QUADRATIC & OTHER SEQUENCES

Task 1 – Work out the next two terms of each of the following sequences.

1) 1, 4, 9, 16, 25, 36, 49
2) 2, 6, 12, 20, 30, 42, 56
3) 3, 8, 15, 24, 35, 48, 63
4) 5, 9, 15, 23, 33, 45, 59
5) 0, 3, 9, 18, 30, 45, 63
6) 1, 5, 13, 25, 41, 61, 85
7) 4, 8, 16, 28, 44, 64, 88
8) 7, 14, 22, 31, 41, 52, 64
9) 2, 7, 17, 32, 52, 77, 107
10) 0, 0, 3, 9, 18, 30, 45
11) 1, 3, 7, 13, 21, 31, 43

Task 2 – Work out the next two terms of each of the following sequences.

12) 1, 1, 2, 3, 5, 8, 13, 21
13) 2, 2, 4, 6, 10, 16, 26, 42
14) 3, 5, 8, 13, 21, 34, 55
15) 1, 4, 5, 9, 14, 23, 37, 60
16) 5, 7, 12, 19, 31, 50, 81
17) 10, 10, 20, 30, 50, 80, 130, 210

Task 3

18) Does the following sequence follow a Fibonacci pattern?

4, 6, 10, 16, 26, 42

Explain your answer.

Yes, the prior two terms are added together to get the next term.

19) A student says the following sequence is a quadratic sequence.

3, 7, 11, 15, 19

Do you agree? Explain your answer.

No, it is not a quadratic sequence because the common difference of 4 stays the same. It is an arithmetic sequence.

20) Work out the next two terms of the sequence:

1, 4, 9, 16, 25, ___, ___

What type of sequence is this?

36, 49

The sequence is square numbers.

21) Work out the next two terms of the sequence:

1, 8, 27, 64, ___, ___

What type of sequence is this?

125, 216

The sequence is cubed numbers.

22) Work out the next two terms of the sequence:

2, 4, 8, 16, 32, ___, ___

What type of sequence is this?

64, 128

This is a geometric sequence.

23) Work out the next two terms of the sequence:

100, 90, 80, 70, 60, ___, ___

What type of sequence is this?

50, 40

This is an arithmetic sequence.

24) 1, 4, 9, 16, 25

Is the sequence:
a. Fibonacci
b. Quadratic
c. Geometric

Circle the correct answer and explain why.

The common difference increases by 2 each time. Therefore, it is a quadratic sequence.

25) A pattern of dots forms this sequence:

1, 5, 13, 25, 41

Find the next two numbers.

The common difference increases by 4 each time.

61, 85

Challenge

26) A staircase is built like this:

Step 1 uses 2 bricks
Step 2 uses 6 bricks
Step 3 uses 12 bricks
Step 4 uses 20 bricks

Which step has 210 bricks?
The common difference increases by 2 each
time.

20 + 10 = 30
30 + 12 = 42
42 + 14 = 56
56 + 16 = 72
72 + 18 = 90
90 + 20 = 110
110 + 22 = 132
132 + 24 = 156
156 + 26 = 182
182 + 28 = 210

Step 14 will use 210 bricks.