## Unit 2: Properties, Postulates and Theorems

**Algebraic Properties of Equality** (applies to segments and angles)

Let $a$, $b$, and $c$ be real numbers.

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| *Addition Property*: | If $a = b$ , then $a + c = b + c$ |
| *Subtraction Property*: | If $a = b$ , then $a - c = b - c$ |
| *Multiplication Property*: | If $a = b$ , then $ac = bc$ |
| *Division Property*: | If $a = b$ and $c \neq 0$ , then $a/c = b/c$ |
| *Reflexive Property*: | For any real number $a$, $a = a$ |
| *Symmetric Property*: | If $a = b$ , then $b = a$ |
| *Transitive Property*: | If $a = b$ and $b = c$ , then $a = c$ |
| *Substitution Property*: | If $a = b$ , then $a$ can be substituted for $b$ |
| 9. *Distributive Property*: | $a(b + c) = ab + ac$ |

**Segment Addition Postulate:** If $B$ is between $A$ and $C$, then $AB + BC = AC$.

**Angle Addition Postulate:** If $P$ is in the interior of $\angle RST$ , then $m\angle RSP + m\angle PST = m\angle RST$ .

**Linear Pair Postulate:** If two angles form a linear pair, then they are supplementary.

**Right Angle Congruence Theorem:** All right angles are congruent.

**Congruent Supplements Theorem:** If two angles are supplementary to the same angle (or to congruent angles) then the two angles are congruent.

**Congruent Complements Theorem:** If two angles are complementary to the same angle (or to congruent angles) then the two angles are congruent.

**Vertical Angles Theorem:** Vertical angles are congruent.

**Corresponding Angles Postulate:** If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent. *(Converse is also true)*

**Alternate Interior Angles Theorem:** If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent. *(Converse is also true)*

**Alternate Exterior Angles Theorem:** If two parallel lines are cut by a transversal, then the pairs of alternate exterior angles are congruent. *(Converse is also true)*

**Consecutive Interior Angles Theorem:** If two parallel lines are cut by a transversal, then the pairs of consecutive interior angles are supplementary.