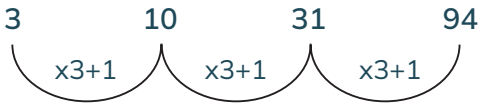
Patterns

Year 8 / S2

Sequence questions are all linked to identifying patterns and repeating them.

To find the pattern, you need to find the rule.
In some sequences the rule remains the same, e.g.



In others, the rule may increase or decrease from the previous step, e.g.

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Activity 1

Complete the number sequences by continuing the patterns below.

1. 15, 17, 20, 24, 29, _____
2. 25, 19, 22, 23, 19, 27, _____
3. 3, 6, 12, 24, _____
4. 4, 9, 13, 18, 22, 27, _____
5. 4, 8, 10, 20, 22, _____
6. 1, 4, 9, 16, 25, _____
7. 3, 12, 10, 40, 38, _____
8. 512, 256, 128, 64, _____
9. 5, 6, 12, 13, 26, _____
10. 50, 47, 41, 32, _____

Activity 2

Linear Sequences: If the numbers increase or decrease by the same amount each time, the sequence is linear.

5 ,8 ,11 ,14 ,17 ,20 ... (+3 every time)

Geometric Sequences: If the rule for a number sequence is to divide or multiply by the same number each time, then it is geometric. They have a 'common ratio'.

2 ,4 ,8 ,16 ,32 ... (x2 every time)

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What is the next number in each sequence? What is happening in the sequence? Are they linear or geometric?

Sequence	Next Number?	What is Happening?	Linear or Geometric?
12, 16, 20, 24, 28 ...			
1, 3, 9, 27, 81 ...			
63, 66, 69, 72, 75 ...			
2, 5, 8, 11, 14, 17 ...			
1, 25, 625, 15, 625 ...			
2, 0.4, 0.08, 0.016 ...			

If you would like an additional challenge, find the nth term for one of the linear sequences above.

Example:

The common difference is 2, so it is linked to the 2 times table or '2n'.
Every term in this sequence is 6 more than the 2 times table e.g. 2,4,6,8.
Therefore, the nth term is 2n + 6.