Topic Test 1 (20 minutes)

Sequences - Foundation

1 Here is a pattern of calculations

$$\begin{aligned} 7 \times 9 &= 63 \\ 77 \times 99 &= 7623 \\ 777 \times 999 &= 776223 \\ 7777 \times 9999 &= 77762223 \end{aligned}$$

Write down the answer to $777\,777 \times 999\,999$

[1 mark]

Answer _____

2 A sequence of numbers is formed with one 1, two 2s, three 3s, four 4s and so on,

1 2 2 3 3 3 4 4 4 4 .....

Work out the 100th number of the sequence.

[2 marks]

Answer _____

3 Here is a linear sequence.

The first two terms are missing.

… … 3 9 15 21 27 …

3 (a) Describe how the sequence is building up.

[1 mark]

3 (b) What is the first term of the sequence?

[1 mark]

Answer _____

4 Here are the 2nd and 3rd terms of a linear sequence.

… 12 17 …

Work out the mean of the first four terms of the sequence.

[2 marks]

Answer _____

5 Write down the next term of each of these sequences.

5 (a)

4 9 16 25 36 …

[1 mark]

Answer _____

5 (b)

1 1 2 3 5 8 13 …

[1 mark]

Answer _____

6 The nth term of a sequence is $7n - 3$

6 (a) Work out the first three terms of the sequence.

[1 mark]

Answer _____ , _____ , _____

6 (b) Which term of the sequence has a value of 109?

[2 marks]

Answer _____

7 (a) Work out the next term of the quadratic sequence.

6 10 16 24 34 …

[1 mark]

Answer _____

7 (b) Work out the next term of the geometric sequence.

3 9 27 81 243 …

[1 mark]

Answer _____

8 Here is a sequence.

15 13 11 9 7 …

Circle the expression for the nth term of the sequence.

[1 mark]

$2n + 13$ $n - 2$ $17 - 2n$ $15 - 2n$

9 The nth term of sequence *A* is $2n + 3$

The nth term of sequence *B* is $5n - 4$

Work out **two** terms that are in both sequences.

[2 marks]

Answer _____ , _____

10 The nth term of sequence *P* is $an + b$

The nth term of sequence *Q* is $bn + a$

10 (a) Show that the sequences both start with the same term.

[1 mark]

10 (b) The 2nd term of sequence *P* equals the 3rd term of sequence *Q*.

Show that $a = 2b$

[2 marks]