

Reason Using Properties from Algebra

Vocabulary	Definition	Example
<p>ALGEBRAIC PROPERTIES of EQUALITY = Let a, b and c be real numbers</p>		
<p>ADDITION PROPERTY</p>	<p>If <math>a = b</math>, then <math>a + \underline{c} = b + \underline{c}</math>.</p>	<p>If <math>x - 5 = 12</math>, then <math>x = 17</math>.  <math>\quad +5 \quad +5</math>  <span style="color: green;">Addition</span></p>
<p>SUBTRACTION PROPERTY</p>	<p>If <math>a = b</math>, then <math>a - \underline{c} = b - \underline{c}</math>.</p>	<p>If <math>x + 5 = 12</math>, then <math>x = 7</math>.  <math>\quad -5 \quad -5</math>  <span style="color: green;">Subtraction</span></p>
<p>MULTIPLICATION PROPERTY</p>	<p>If <math>a = b</math>, then <math>a \underline{c} = b \underline{c}</math>.</p>	<p>If <math>\frac{x}{2} = 12</math>, then <math>x = 24</math>.  <math>(2) \frac{x}{2} = 12(2)</math>  <span style="color: green;">multiplication</span></p>
<p>DIVISION PROPERTY</p>	<p>If <math>a = b</math> and <math>c \neq 0</math>, then <math>\frac{a}{c} = \frac{b}{c}</math>.</p>	<p>If <math>\frac{2x}{2} = \frac{12}{2}</math>, then <math>x = 6</math>.  <span style="color: green;">Division</span></p>
<p>SUBSTITUTION PROPERTY</p>	<p>If <math>a = b</math>, then a can be substituted for b in any equation or expression  <span style="color: orange;">has an =</span>      <span style="color: orange;">does not have =</span></p>	<p>If <math>x = 2</math> and <math>x - 6 + 12</math>, then 8.  <math>\quad \quad \quad 2 - 6 + 12</math>  <span style="color: green;">substitution</span>  <math>m \angle A = 6^\circ</math>  or <math>m \angle A = 3x</math></p>
<p>DISTRIBUTIVE PROPERTY</p>	<p><math>a(b + \underline{c}) = ab + a \underline{c}</math>  <math>ab + ac = a(b + c)</math> <span style="color: orange;">GCF</span></p>	<p>If <math>2(x + 3) = 12</math>, then <math>2x + 6 = 12</math>.  <math>5x + 20 = 100</math>, then <math>5(x + 4) = 100</math>.  <span style="color: green;">Distributive</span></p>
<p>Combine Like Terms (CLT)</p>	<p>If <math>a + 2a + b = c</math>, then <math>3a + b = c</math></p>	<p>If <math>\underline{x + 2x} - 3 = 12</math>, then <math>3x - 3 = 12</math>.  <math>\quad \quad \quad 3x</math>  <span style="color: green;">CLT</span></p>

REFLEXIVE PROPERTY of EQUALITY	Real Numbers	For any real number $a$ , $\underline{a} = \underline{a}$	
	Segment Length	For any segment $AB$ , $\underline{AB} = \underline{AB}$	
	Angle Measure	For any angle $A$ , $\overset{m\angle A}{\underline{\quad}} = \overset{m\angle A}{\underline{\quad}}$	
SYMMETRIC PROPERTY of EQUALITY	Real Numbers	For any real number $a$ and $b$ , If $a = b$ , then $b = \underline{a}$ .	
	Segment Length	For any segments $AB$ and $CD$ , If $AB = CD$ , then $CD = \underline{AB}$ .	
	Angle Measure	For any angles $A$ and $B$ , If $m\angle A = m\angle B$ , then the $m\angle B = \underline{m\angle A}$ .	
TRANSITIVE PROPERTY of EQUALITY	Real Numbers	For any real numbers $a$ , $b$ , and $c$ , If $a = \underline{b}$ and $b = c$ , then $a = \underline{c}$ .	$\text{if } a = b \text{ and } c = b, \text{ then } a = c.$
	Segment Length	For any segments $AB$ , $BC$ and $EF$ , If $AB = BC$ and $\overset{BC}{\underline{BC}} = EF$ , then $AB = \underline{EF}$ .	
	Angle Measure	For any angles $A$ , $B$ , and $C$ , If $m\angle A = m\angle B$ and $m\angle B = m\angle C$ , then $m\angle A = \underline{m\angle C}$	