

Deductive Reasoning

Deductive Reasoning - Uses the laws of logic to reach a conclusion.

Law of Detachment - If $p \rightarrow q$ is true and p is true, then q is true.

Law of Syllogism - If $p \rightarrow q$ is true and $q \rightarrow r$ is true, then $p \rightarrow r$ is true.

Directions: Determine if statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism.

1. (1) If a quadrilateral is a rectangle, then its opposite sides are congruent.

(2) $\overline{AB} \cong \overline{CD}$ and $\overline{AD} \cong \overline{BC}$.

(3) $ABCD$ is a rectangle.

2. (1) If an angle is obtuse, then it is not acute.

(2) $\angle 1$ is obtuse.

(3) $\angle 1$ is not acute.

3. (1) Vertical angles are congruent.
(2) If two angles are congruent, then their measures are equal.
(3) If two angles are vertical, then their measures are equal.

Directions: Determine if a valid conclusion can be reached from the two true statements using the Law of Detachment or the Law of Syllogism.

4. (1) If two angles are vertical, then they do not form a linear pair.
(2) If two angles are vertical, then they are congruent.
5. (1) If two lines intersect to form a right angle, then they are perpendicular.
(2) ℓ and m are perpendicular.
6. (1) If an angle is obtuse, then its measure is greater than 90° .
(2) $\angle 1$ is obtuse.