

Make a valid conclusion in the situation.

1. If the measure of an angle is 90° , then it is a right angle. The measure of $\angle A$ is 90° .

$\angle A$ is a right angle.

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

$$-15 < -12$$

3. If a book is a biography, then it is nonfiction. You are reading a biography.

You are reading a nonfiction book.

4. If two angles are vertical angles, then they have the same measure. You know that $\angle 1$ and $\angle 2$ vertical angles.

Then $\angle 1$ and $\angle 2$ have the same measure.

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.

If a rectangle has four equal side lengths, then it is a regular polygon.

6. If $y > 0$, then $2y > 0$. If $2y > 0$, then $2y - 5 \neq -5$.

$$\text{If } y > 0, \text{ then } 2y - 5 \neq -5$$

7. If you play the clarinet, then you play a woodwind instrument. If you play a woodwind instrument, then you are a musician.

If you play the clarinet, then you are a musician.

8. Describe and correct the error in the argument: "If two angles are a linear pair, then they are supplementary. Angles C and D are supplementary, so the angles are a linear pair."

*Linear Pairs are not the only pair of angles that can be supplementary.

Angles C and D are supplementary, so the sum of their measures equal 180°

What conclusions can you make using the true statement?

9. If you save at least \$2000, then you can buy a used car. You have saved \$2400.

You cannot buy a car.

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.

You will get a raise if the bakery's revenue is greater than its costs.

Select the word(s) that make the conclusion true.

11. Mesa Verde National Park is in Colorado. Simone vacationed in Colorado. So Simone (*must have, may have or never*) visited Mesa Verde National Park.

may have

12. The cliff dwellings in Mesa Verde National Park are accessible to visitors only when accompanied by a park ranger. Billy is at a cliff dwelling in Mesa Verde National Park. So, Billy (*is, may be, is not*) with a park ranger.

is

Decide whether inductive or deductive reasoning is used to reach the conclusion. Explain your reasoning.

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13. The rule at your school is that you must attend all of your classes in order to participate in sports after school. You played in a soccer game after school on Monday. Therefore, you went to all of your classes on Monday.

Deductive

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.

Inductive

Use the true statements below to determine whether you know the conclusion is true or false. Explain your reasoning.

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.

15. Mia bought a hot dog.

False; she will buy popcorn

16. Arlo had some of Mia's popcorn.

False; not enough info.

17. Arlo bought a hot dog.

True; (Not sold out → went to the game)

18. Arlo and Mia went to the game.

True; (Not sold out)

Determine if statement (3) follows from statements (1) and (2) by either the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If not, write not invalid.

19. (1) If you order the apple pie, then it will be served with ice cream

(2) Matthew ordered the apple pie.

(3) Matthew was served ice cream.

Law of Detachment

20. (1) If $\angle 2$ is acute, then $\angle 3$ obtuse.

(2) If $\angle 3$ is obtuse, then $\angle 4$ acute.

(3) If $\angle 2$ is acute, then $\angle 4$ acute.

Law of Syllogism.