Continue non-linear sequences

1 a) A non-linear sequence is found by doubling the previous term.

Continue the sequence.

2, 4, ☐, ☐, ☐

b) A different non-linear sequence is found by tripling the previous term.

Continue the sequence.

1, 3, ☐, ☐, ☐

2 Write the next three terms in these non-linear sequences.

Describe what is happening in each sequence.

a) 160, 80, 40, ☐, ☐, ☐

b) 1, 4, 16, ☐, ☐, ☐

c) 4, 7, 11, 18, 29, ☐, ☐, ☐

d) 4400, 5400, 7400, 10400, ☐, ☐, ☐

e) $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, ☐, ☐, ☐

3 Continue the sequences.

sequence A: 2, 6, 18, ☐, ☐, ☐

sequence B: 2, 32, 62, ☐, ☐, ☐

Which sequence will reach 200 first? _____

Explain how you know.

_____

_____

In which position will the number in sequence A be greater than sequence B?

_____

4 How many different sequences, linear or non-linear, can you create starting with 15, 45 . . .

_____

_____

_____

_____

Compare answers with a partner.

5 A sequence starts with the number 23

The next term is found by multiplying the previous term by 2 and then adding 7

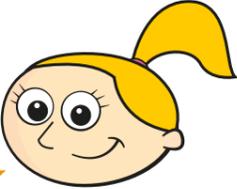**a)** Write the first six terms of the sequence.

_____

b) What do you notice about the terms?

_____

_____

6 Continue each sequence using this rule.

> To find the next term in the sequence, you multiply the previous term by 3 and subtract 2

	1st	2nd	3rd	4th	5th
1					
2					
3					
4					

If you compare all of the 2nd terms, they form a linear sequence with a constant difference of 3

a) Is Eva correct? Explain how you know.

_____

_____

b) What do you notice when you compare the 3rd terms of each sequence?

_____

_____

c) Compare the constant differences between the same terms of each sequence.

What do you notice?

d) What do you predict will happen with the 10th term of each sequence?

7 Create a geometric sequence where the last digit is always 4

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