

Name: _____ Class: _____

Topic: _____ Date: _____

Main Ideas/Questions	Notes
Inductive Reasoning	making a conclusion based on observations & patterns
Conjecture	A concluding statement reached using inductive reasoning

Examples: Find the next five terms of the sequences 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
 $\begin{matrix} \cdot 2 & \cdot 2 \\ +1 & +1 \end{matrix}$
Conjecture: to generate the next term, double the previous and add 1.

3. 1, 4, 9, 16, 25, 36, 49, 64, 81
Conjecture: to generate the next term, square n .

4. A, D, G, J, M, P, S, V, Y
Conjecture: to generate the next term skip 2 letters after previous.

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 mins 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 next, identify the n^{th} term of π .

Counterexample

an example that shows a conjecture is false.

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

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

true

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

false $2(\frac{1}{2}) = 1$; $0.5 = 0$

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

true

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

false 1×6

5. Dividing by 2 always produces a number less than the original number.

false $-\frac{8}{2} = -4$ $-4 > -8$

6. Vertical angles are never complementary angles.

false if the angles are 45° then they $= 90^\circ$.

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

true

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

true

9. All state names have at least two syllables.

false maine

10. Squaring a number and adding one will always produce an even number.

false $10^2 = 100 + 1 = 101$

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

11. Conjecture: _____

T/F: _____

12. Conjecture: _____
