



**Blackfen School**  
**Maths: Looking at sequences**  
**Summer Holidays 2023**

When you start your maths lessons in September, our first topic is on Sequences.

To get ready for this we would like you to complete some questions in the various areas we will study in preparation.

Please do this on paper as you will need to upload these to TEAMS in the first week AND have it ready to help you in class.

**Task 1** – do these on paper. Show your working

**1. Continuing sequences:**

**Are you ready?**

- 1** What comes next in these repeating patterns?
  - a** Red Yellow Red Yellow Red Yellow ...
  - b** ABBABBABBAB ...
  - c** 1 0 1 0 1 0 1 0 ...
  - d** ABACADAE ...
- 2** Four children take turns playing a game. Continue the sequence for the next three turns.  
Huda Ali Charlie Rob Huda Ali Charlie Rob Huda Ali
- 3** What would come next in each list?
  - a** 1 22 333 4444 55555 ...
  - b** 1 10 100 1000 10000 ...
- 4** What would be the next three items in this list? 1st 2nd 3rd 4th ....

## 2. Linear Sequences:

### Are you ready?

- 1** Find the difference between each pair of numbers.

**a** 10 and 15

**b** 10 and 4

**c** 17.3 and 18.7

**d** 102.3 and 98.7

- 2** Describe what is happening in each of these sequences.

**a** 10   20   30   40   50   ...

**b** 10   20   40   80   160   ...

- 3** The number of squares in each term of this sequence increases by two each time.



How many squares will there be in

**a** the fourth term of the sequence

**b** the fifth term of the sequence?

- 4** The number of triangles in each term of this sequence decreases by three each time.



How many triangles will there be in

**a** the fourth term of the sequence

**b** the fifth term of the sequence?

3. Non-linear sequences:

### Are you ready?

- 1** State whether each sequence is linear or not. How do you know?
  - a** 8   10   13   17   ...
  - b** 80   77   74   71   ...
- 2** Write the first four terms of the linear sequence that starts  
5   10   ...
- 3** Write the first four terms of the linear sequence that starts  
19   17   ...
- 4** Make up three different linear sequences whose second term is 12

4. Representing sequences:

### Are you ready?

- 1** Here is a sequence.  
5   8   11   14   ...
  - a** What is the third term of the sequence?
  - b** What would the fifth term of the sequence be?
  - c** In what position in the sequence is the number 8?
- 2** Which of these two sequences is linear and which is non-linear?  
Sequence A      1   11   21   31   41   ...  
Sequence B      1   10   100   1000   10000   ...
- 3** The first term of a sequence is 12. The term-to-term rule is "add 5 every time". Work out the second, third and fourth terms of the sequence.
- 4** Make up a descending linear sequence whose first term is 12

5. Find missing terms in sequences:

### Are you ready?

- 1** 5 and 10 are the second and third terms of a linear sequence.
  - a** What is the fourth term of the sequence?
  - b** What is the first term of the sequence?
  - c** What's the same and what's different about how you worked your answers out?
- 2** 5 and 10 are the second and third terms of a geometric sequence.
  - a** What is the fourth term of the sequence?
  - b** What is the first term of the sequence?
  - c** What's the same and what's different about how you worked your answers out?
- 3** 5 and 10 are the second and third terms of a Fibonacci sequence.
  - a** What is the fourth term of the sequence?
  - b** What is the first term of the sequence?
  - c** What's the same and what's different about how you worked your answers out?
- 4** Here are the first five terms of a sequence.  
7   12   17   22   27
  - a** How many terms are there between the first and fifth terms?
  - b** How many differences are there between the first and fifth terms?

Task 2 – (just for fun)

We will be using some new maths words and terms (as well as ones that you know). You might want to research these in readiness and then stick, or write these out into the back of your Maths Notebook in September so you can refer back to them

Sequence

Term

Predict

Check

Difference

Constant

Successive

Linear sequence

Non-linear sequence

Increasing or ascending sequence

Decreasing or descending sequence

Term-to-term rule

Geometric sequence

Fibonacci sequence

Tabular

Graph

Axis

Trial and Improvement

Take care and happy working out!

Team Maths

**All results will be submitted via Teams and remember to bring with you for the first few maths lessons.**

Have fun and good luck!