

1.B – Applying Deductive Reasoning

- 1) In your own words, what is the difference between inductive reasoning and deductive reasoning?
- 2) Give a situation in real life that inductive reasoning and deductive reasoning can be used. Explain.

Make a valid conclusion in the situation.

- 3) If the measure of an angle is 90° , then it is a right angle. The measure of $\angle A$ is indeed 90° .
- 4) If $x > 12$, then $-x < -12$. The value of x is 15.

Write the statement that follows from the pair of statements that are given.

- 5) 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.
- 6) If $y > 0$, then $2y > 0$. If $2y > 0$, then $2y - 5 \neq -5$
- 7) If you play the clarinet, then you play a woodwind instrument. If you play a woodwind instrument, then you are a musician.
- 8) What can you say about the sum of an even integer and an even integer? Use inductive reasoning to form a conjecture. Then use deductive reasoning to show that the conjecture is true.

In #9 and #10, what conclusions can you make using the true statement?

- 9) If you save \$2000, then you can buy a car. You have saved \$1200.
- 10) The bakery makes a profit if its revenue is greater than its costs. You will get a raise if the bakery makes a profit.

In #11 and #12, decide whether inductive or deductive reasoning is used to reach the conclusion. Explain why.

- 11) 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.
- 12) 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.

In #13-16, use the true statements below to determine whether you know the conclusion is true or false. Explain.

- If Arlo goes to the baseball game, then he will buy a hot dog.
- If the baseball game is not sold out, then Arlo and Mia will go to the game.
- If Mia goes to the baseball game, then she will buy popcorn.
- The baseball game is not sold out.

- 13) Arlo bought a hot dog.
- 14) Arlo and Mia went to the game.
- 15) Mia bought a hot dog.
- 16) Arlo had some of Mia's popcorn.