Geometry WS 2.1-2.4

1 – 3. Find the next item in the pattern.

1. 100, 81, 64, 49, _____   2. Z, Y, X, _____   3. -1, 3, -9, 27, _____

4. Circle the type of reasoning you used to answer #1-3   Inductive   or   Deductive

5 - 12. Determine if each conjecture is true. If it is false, give a counter-example.

5. If B is the midpoint of AC, then AB = BC.   6. If a living thing is green, then it is a plant.

7. If an animal has paws, then it is a cat.   8. If $n \geq 0$, then $\dfrac{n}{2} > 0$.

9. If x is a prime number, then x + 2 is also a prime number.

10. The vertices of the image of a figure under the translation (x, y) → (x+0, y+0) have the same coordinates as the pre-image.

11. If an angle is acute, then it has a measure of 30°.   12. If 9x – 11 = 2x +3, then x = 2.

Identify the Hypothesis and Conclusion of each statement.

13. If it is a bicycle, then it has two wheels.   14. I will go indoors if it rains.
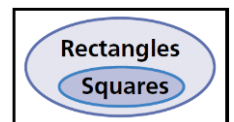
   Hyp:_____   Hyp:_____

   Conc: _____   Conc:_____

15. An angle is obtuse if its measure is 107°.   16. Write a conditional statement

   Hyp: _____   from the given diagram.

   Conc:_____

17. Given the conditional p → q , find the following.

Converse:_____   Inverse:_____   Contrapositive:_____

18. If an animal is an owl, then it is nocturnal.

Converse: _____

Inverse: _____

Contrapositive: _____

19. If a number is even, then it is divisible by 4.

Converse: _____

Inverse: _____

Contrapositive: _____

20 – 21   Identify whether each conclusion uses Inductive or Deductive Reasoning.

20. At RPHS, students must pass Geometry before they can take Algebra 2. Emily is in Algebra 2, so she must have passed Geometry.

21. Tonya studied 3 hours for each of her last two geometry tests. She got an A on both tests. She concludes that she will get an A on the next test if she studies for 3 hours.

22 – 24 Determine if the following are valid by Law of Detachment:

22. If a person sees a polar bear, then they are in the arctic. James is in the arctic.   Conjecture: James sees a polar bear.

23. If a person is 16, then they can drive a car. Johnna is 16.   Conjecture: Johnna can drive a car.

24. If an American citizen is at least 18 years old, then he or she is eligible to vote. Anna is a 20-year old American citizen.   Conjecture: Anna is eligible to vote.

Determine if the following are valid by Law of Syllogism:

25. If a team wins 10 games, then they make the playoffs. If a team makes the playoffs, then they travel to Florida.   The Ravens won 10 games.   Conjecture: The Ravens will travel to Florida.

26. If a dog eats a lot, then it will get fat. If a person always leaves food out, then a dog will eat a lot. Amy always leaves food out for her dog.   Conjecture: Amy's dog will get fat.

27. Draw a conclusion from the given information:

If a polygon is a triangle, then it has 3 sides. If a polygon has three sides, then it is not a quadrilateral.

Polygon P is a triangle.   Conclusion:_____

Write a biconditional statement from the given definition or conditional.

28. A triangle is a three-sided polygon.

29. The measure of a right angle is 90 degrees.

30. If the month is January, then it is the first month of the year.

Determine if the bi-conditional statement is true. If false, provide a counter example.

31. An object is an automobile if and only if it has wheels and moves along the ground.

32. A machine is a calculator iff it performs computations with numbers.

33. Points are coplanar iff they lie on the same plane.

Write the recursive and explicit equations for each sequence of numbers.

34.   10, 7, 4, 1,…   Recursive: Explicit:

35.   -5, 5, 15, 25,…   Recursive: Explicit:

36. Write a rule in terms of n for the number of dots in the sequence.