

Making Conjectures: Inductive Reasoning

Conjecture – A conclusion that is based on evidence, but not yet proved. Additional evidence may support a conjecture, but does not prove it.

Inductive Reasoning – Observing patterns and identifying properties in specific examples in order to make a general conjecture

Example 1: Use Inductive Reasoning to Make a Conjecture about Integers

Make a conjecture about the sum of two odd integers.

Solution:

STEP 1: Find examples.

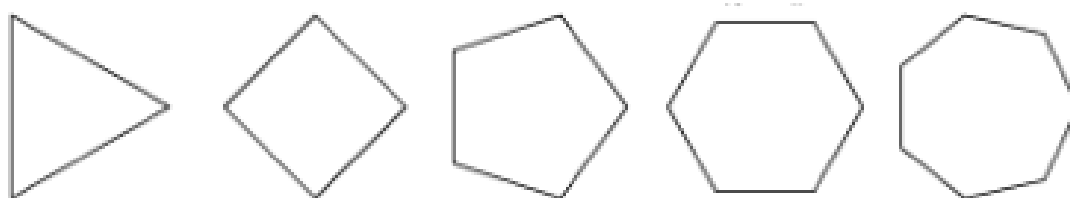
STEP 2: Look for a pattern and form a conjecture.

Example 2: Use Inductive Reasoning to Make a Conjecture about Polygons

Make a conjecture about the relationship between the *number of sides* of a polygon and the *number of triangles formed by drawing all the diagonals from one vertex* of the polygon.

Solution:

STEP 1: Find examples.



Number of Sides					
Number of Triangles					

STEP 2: Look for a pattern and form a conjecture.

Example 3: Use Inductive Reasoning to Make a Conjecture about Integers

Make a conjecture about the sum of the first n positive even integers.

Solution:

STEP 1: Find examples.

Determine the sum for $n = 2$. _____ = _____ = _____

Determine the sum for $n = 3$. _____ = _____ = _____

Determine the sum for $n = 4$. _____ = _____ = _____

Determine the sum for $n = 5$. _____ = _____ = _____

Determine the sum for $n = 6$. _____ = _____ = _____

STEP 2: Look for a pattern and form a conjecture.

YOUR TURN:

1. Make a conjecture about the sum of a two-digit number and the number with the same digits transposed.

STEP 1: Find examples.

$$13 + 31 = \underline{\hspace{2cm}}$$

STEP 2: Look for a pattern and form a conjecture.

2. Make a conjecture about the sum of two consecutive odd numbers.

STEP 1: Find examples.

$$1 + 3 = \underline{\hspace{2cm}}$$

STEP 2: Look for a pattern and form a conjecture.

3. Make a conjecture about the product of 9 and another whole number containing only repeated 7's.

STEP 1: Find examples.

$$9 \times 77 = \underline{\hspace{2cm}}$$

STEP 2: Look for a pattern and form a conjecture.

4. Make a conjecture about the quotient of the square of an odd number and 4.

STEP 1: Find examples.

$$\frac{3^2}{4} = \underline{\hspace{2cm}}$$

STEP 2: Look for a pattern and form a conjecture.