Linear and non-linear sequences

1 Tick the diagrams that show linear sequences.

a)

b)

c)

d)

2 Fill in the gaps to describe how each sequence is increasing.

a)

7   10   13   16

+ ☐   + ☐   + ☐

Is the sequence linear or non-linear? Explain how you know.

_____

_____

b)

7   10   15   20

+ ☐   + ☐   + ☐

Is the sequence linear or non-linear? Explain how you know.

_____

_____

3 Is the sequence linear or non-linear?
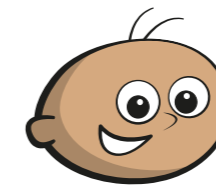
a) 3, 9, 15, 21 . . .   _____

b) 1, 3, 6, 10 . . .   _____

c) 81, 72, 63 . . .   _____

d) 12.5, 13, 13.5, 14, 14.5 . . . _____

e) 3, $3\frac{2}{3}$, $4\frac{1}{3}$, 5 . . .   _____

f) 7, 5, 3, 1, 0 . . .   _____

4

This sequence is linear as there is a constant difference of 5 between terms.

0, 5, 10, 15, 10, 5, 0, 5, 10, 15, 10, 5, 0 . . .

Is Tommy correct? Explain how you know.

_____

_____

5 Write a number for the 3rd term to make the sequence:

a) linear

Position	1	2	3
Term	9	18	

b) non-linear

Position	1	2	3
Term	9	18	

6 **a)** Tick the tables that show linear sequences.

Position	1	2	3	4	5
Term	20	17	14	11	8

Position	1	2	3	4
Term	0.4	0.8	1.2	1.6

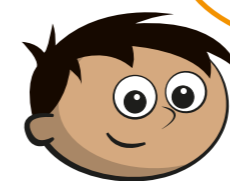| Position	1	2	3	4	5
Term	2	6	12	20	30

b) Tick the graphs that show linear sequences.
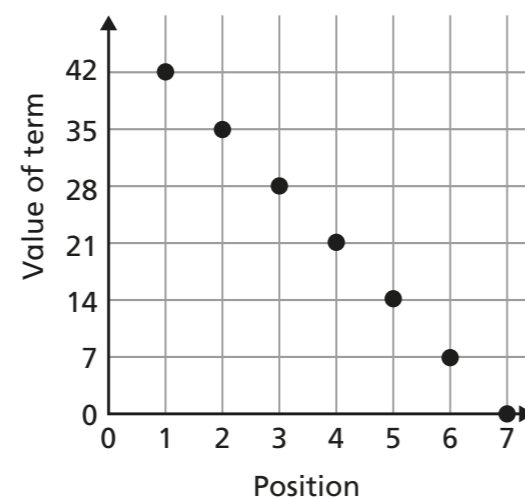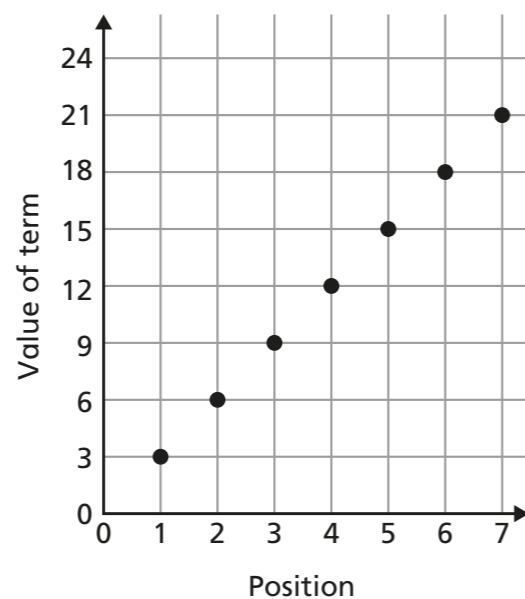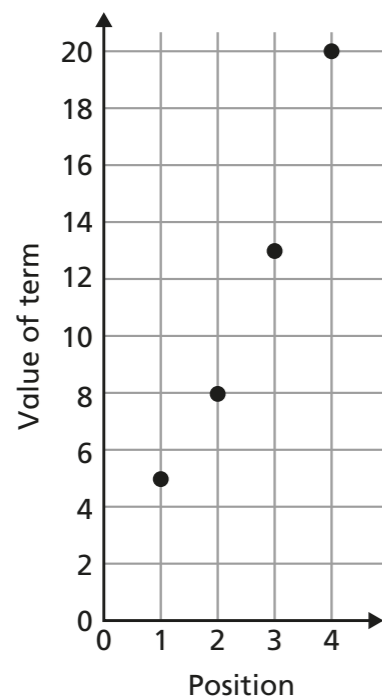
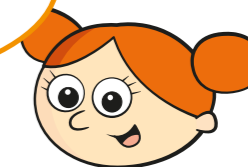
Explain your answers.

7 A sequence starts with the terms 4, 8 . . .

The sequence is linear as it is going up by 4

Amir

It is impossible to tell if the sequence is linear or non-linear.

Alex

Who is correct? Explain how you know.

_____

_____

_____

8 **a)** Write a linear sequence where the 1st term is 75 and the 2nd term is 225

_____

_____

b) Write a non-linear sequence where the 1st term is 75 and the 2nd term is 225

_____

_____

Compare sequences with a partner. Is it possible to come up with more than one sequence for each type? Why?

Predict the 5th term in each of your sequences.