

## 2.3 - Deductive Reasoning

- 1) In your own words, what is the difference between inductive reasoning and deductive reasoning?

**Make a valid conclusion in the situation.**

- 2) If the measure of an angle is  $90^\circ$ , then it is a right angle. The measure of  $\angle A$  is indeed  $90^\circ$ .

- 3) If  $x > 12$ , then  $-x < -12$ . The value of  $x$  is 15.

**In #4 -#12, determine the logical conclusion and state which law you used: Law of Detachment (LOD), Law of Contrapositive (LOC), or Law of Syllogism (LOS). If no conclusion can be drawn, write “no conclusion.”**

- 4) People who vote for Jane Wannabe are smart people. I voted for Jane Wannabe.

- 5) If Rae is the driver today then Maria is the driver tomorrow. Ann is the driver today.

- 6) If a shape is a circle, then it never ends. If it never ends, then it never starts. If it never starts, then it doesn't exist. If it doesn't exist, then we don't need to study it.

- 7) If you text while driving, then you are unsafe. You are a safe driver.

- 8) If you wear sunglasses, then it is sunny outside. You are wearing sunglasses.
- 9) If you wear sunglasses, then it is sunny outside. It is cloudy.
- 10) I will clean my room if my mom asks me to. I am not cleaning my room.
- 11) If a rectangle has four equal side lengths, then it is a square. If a polygon is a square, then it is a regular polygon.
- 12) If  $y > 0$ , then  $2y > 0$ . If  $2y > 0$ , then  $2y - 5 \neq -5$

**In #13-17, decide whether inductive or deductive reasoning is used to reach the conclusion. Briefly explain why.**

- 13) The rule at your school is that you must attend all of your classes in order to participate in in-school sports after school. You played in a soccer game after school on Monday. Therefore, you went to all of your classes on Monday.
- 14) For the past 5 years, your neighbor goes on vacation every July 4th and asks you to feed her hamster. You conclude that you will be asked to feed her hamster on the next July 4th.

- 15) John is watching the weather. As the day goes on it gets more and more cloudy and cold. He concludes that it is going to rain.
- 16) Beth's 2-year-old sister only eats hot dogs, blueberries and yogurt. Beth decides to give her sister some yogurt because she is hungry.
- 17) Nolan Ryan has the most strikeouts of any pitcher in Major League Baseball. Jeff debates that he is the best pitcher of all-time for this reason.

In #18 & 19, write a truth table for the following variables.

18)  $p \vee \sim q$

19)  $\sim p \wedge \sim q$