Find the rule for the nth term of a linear sequence

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1 Complete the sentence.

A sequence is linear if you _____ 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	

3 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
$3n - 1$	5, 8, 11, 14

4 Find the rule for the nth term of each sequence.

a) 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

_____

6 Complete the table.

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

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

7 What is the rule for the nth term of the sequence?

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.

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 nth term of the combined sequence.

Did you expect this result? Discuss with a partner.

10 Find the nth term of the sequence.

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