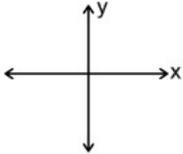
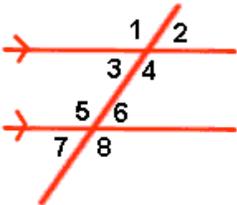


PreAlgebra Reference Sheet

<p>Area Formulas</p> $A_{\text{triangle}} = \frac{1}{2}bh$ $A_{\text{rectangle}} = bh = lw$ $A_{\text{square}} = bh = s^2$ $A_{\text{parallelogram}} = bh$ $A_{\text{trapezoid}} = \frac{1}{2}h(b_1 + b_2)$ $A_{\text{circle}} = \pi r^2$ <p>Circumference</p> $C_{\text{circle}} = 2\pi r = \pi d$	<p>3-D Shapes (B = area of base)</p> <p>Rectangular Solid</p> $V = lwh \text{ or } Bh$ $SA = 2wl + 2lh + 2wh$ <p>Cube</p> $V = s^3$ $SA = 6s^2$ <p>Cylinder</p> $V = \pi r^2 h$ $SA_{\text{closed}} = 2\pi rh + 2\pi r^2$ <p>Cone</p> $V = \frac{1}{3}\pi r^2 h$ $SA = \pi rs + \pi r^2$	<p>Statistics:</p> <p><i>Mean:</i> The “average”. Add and divide by the total number.</p> <p><i>MOde:</i> The value that appears MOst often. May be more than one answer.</p> <p><i>Median:</i> The “middle” value. Arrange the data in order and find the middle value. If the number of data is even, you may need to take the average of the two middle values.</p> <p><i>Range:</i> The difference between the largest and smallest data values.</p> <p><i>Quartiles:</i> First quartile = 25th percentile Second quartile (median) = 50th percentile Third quartile = 75th percentile</p>
<p>Perimeter: the distance around the outside.</p>	<p>Properties:</p> <p>Commutative property (addition): $a + b = b + a$</p> <p>Commutative property (multiplication): $a \times b = b \times a$</p> <p>Associative property (addition): $a + (b + c) = (a + b) + c$</p> <p>Associative property (multiplication): $a \cdot (b \cdot c) = (a \cdot b) \cdot c$</p> <p>Distributive property: $a \cdot (b + c) = a \cdot b + a \cdot c$</p> <p>Additive Identity: $a + 0 = a$</p> <p>Multiplicative Identity: $a \cdot 1 = a$</p> <p>Additive Inverse: $a + (-a) = 0$</p> <p>Multiplicative Inverse: $a \cdot \frac{1}{a} = 1$ where $a \neq 0$</p> <p>Zero property: $a \cdot 0 = 0$</p>	
<p>Pythagorean Theorem</p> <p>c = hypotenuse (longest side)</p> $c^2 = a^2 + b^2$	<p>Conversions:</p> <p>12 inches = 1 foot</p> <p>3 feet = 1 yard</p> <p>5,280 feet = 1 mile</p> <p>3 teaspoons = 1 tablespoon</p> <p>16 ounces = 1 pound</p> <p>16 fluid ounces = 1 pint</p> <p>8 fluid ounces = 1 cup</p> <p>2 cups = 1 pint</p> <p>2 pints = 1 quart</p> <p>4 quarts = 1 gallon</p>	
<p>Order of Operations:</p> <ol style="list-style-type: none"> 1. parentheses P 2. exponents E 3. mult & divide as you come to them from left to right M 4. add & subtract as you come to them from l to r. D 	<p>Scientific Notation:</p> 5.7×10^{14} <p>The first number must be $1 \leq n < 10$</p>	<p>Absolute Value:</p> $ -5 = 5$ $ 5 = 5$ <p>Represents distance</p>
<p>Distance traveled:</p> <p>distance = rate x time</p>	<p>Multiply: (distribute or FOIL)</p> $(x+3)(x+2) = x \cdot x + x \cdot 2 + 3 \cdot x + 3 \cdot 2$ $= x^2 + 5x + 6$	

<p>Inequalities: $5 - 3x \leq 13 + x$ Remember to $-3x \leq 8 + x$ change direction $-4x \leq 8$ of inequality when $x \geq -2$ mult/div by a negative.</p>	<p>Solving Equations: 1. Deal with any parentheses in the problem. 2. Combine similar terms on same side of = sign. 3. Get the needed variables on the same side of = sign. 4. Isolate the needed variable by add or subtract. 5. Find the needed variable by divide or multiply.</p>	<p>Slope: $m = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$.</p> <p>Equations of Lines: m = slope $y = mx + b$ slope-intercept $y - y_1 = m(x - x_1)$ point-slope</p> <p>Graphing Lines: 1. Plot 2 pts. <i>or</i> 2. Create a table of values. 3. Use slope-intercept</p> 														
<p>Transformations: <i>Reflection:</i> "Flip" – a mirror image. <i>Translation:</i> "Slide" <i>Rotation:</i> "Turn" about a point. <i>Dilation:</i> "Grow" or "shrink"</p>	<p>Metric Conversions: When making metric conversions, arrange the prefixes from largest to smallest and then examine the change in locations left/right: (meter, gram or liter)</p> <table border="1" data-bbox="653 553 1335 626"> <thead> <tr> <th>kilo</th> <th>hecto</th> <th>deca</th> <th>UNIT</th> <th>deci</th> <th>centi</th> <th>milli</th> </tr> </thead> <tbody> <tr> <td>1000</td> <td>100</td> <td>10</td> <td>1</td> <td>0.1</td> <td>0.01</td> <td>0.001</td> </tr> </tbody> </table>	kilo	hecto	deca	UNIT	deci	centi	milli	1000	100	10	1	0.1	0.01	0.001	<p>Error in Measurement: Relative error = $\frac{ \text{measure-actual} }{\text{actual}}$ % of Error = Relative • 100%</p>
kilo	hecto	deca	UNIT	deci	centi	milli										
1000	100	10	1	0.1	0.01	0.001										
<p>Triangles: <i>Scalene</i> – no = sides <i>Isosceles</i> – 2 = sides <i>Equilateral</i> – 3 = sides <i>Right:</i> 1 rt. < (90°)</p>	<p>Parallels: If lines are parallel ...</p>  <p><i>Corresponding angles</i> are equal. $m\angle 1 = m\angle 5, m\angle 2 = m\angle 6, m\angle 3 = m\angle 7, m\angle 4 = m\angle 8$</p> <p><i>Alternate Interior angles</i> are equal. $m\angle 3 = m\angle 6, m\angle 4 = m\angle 5$</p> <p><i>Alternate Exterior angles</i> are equal. $m\angle 1 = m\angle 8, m\angle 2 = m\angle 7$</p> <p><i>Same side interior angles</i> are supp. $m\angle 3 + m\angle 5 = 180, m\angle 4 + m\angle 6 = 180$</p>	<p>Permutations: Arrangement in specific order. ${}_n P_r = \frac{n!}{(n-r)!}$</p> <p>Factorial: $5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$ $1! = 1$ FYI: $0! = 1$</p>														
<p>Related Conditionals: <i>Converse:</i> switch "if" and "then" <i>Inverse:</i> negate "if" and "then" <i>Contrapositive:</i> inverse of converse</p>	<p>Probability: describes the chance that an uncertain event will occur. <i>(Theoretical) Probability of event</i> = (# of ways to get what you want) / (total # of possibilities) Probabilities range from 0 to 1. Impossible = 0 Absolutely certain = 1 <i>Empirical probability</i> (probability based upon data from an experiment)</p>															
<p>Square Roots: <i>Perfect squares:</i> 4, 9, 16, 25, 36, ... <i>Simplify a radical:</i> Write as a product containing a perfect square; give each a radical sign, and simplify the perfect square. $\sqrt{50} = \sqrt{25 \cdot 2} = \sqrt{25} \cdot \sqrt{2} = 5\sqrt{2}$ $\sqrt{25} = 5$</p>																