

# Inductive Reasoning Guided Notes

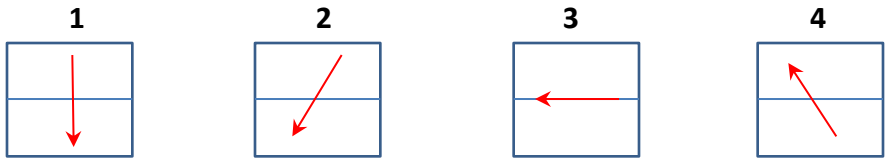
**Inductive reasoning** is a type of reasoning in which you look at a pattern and then make some type of prediction based on the pattern.

These predictions are also called **conjectures**.

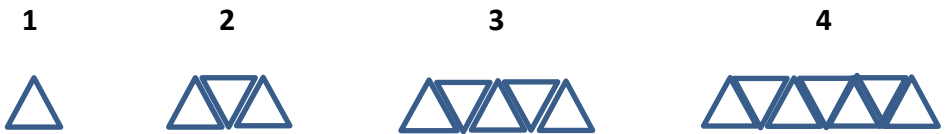
A **conjecture** is a statement about what you think will happen based on the pattern you observed.

**Sample Problem 1:** Make a conjecture about the next figure in the pattern. Then draw the figure.

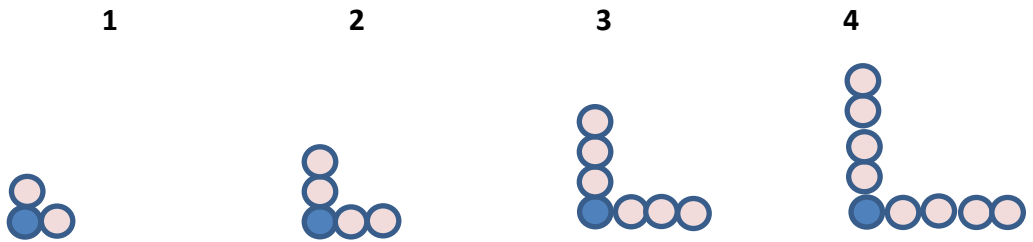
a.



b.



c.



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**Sample Problem 2:** Write a rule for each number pattern, and find the next number.

a. 3, 7, 11, 15, 19 ... ..

b. 1, 2, 4, 8, 16 ... ..

c. 10, 5, 2.5, ... 1.25

One way to show that a conjecture is not true is to find a counterexample.

**A counterexample** is an instance in which the conjectured pattern does not work.

Only one counterexample is needed to prove a conjecture false. A counterexample can be a drawing, a statement, or a number.

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**Sample Problem 3:** Find one counterexample to show that each conjecture is false.

- a. The difference between two integers is always positive.
  
- b. All prime numbers are odd integers.
  
- c. If the product of two numbers is positive, then the two numbers must both be positive.

## Finding the $n$ term

**Sample Problem 4:** Find the  $n$  term.

a.

$n$	1	2	3	4	5	6	7
$4n - 2$							

b.

$n$	1	2	3	4	5	6	7
$5n + 2$							