Find the rule for the nth term of a linear sequence



H



1 Complete the sentence.

A sequence is linear if you _____ or ____ or ____ the same amount each time.

2 Tick the linear sequences.

1, 3, 5, 7, 9

1, 2, 4, 8, 16

20, 17, 14, 11, 8

0.8, 1, 1.2, 1.4, 1.6

1, 3, 6, 10, 15

10, -20, 30, -40

60, 30, 15, 7.5

 \bigcirc Match the sequence to the nth term.

2n + 3

4, 7, 10, 13

3n + 2

5, 7, 9,11

3n + 1

2, 5, 8, 11

3*n* – 1

5, 8, 11, 14

Find the rule for the nth term of each sequence.

α) 4, 8, 12, 16 ...

b) 5, 9, 13, 17 ...

c) 7, 11, 15, 19 ...

d) 2, 6, 10, 14 ...

What is the same about each sequence? What is different?

5



The nth term for the sequence 11, 14, 17, 20, 23 is n + 3 because it is going up by three each time.

- a) Do you agree with Whitney? ______

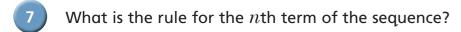
 Talk about it with a partner.
- **b)** Find the nth term of the sequence 11, 14, 17, 20, 23

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6 Complete the table.

Sequence	nth term	50th term	100th term
12, 24, 36, 48			
	8 <i>n</i> + 8		
	9 <i>n</i> – 5		
-7, -1, 5, 11			
	-6 <i>n</i>		
-3, -8, -13, -18			

Explain why the 100th term is not always double the 50th term.











How does the nth term link to the pattern?

8 a) Find the nth term of the sequence.

-3, 5, 13, 21 ...



b) Does the number 1,001 appear in this sequence?
Explain your answer.

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9 a) Find the nth term of the sequence.

Sequence A

3, 9, 15, 21, 27

b) Generate the first five terms of this sequence.

Sequence B

4n + 3



c) Sequence A and sequence B are added together.

Find the $n ext{th}$ term of the combined sequence.

Did you expect this result? Discuss with a partner.

10) Find the nth term of the sequence.

 $\frac{2}{5}$ $\frac{9}{20}$ $\frac{1}{2}$...