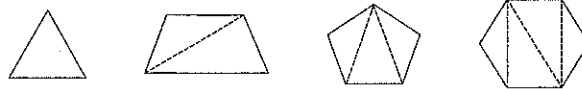


Skill Set 5: Induction

Induction is a reverse process of deduction. It is used to draw a general conclusion from specific computations in a problem.

Example:

Look at the figures below.



What can you say about the relationship between the number of triangles used to form each figure and the number of sides of the figure? How many triangles are needed to form a figure with n sides?

Think

- Gather the information given.
- If necessary, create a table to organize the data.
- Use the data to find a pattern and draw a general conclusion about the relationship.

Solve

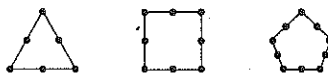
Number of Triangles	Number of Sides
1	3
2	4
3	5
4	6

The number of triangles is always 2 fewer than the number of sides.

Answer $n - 2$ triangles are needed to form a figure with n sides.

Give it a try!

Look at the figures below.



What can you say about the relationship between the number of sides on each figure and the number of dots on each figure? How many dots would be on a figure with n sides?

Think

Use the data in a table to find a pattern and draw a general conclusion about the relationship.

Solve

Number of Sides	Number of Dots

Answer _____ dots would be on a figure with n sides.

(Answer: $2n$)

Practice Questions

1. Look at the data in the table below. Induce and generalize a relationship between the number of sides on a figure and the sum of its interior angles.



Think

Number of Sides	Sum of Interior Angles
3	180°
4	360°
5	540°
6	720°



Solve



Answer

2. Study the following pattern.

```
      1                ← line 1
     2  4
    3  6  9
   4  8 12 16
  5 10 15 20 25      ← line 5
```

What can you say about the numbers found in line 18?



Think



Solve



Answer

Practice: Induction

3. Given 1, 3, 8, 15, ...
What is the 10th number?



Think



Solve



Answer

4. Find the sum of all of the odd numbers from 1 to 200.



Think



Solve



Answer

