Practice Worksheet for Lesson 3-6 Name:

Mailbox #:

Look for a pattern and predict the next <u>two</u> numbers in each sequence.

1) 1, 4, 16, 64, _____, _____

2) 1, 1, 2, 3, 5, 8, _____, _____

3) 1, 1/3, 1/9, 1/27, _____, _____

4) 1, 4, 9, 16, _____, _____

5) 2, 3, 5, 8, 12, _____, _____

6) 10, 12, 16, 22, 30, _____, _____

7) 40, 39, 36, 31, 24, _____, _____

8) 8, -4, 2, -1, $\frac{1}{2}$, _____, _____

Tell whether the reasoning process is deductive or inductive.

9) Ky did his assignment, adding the lengths of the sides of triangles to find the perimeters. Noticing the results for several equilateral triangles, he guesses that the perimeter of every equilateral triangle is three times the length of a side.

10) Linda observes that $(-1)^2 = +1$, $(-1)^4 = +1$, and $(-1)^6 = +1$. She concludes that every even power of (-1) is equal to +1.

11) John knows that multiplying a number by -1 merely changes the sign of the number. He reasons that multiplying a number by an even power of -1 will change the sign of the number an even number of times. He concludes that this is equivalent to multiplying a number by +1, so that every even power of -1 is equal to +1.

Accept the two statements as given information. State a conclusion based on *deductive* reasoning. If no conclusion can be reached, write *none*.

12) Polygon G has more than 6 sides
Polygon G has fewer than 8 sides

13) Polygon G has more than 6 sides
Polygon K has more than 6 sides

14) There are three sisters. Two of them are athletes and two of them like tacos. Can you be sure that both athletes like tacos? Do you reason deductively or inductively to conclude the following? *At least one of the athletic sisters like tacos.*

Write the equation you think should come next.

15) $1 \times 9 + 2 = 11$
$12 \times 9 + 3 = 111$
$123 \times 9 + 4 = 1111$

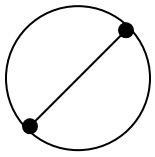
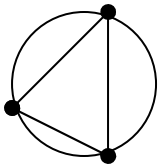
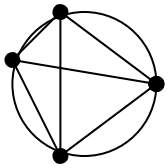
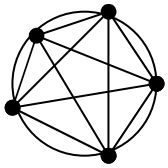
16) $9^2 = 81$
$99^2 = 9801$
$999^2 = 998001$

17) a) substitute each of the integers from 1 to 9 for n in the expression $n^2 + n + 11$.

b) Using inductive reasoning, guess what kind of number you will get when you substitute any positive integer for n in the expression $n^2 + n + 11$.

c) Test your guess by substituting 10 and 11 for n.

18) Study the diagrams below. Then guess the number of regions for the fourth diagram. Check your answer by counting.

			
2 points 2 regions	3 points 4 regions	4 points 8 regions	5 points __?__ regions