

**ACT Math: The most important formulas and concepts***More Advanced Formulas and Concepts\****Pre-Algebra**

Number of inches in 1 foot	
Number of feet in 1 yard	
What is a proportion and how do you solve it?	
What types of problems can be solved with proportions?	
Distance, Rate and Time relationship	
Prime numbers are ...	
Integers are...	

**Algebra**

Equation of a line – Slope-intercept form Standard form Point-slope form	
<b><u>Slope is the measure of steepness of a line.</u></b> Given 2 points, $(x_1, y_1)$ and $(x_2, y_2)$ , what is the slope formula?	
<b>Exponent Rules</b>  Addition rule  Multiplication rule  Division rule  Expanded power rule  Zero exponent rules  Negative exponents  Fractional exponents	
Factor perfect square trinomials	
Factor the difference of two squares	
What is the Quadratic formula? What is it used for?	

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Discriminant test	
Solve absolute value equation – how to solve	
Solve absolute value inequalities – how to solve	
Complex number	

**Geometry**

Scalene triangle is...	
Equilateral triangle is...	
Isosceles triangle is...	
Midpoint on a number line	
Midpoint on the x-y plane between $(x_1, y_1)$ and $(x_2, y_2)$	
Distance between points on number line	

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Distance between points $(x_1, y_1)$ and $(x_2, y_2)$ on coordinate plane	
What is the Pythagorean Theorem and when is it used?	
Pythagorean Triples	
45-45-90 Triangle side length ratios	
30-60-90 Triangle side length ratios	
Sector area*	
Arc length*	
<b><u>Perimeter is the distance around an object</u></b> Perimeter of square of side length $x$ Perimeter of a rectangle with side lengths $L$ & $W$	
Circumference is the distance around a circle. What is the formula?	
<b><u>Area is number of squares that fill a 2-D Space</u></b> Area of square = Area of rectangle = Area of parallelogram = Area of triangle = Area of circle = Area of trapezoid =	
<b><u>Volume is number of cubes that fill a 3-D space</u></b> Volume of rectangular prism (box) =	

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Volume of cylinder =	
<b><u>Surface area = sum of areas of sides of 3-D figure</u></b>	
Surface area of cube =	
Surface area of rectangular prism =	
Sum of interior angles in triangle	
Sum of interior angles in a polygon	
Number of degrees in a circle	
Equation of Parabola with vertex at (h,k)	
Standard form of equation with axis of symmetry at $x = -b/2a$	
Equation of Circle centered at (0,0)	
Equation of Circle centered at (h,k)	
Equation of Ellipse centered at (0,0)	
Equation of Ellipse centered at (h,k)	
Equation of Hyperbola centered at (0,0)	
Equation of Hyperbola centered at (h,k)	

**Functions/Trigonometry**

What are the 6 trig ratios?	
Law of Sines* (used when?)	
Law of Cosines* (used when?)	
Logarithm rewritten as exponent	

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Logarithm rules	
$\sin^2x + \cos^2x = 1$ *	
Arithmetic Sequence*	
Geometric Sequence*	

**Probability and Statistics**

Mean	
Median	
Mode	
Combinations used for...	
Permutations used for...	