

Lesson 2.3 Worksheet

Name: Key

Use the *Law of Detachment* to make a valid conclusion about 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.

The book is nonfiction

Use the *Law of Syllogism (Chain Rule)* to write the conclusion that follows from the pair of statements that are given.

4.) If a rectangle has four equal side lengths, then it is a square. If a polygon is a square, then it is a ~~rectangle~~ ^{regular polygon}.

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

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

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

6.) 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.

7.) If $a = 3$, then $5a = 15$. If $\frac{1}{2}a = 1\frac{1}{2}$, then $a = 3$.

$$\text{If } \frac{1}{2}a = 1\frac{1}{2}, \text{ then } 5a = 15$$

What conclusions can you make using the true statement below?

8.) If you save \$2000, then you can buy a car. You have saved \$1200.

You cannot buy a car

9.) The bakery makes a profit if its revenue is greater than its costs. You will get a raise if the bakery makes a profit.

If the bakery's revenue is greater than its costs, then you will get a raise.

- In 10-14: 1) Make a conclusion for the given statements.
2) State which law you used.

**** IF NO CONCLUSION CAN BE MADE, JUST WRTE "NO CONCLUSION"****

- 10.) If you park a car on a hill, then you should set the parking break. When parking your car at the movies, you set your parking break.

Conclusion: No conclusion

Law:

- 11.) If the ice on the lake becomes brittle, the lake may be unsafe to walk on. If there is a rapid decrease in temperature, then the ice on the lake becomes brittle.

Conclusion: If there is a rapid decrease in temperature, the lake be unsafe to walk on

Law: Law of Syllogism

- 12.) If a surgeon is well-rested, they operate with precision. Dr. Klein got plenty of sleep for today's operation.

Conclusion: Dr. Klein will operate with precision.

Law: Law of Detachment

- 13.) If a basketball player receives two technical fouls in one game, then the player is ejected from the game. If a basketball player receives two technical fouls in one game, they are suspended for the following game.

Conclusion: No conclusion

Law:

- 14.) If we make any bathroom stops, then we will miss the start of the game. We missed the start of the game.

Conclusion: No conclusion

Law:

In exercises 15-18, 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.) Arlo bought a hot dog. True; Game not sold out, so he goes and buys a hot dog.

- 16.) Arlo and Mia went to the baseball game. True; was not sold out, so they went

- 17.) Mia bought a hot dog. False; Mia bought popcorn

- 18.) Arlo has some of Mia's popcorn. False; Arlo buys a hot dog.