



- 1 Here are the first four terms of a sequence.

3 6 12 24

- a. Write down the next term of the sequence.
b. Write down the term-to-term rule of the sequence.

(2 marks)

Each term is double the term before

$$3 \times 2 = 6, 6 \times 2 = 12, 12 \times 2 = 24$$

The next term is $24 \times 2 = 48$

The term-to-term rule is multiply by 2

- 2 Here is a sequence of numbers.

6, 11, 16, ____, 26

Work out the missing number.

(1 mark)

Each term goes up by 5

$$16 + 5 = 21$$

$$\text{check: } 21 + 5 = 26$$

21

- 3 Here are the first four terms of a sequence.

0.5, 1, 1.5, 2

Write down the next two terms.

(2 marks)

Add 0.5 each time

$$2 + 0.5 = 2.5$$

$$2.5 + 0.5 = 3$$

2.5, 3

4 Here are the first five square numbers.

1 4 9 16 25

- Write down the next square number after 25.
- Write down the 8th square number.

(2 marks)

The square numbers are 1×1 , 2×2 , 3×3 and so on

The next one after 25 is $6 \times 6 = 36$

The 8th square number is $8 \times 8 = 64$

5 Here are the first four terms of a sequence.

50, 44, 38, 32

- Write down the next two terms.
- Write down the rule for continuing the sequence.

(2 marks)

a)

$50 - 44 = 6$, so subtract 6

$$32 - 6 = 26$$

$$26 - 6 = 20$$

26, 20

b)

subtract 6 each time

6 Matchsticks are used to make a row of squares. The table shows the number of matchsticks in the first three patterns.

Pattern number	1	2	3
Number of matchsticks	4	7	10

The pattern carries on in the same way.

- Work out the number of matchsticks in Pattern 4.
- Work out the number of matchsticks in Pattern 6.

(2 marks)

a)

4, 7, 10: add 3 each time

$$10 + 3 = 13$$

13

b)

Pattern 5: $13 + 3 = 16$

Pattern 6: $16 + 3 = 19$

19

7

Here are the first five terms of a Fibonacci sequence.

2 3 5 8 13

- Write down the next term of the sequence.
- Describe the rule for finding the next term of the sequence.

(2 marks)

In a Fibonacci sequence each term is the sum of the two terms before it

Check

$$2 + 3 = 5, 3 + 5 = 8, 5 + 8 = 13$$

The next term is $8 + 13 = 21$

8

Here are the first five terms of a sequence.

3, 8, 13, 18, 23

Eli says, "The number 100 will be in this sequence."

Is Eli correct? Give a reason for your answer.

(2 marks)

Add 5 each time

Last digits: 3, 8, 3, 8, ...

100 ends in 0

...93, 98, 103 skips 100

No: 100 is not a term

9

Here are the first four cube numbers.

1 8 27 64

- Write down the next cube number after 64.
- Write down the 10th cube number.
- Explain why 200 is not a cube number.

(3 marks)

The cube numbers are 1^3 , 2^3 , 3^3 and so on

The next one after 64 is $5^3 = 125$

The 10th cube number is $10^3 = 1000$

$5^3 = 125$ and $6^3 = 216$, so 200 falls between two consecutive cube numbers and cannot be one

- 10 Here are the first four terms of a sequence.

14 11 8 5

- a. Work out the next two terms of the sequence.
b. Write down the term-to-term rule of the sequence.

(3 marks)

The terms go down by 3 each time: 14, 11, 8, 5

Next term

$$5 - 3 = 2$$

The term after that

$$2 - 3 = -1$$

The term-to-term rule is subtract 3

- 11 Here are the first four terms of a sequence.

96 48 24 12

- a. Write down the next term of the sequence.
b. Work out the 8th term of the sequence.

(3 marks)

Each term is half the term before, so the 5th term is $12 \div 2 =$

6

Keep halving

$$6\text{th term} = 3, 7\text{th term} = 1.5, 8\text{th term} = 0.75$$

- 12 Here are the first five triangular numbers.

1 3 6 10 15

- a. Describe how the sequence continues from one term to the next.
b. Work out the next two terms of the sequence.

(3 marks)

The differences between terms are 2, 3, 4, 5, so the amount added goes up by 1 each time

Next term

$$15 + 6 = 21$$

The term after that

$$21 + 7 = 28$$

13

The even numbers form the pattern

2, 4, 6, 8, ...

Write down the 12th number in this pattern.

(1 mark)

The n th even number is $2 \times n$

The 12th even number is $2 \times 12 = 24$

24