

**Inductive reasoning** is a type of reasoning that reaches conclusions based on a pattern of specific examples or past events. How can you use inductive reasoning to determine what appears to be the next two terms in the sequence?

A. 88, 82, 76, 70, 64, ... 58, 52

B. 3, 5, 9, 15, 23, 33, 45

1. What appear to be the next two terms in each sequence?

a. 800, 400, 200, 100, ... 50, 25

Enter your answer.

CHECK ANSWER





b. 18, 24, 32,  $\frac{128}{3}$ , ...

$$\frac{512}{9} \quad \frac{2048}{27}$$

$$\frac{24}{18} = \frac{4}{3}$$

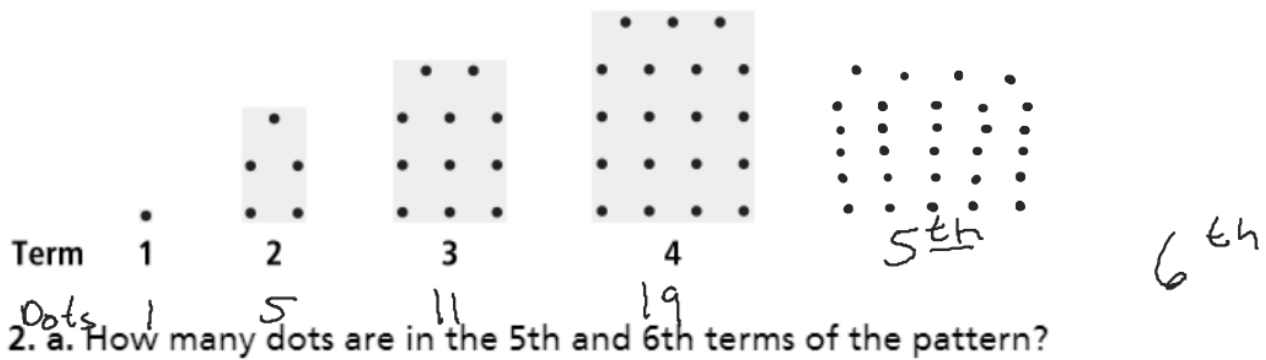
$$\begin{array}{l} 58, 64 \\ 42, 54 \end{array}$$

A **conjecture** is an unproven statement or rule that is based on inductive reasoning. What conjecture can be made about the number of dots in the  $n$ th term of this geometric pattern?

					
Term	1	2	3	4	$n$
Number of Dots	2	6	12	20	

$$n + (n+1)$$

$$\boxed{n(n+1)}$$



Enter your answer

$$5^{\text{th}} = 29$$

$$6^{\text{th}} = 41$$

CHECK ANSWER

b. What conjecture can you make about the number of dots in the  $n$ th term of the pattern?

$$n^2 + (n-1)$$

Based on the data in the table, how many residents would you expect to vote in the 7th town council election?

**SOLUTION**

**Town Council Elections  
Voter Turnout**

Year	Total Residents	Voters
1	3,511	386
2	3,790	414
3	4,085	451
4	4,907	544
5	5,562	623
6	7,014	767
7	7,786	?

850

3. Based on the data, about how many members would you expect the chess club to have in its 5th year?

Year	1	2	3	4	5
Club Members	10	13	17	22	28

+3

+4

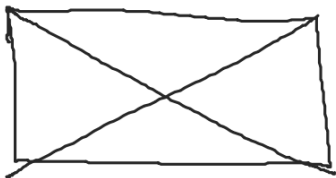
+5

+6

CHECK ANSWER

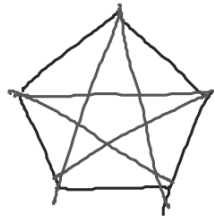
A **counterexample** is an example that shows a statement or conjecture is false.

Conjecture: A polygon with diagonals has two fewer diagonals as sides.



4

2



5

5



For the conjecture, test the conjecture with several more examples or find a counterexample to disprove the conjecture.





