LESSON 2-1 Inductive Reasoning and Conjecture

Target:_____

_____

Making Conjectures

Inductive reasoning is reasoning that uses information from different examples to form a conclusion or statement called a **conjecture**.

Example 1 **Write a conjecture about the next number in the sequence 1, 3, 9, 27, 81.**

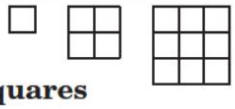
Look for a pattern:

Each number is a power of 3.

1	3	9	27	81
3^0	3^1	3^2	3^3	3^4

Conjecture: The next number will be 3^5 or 243.

Example 2 **Write a conjecture about the number of small squares in the next figure.**



Look for a pattern: The sides of the squares have measures 1, 2, and 3 units.
Conjecture: For the next figure, the side of the square will be 4 units, so the figure will have 16 small squares.

Find Counterexamples

A conjecture is false if there is even one situation in which the conjecture is not true. The false example is called a **counterexample**.

Example **Find a counterexample to show the conjecture is false.**

If $\overline{AB} \cong \overline{BC}$, then B is the midpoint of $\overline{AC}$.

Is it possible to draw a diagram with $\overline{AB} \cong \overline{BC}$ such that B is not the midpoint? This diagram is a counterexample because point B is not on $\overline{AC}$. The conjecture is false.