

Name:	Date:
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Topic:	Class:
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Main Ideas/Questions	Notes/Examples
<b>DEDUCTIVE</b> Reasoning	The process of reasoning logically and drawing a conclusion from given facts and statements.
<b>LAW OF DETACHMENT</b>	<p>Given a conditional statement, if the <u>hypothesis</u> is <u>true</u>, then the <u>Conclusion</u> is <u>true</u>.</p> <p>Symbolic Map:</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math display="block">\begin{array}{l} p \rightarrow q \\ p \\ \hline \therefore q \end{array}</math> </div> <p>(<math>\therefore</math> is the symbol for therefore.)</p>

**Directions:** Use the Law of Detachment to give a valid conclusion. If not possible, write *no valid conclusion*.

1. **Given:** If Mark saves \$30, then he can buy a new video game.  
Mark saves \$30.

**Conclusion:** Mark can buy a new video game.

2. **Given:** If a quadrilateral is a rhombus, then it is also a parallelogram.  
Quadrilateral ABCD is a rhombus.

**Conclusion:** Quadrilateral ABCD is a parallelogram.

3. **Given:** If you are 18 years old, then you can register to vote.  
Olivia is not 18 years old.

**Conclusion:** No Valid Conclusion

4. **Given:** If the sum of the measures of two angles is  $90^\circ$ , then they are complementary.  
 $m\angle J = 58^\circ$  and  $m\angle K = 32^\circ$

**Conclusion:**  $\angle J$  and  $\angle K$  are Complementary.

5. **Given:** If you plan to attend prom, then you must purchase a ticket.  
Sarah purchases a prom ticket.

**Conclusion:** No valid conclusion.

## LAW OF SYLLOGISM

Allows you to draw a conclusion from 2 conditional statements in which the conclusion of the first statement is the hypothesis of the second statement.

Symbolic Map:

$$\begin{array}{l} p \rightarrow q \\ q \rightarrow r \\ \hline \therefore p \rightarrow r \end{array}$$

**Directions:** Use the Law of Syllogism to give a valid conclusion.  
If not possible, write no valid conclusion.

6. **Given:** If it is Saturday, then Jake has a baseball tournament.  
If Jake has a baseball tournament, then he will need to pack his lunch.

**Conclusion:** If it is Saturday, then Jake will need to pack his lunch.

7. **Given:** If a number is divisible by 12, then it is divisible by 6.  
If a number is divisible by 6, then it is divisible by 3.

**Conclusion:** If a number is divisible by 12, then it is divisible by 3.

8. **Given:** If a quadrilateral is a square, then it is a rectangle.  
If a quadrilateral is a rectangle, then it has four right angles.

**Conclusion:** If a quadrilateral is a square, then it has four right angles.

9. **Given:** If it is sunny this weekend, then you will go boating.  
If it is sunny this weekend, then you will wear shorts.

**Conclusion:** No valid conclusion.

10. **Given:** If you shop at Target, then you will use your Target Red Card.  
If you do not use your Target Red Card, then you will not get 5% off.

**Conclusion:** No valid conclusion.

11. **Given:** If it snows, then school will be canceled.  
If school is canceled, then students will need to make-up a day of school.

**Conclusion:** If it snows, then students will need to make-up a day of school.