

Algebra II Sheet 2

Exponential Growth/Decay
 Growth: $A(t) = P(1 + r)^t$
 Decay: $A(t) = P(1 - r)^t$

Compound Interest with LOG
 $A = P \left(1 + \frac{r}{n} \right)^{nt}$

Logarithms
 $\log_a a = 1$
 $\log_a 1 = 0$
 $\log_a x^y = y \log_a x$
 $\log_a \frac{x}{y} = \log_a x - \log_a y$
 $\log_a xy = \log_a x + \log_a y$

Polynomial Functions
 Linear: $y = mx + b$
 Quadratic: $y = ax^2 + bx + c$
 Cubic: $y = ax^3 + bx^2 + cx + d$

Graphing Polynomials
 End Behavior
 Odd degree: $y \rightarrow \infty$ as $x \rightarrow \infty$
 Even degree: $y \rightarrow \infty$ as $x \rightarrow \infty$

By meanshape101 (PokemonTrainerGold)

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