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| **Conditional Statement** | A conditional statement has two parts, a hypothesis and a conclusion. When the statement is written in if-then form, the "if" part contains the hypothesis and the "then" part contains the conclusion. |
| **Converse** | The converse of a conditional statement is formed by switching the hypothesis and conclusion. |
| **Inverse** | The inverse is formed by negating the hypothesis and conclusion of a conditional statement. |
| **Contrapositive** | The contrapositive is formed by negating the hypothesis and conclusion of the converse of a conditional statement. |
| **Equivalent Statements** | When two statements are both true or both false they are called equivalent statements. |
| **Point Postulate** | Through any two points there exists exactly one line. |

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| **Line Postulates** | A line contains at least two points. If two lines intersect, then their intersection is exactly one point. |
| **Plane Postulates** | Through any three noncollinear points there exists exactly one plane. A plane contains at least three noncollinear points. If two points lie in a plane, then the line containing them lies in the plane. If two planes intersect, then their intersection is a line. |
| **Perpendicular Lines** | Two lines are called perpendicular lines if they intersect to form a right angle. |
| **Line Perpendicular to a Plane** | A line perpendicular to a plane is a line that intersects the plane in a point and is perpendicular to every line that lies in the plane. |
| $\perp$ | The symbol $\perp$ is read as "is perpendicular to." |

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| **Biconditional Statement** | A biconditional statement is a statement that contains the phrase "if and only if." To be true, both the statement and its converse must be true. |
| **Symbolic Notation: Conditional Statement** | Conditional statement: p □ q<br>If p, then q. |
| **Symbolic Notation: Converse** | Converse: q □ p<br>If q, then p. |
| **Symbolic Notation: Inverse** | Inverse: □p □ □q<br>If not p, then not q. |
| **Symbolic Notation: Contrapositive** | Contrapositive: □q □ □p<br>If not q, then not p. |
| **Deductive Reasoning** | Deductive reasoning uses facts, definitions, and accepted properties in a logical order to write a logical argument. |

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| **Inductive Reasoning** | Inductive reasoning uses previous examples and patterns to form a conjecture. |
| **Law of Detachment** | Law of Detachment<br>If $p \rightarrow q$ is a true conditional statement and p is true, then q is true. |
| **Law of Syllogism** | Law of Syllogism<br>If $p \rightarrow q$ and $q \rightarrow r$ are true conditional statements, then $p \rightarrow r$ is true. |
| **Addition Property** | Addition Property If a = b, then a + c = b + c. |
| **Subtraction Property** | Subtraction Property<br>If a = b, then a − c = b − c. |
| **Multiplication Property** | Multiplication Property<br>If a = b, then ac = bc. |

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| **Division Property** | Division Property<br>If a = b and c ≠ 0,<br>then a ÷ c = b ÷ c. |
| **Reflexive Property** | Reflexive Property<br>For any real number a, a = a. |
| **Symmetric Property** | Symmetric Property<br>If a = b, then b = a. |
| **Transitive Property** | Transitive Property<br>If a = b and b = c, then a = c. |
| **Substitution Property** | Substitution Property<br>If a = b, then a can be substituted<br>for b in any equation or expression. |
| **Distributive Property** | Distributive Property<br>a(b + c) = ab + ac |

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| **Reflexive Equality** | Reflexive<br>For any segment AB,<br>AB = AB.<br>For any angle A,<br>m∠A = m∠A. |
| **Symmetic Equality** | Symmetic<br>If AB = CD, then CD = AB.<br>If m∠A = m∠B, then m∠B = m∠A. |
| **Transitive Equality** | Transitive<br>If AB = CD and CD = EF, then AB = EF.<br>If m∠A = m∠B and m∠B = m∠C, then m∠A = m∠C. |
| **Right Angle Congruence Theorem** | Right Angle Congruence Theorem<br>All right angles are congruent. |
| **Theorem** | A true statement that follows as a result of other true statements is called a theorem.  All theorems must be proved. |
| **Reflexive Segment Congruence** | AB = AB |

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| **Symmetric Segment Congruence** | If AB = CD, then CD = AB |
| **Transitive Segment Congruence** | If AB = CD and CD = EF, then AB = EF |
| **Congruent Supplements Theorem** | If two angles are supplementary to the same angle (or to congruent angles) then they are congruent. If $m\angle 1 + m\angle 2 = 180°$ and $m\angle 2 + m\angle 3 = 180°$, then $m\angle 1 = m\angle 3$. |
| **Congruent Complements Theorem** | If two angles are complementary to the same angle (or to congruent angles) then the two angles are congruent. If $m\angle 4 + m\angle 5 = 90°$ and $m\angle 5 + m\angle 6 = 90°$, then $m\angle 4 = m\angle 6$. |
| **Linear Pair Postulate** | If two angles form a linear pair, then they are supplementary. |
| **Conditional Statement** | A conditional statement has two parts, a hypothesis and a conclusion. When the statement is written in if-then form, the "if" part contains the hypothesis and the "then" part contains the conclusion. |

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| **Converse** | The converse of a conditional statement is formed by switching the hypothesis and conclusion. |