

Finding the nth Term

3 7 11 15 19 23 27

+4 +4 +4 +4 +4

This is the difference between $4n$ and the number in the sequence (i.e. 3, 7, 11).

Lots of +4 together make up the 4 times table, hence $4n$.

$4n - 1$

20

What is the nth term rule for this sequence 4, 7, 10, 13...

A $4n + 3$

B $3n + 1$

C $+3n$

D $3n + 4$

Lesson 8 :

The nth Term

Learning Targets:



- I can explain why different equations can represent the same sequence

Let's see how to find terms of
sequences directly

8.1 Repeated Operations

Which One Doesn't Belong:

A. $5 + 2 + 2 + 2 + 2 + 2 + 2$

B. $5 + 6 \cdot 2$

C. $5 \cdot 2^6$

D. $5 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

8.2 More Paper Slicing

n (number of cuts)	$C(n)$ (area in square inches of each piece)
0	80
1	40
2	20
3	10
4	5

Remember the activity:

Clare takes a sheet of paper that is 8 inches by 10 inches, cuts the paper in half, stacks the pieces, cuts the pieces in half, then stacks them, etc.

How can we write a recursive definition for $C(n)$?

Complete the task with your partner.

Activity Synthesis:

$$C(n) = 80 \cdot \left(\frac{1}{2}\right)^n$$

$$K(n) = 80 - 8n$$

How can you tell which of these defines a geometric sequence and which defines an arithmetic sequence?

Which is larger?

$K(10)$ or $C(10)$

Activity Synthesis

A Sierpinski triangle can be created by starting with an equilateral triangle, breaking the triangle into 4 congruent equilateral triangles, and then removing the middle triangle. Starting from a single black equilateral triangle:



Complete the task with your partner.

8.3 A Sierpinski Triangle



Explain why Andre or Lin is correct?

Lesson Synthesis:

C: 1, 2, 4, 8, 16, ...

E: 20, 13, 6, -1, -8, ...

Write an equation for the n th term.

Arithmetic and geometric sequences are just special types of these functions with a restricted domain.