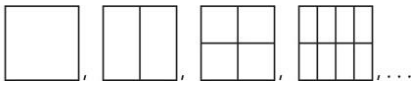
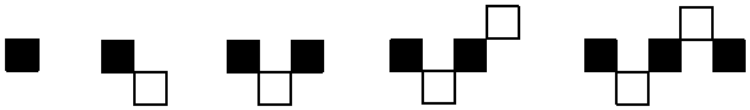
Name_____ **Geometry** **2.1-2.4 Study Guide**

What is the next term in each sequence?

1. 

2. 

3. 3, 5, 9, 15, 23, …

4. 2, 2.1, 2.01, 2.001, …

Provide a counter example to show the conjecture is false.

5. All plurals end with the letter *s.*

   Counterexample_____

6. The difference between two integers is always positive.

   Counterexample_____

Underline the hypothesis, and box in the conclusion of each statement. Then write the inverse, converse and contrapositive of the statements.

7. If the sidewalks are wet, then it has been raining.

   Converse_____

   Inverse_____

   Contrapositive_____

8. If a triangle has three congruent angles, then the triangle is equilateral.

   Converse_____

   Inverse_____

   Contrapositive_____

Write the sentence as a conditional.

9. Apples grow on trees.

   Conditional_____

Determine if the conditional is *true* or *false.* If it is *false*, give a counter-example.

10. If an animal is brown, then it is a dog

    True_____ or False_____

    Counterexample: _____

11. If a figure is a rectangle, then it has exactly four sides.

    True_____ or False_____

    Counterexample: _____

For each statement, write the converse statement. If both the conditional and its converse are true, write the biconditional statement as well.

12. If two angles are linear, then their measures sum to 180.

Converse_____

Biconditional_____

13. If a closed figure is a pentagon, then it has exactly five sides.

Converse_____

Biconditional_____

Given hypothesis (p):"birds sing"and conclusion (q): "sun is out," then write the following conditional statements and identify them as conditional, converse, inverse, or contrapositive.

14. $p \rightarrow q$ _____

_____

15. $\sim p \rightarrow \sim q$ _____

_____

16. $q \rightarrow p$ _____

_____

17. $\sim q \rightarrow \sim p$ _____

_____

Given hypothesis (p): "Bob walks" and conclusion (q): "dogs play," Identify the following statements as converse, inverse, or contrapositive statements.

18. If Bob doesn't walk, then dogs don't play. _____

19. If dogs don't play, then Bob doesn't walk. _____

20. If dogs play, then Bob walks. _____

21. If Bob walks, then dogs play. _____

Use the Law of Detachment(LD) and the Law of Syllogism(LS) to make conclusions from the following statements. State which Law was used. State Not Valid (NV) if it is not possible to make a conclusion.

_____22. If a triangle is a right triangle, then the triangle has one 90º angle.
ΔABC is a right triangle...
Conclusion_____

_____23. If cats prowl, mice will scatter.
Mice are scattering...
Conclusion_____

_____24. To take Calculus, you must first take Algebra 2.
To take Algebra 2, you must first take Algebra 1.
Conclusion_____

_____25. If you like to snow ski, then you will like Colorado.
If you like to wakeboard, then you will like Florida.
Conclusion_____

Determine if the following are valid forms of logic. If so, name the law (LD or LS). If they are not valid statements, state invalid (NV).

_____26. If the measure of an angle is greater than 90, then it is obtuse.
$m\angle T$ is greater than 90.
$\therefore \angle T$ is obtuse.

_____27. If April is an athlete, then she is a swimmer.
April is an athlete.
$\therefore$ April is a swimmer.

_____28. If Pedro is taking history, then he will study about World War II.
Pedro will study about World War II.
$\therefore$ Pedro is taking history.

_____29. If Julia studies Geometry, then she passes her test.
Julia did not study Geometry
$\therefore$ Julia did not pass her test.

_____30. If William is reading, then he is reading a magazine.
If William is reading a magazine, then he is reading a magazine about computers.
$\therefore$ If William is reading, then he is reading a magazine about computers.