Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
INDUCTIVE Reasoning	Making a conclusion based on observations and patterns.
CONJECTURE	A concluding statement reached using inductive reasoning.

Directions: Find the next five terms of the sequence. Then write a conjecture.

1. 38, 31, 24, 17, 10, 3, -4, -11, -18

Conjecture: To generate the next term, subtract 7 from the previous term.

2. 2, 5, 11, 23, 47, 95, 191, 383, 767

Conjecture: To generate the next term, double the previous term and add 1.

3. 1, 4, 9, 16, 25, 36, 49, 64, 81

Conjecture: Each term is a perfect square. To find the "n^{th} term", square "n".

4. A, D, G, J, M, P, S, V, Y

Conjecture: To generate the next term, skip two letters after the previous term.

5. 7:30, 7:55, 8:20, 8:45, 9:10, 9:35, 10:00, 10:25

Conjecture: To generate the next term, add 25 minutes to the previous term.

6. 3, 1, 4, 1, 5, 9, 2, 6, 5, 3

Conjecture: Each term is a digit of π. To find the "n^{th} term", find the "n^{th} digit" of π.

COUNTEREXAMPLE	An example that shows a conjecture is false.

Directions: Determine whether the conjecture is true or false. If false, provide a counterexample.

7. The sum of any two consecutive integers is always odd.

True

8. The product of two numbers is always larger than either number.

False ; $2\left(\frac{1}{2}\right) = 1$ or $5(0) = 0$

9. The product of two perfect squares is always a perfect square.

True

10. If the area of a rectangle is 6 m^2, then the dimensions must be 2 meters by 3 meters.

False ; 1 m x 6 m

11. Dividing by 2 always results in a number less than the original number.

False ; $\frac{-8}{2} = -4$ or $\frac{0}{2} = 0$

12. Vertical angles are never complementary angles.

False ; If the vertical angles measure 45°, then they're complementary.

13. If $a \cdot b = 0$, then either $a = 0$ or $b = 0$.

True

14. Two angles supplementary to the same angle must be congruent.

True

15. All state names have at least two syllables.

False; Maine

16. Squaring a number and adding one will always result in an even number.

False ; $10^2 + 1 = 101$ or $4^2 + 1 = 17$

Write your own conjectures! Then trade with your partner and determine if the conjecture is true or false. If false, provide a counterexample.

17. Conjecture: _____

_____

T/F: _____

18. Conjecture: _____

_____

T/F: _____