



# Generating Sequences



← REVISE THIS TOPIC



1 The  $n$ th term of a sequence is  $5n + 3$

(a) Work out the 3<sup>rd</sup> term of the sequence

$$5 \times 3 + 3 \\ = 15 + 3$$

18

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(1)

(b) Work out the 5<sup>th</sup> term of the sequence

$$5 \times 5 + 3 \\ = 25 + 3$$

28

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(1)

(c) Work out the 9<sup>th</sup> term of the sequence

$$5 \times 9 + 3 \\ = 45 + 3$$

48

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(1)

(d) Work out the 12<sup>th</sup> term of the sequence

$$5 \times 12 + 3 \\ = 60 + 3$$

63

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(1)

(Total for Question 1 is 4 marks)



2 The  $n$ th term of a sequence is  $3n - 2$



(a) Work out the 2<sup>nd</sup> term of the sequence

$$\begin{aligned}
 & 3 \times 2 - 2 \\
 & = 6 - 2
 \end{aligned}$$

4

(b) Work out the 8<sup>th</sup> term of the sequence

$$\begin{aligned}
 & 3 \times 8 - 2 \\
 & = 24 - 2
 \end{aligned}$$

22

(1)

(1)

(Total for Question 2 is 2 marks)

3 The  $n$ th term of a sequence is  $2n - 10$



(a) Work out the 1<sup>st</sup> term of the sequence

$$\begin{aligned}
 & 2 \times 1 - 10 \\
 & = 2 - 10
 \end{aligned}$$

-8

(b) Work out the 9<sup>th</sup> term of the sequence

$$\begin{aligned}
 & 2 \times 9 - 10 \\
 & = 18 - 10
 \end{aligned}$$

8

(1)

(1)

(Total for Question 3 is 2 marks)



4 The  $n$ th term of a sequence is  $4n + 11$



(a) Work out the 5<sup>th</sup> term of the sequence

$$\begin{aligned}
 &4 \times 5 + 11 \\
 &= 20 + 11
 \end{aligned}$$

31

(1)

(b) Work out the 10<sup>th</sup> term of the sequence

$$\begin{aligned}
 &4 \times 10 + 11 \\
 &= 40 + 11
 \end{aligned}$$

51

(1)

(Total for Question 4 is 2 marks)

5 The  $n$ th term of a sequence is  $10n - 3$



(a) Work out the 8<sup>th</sup> term of the sequence

$$\begin{aligned}
 &10 \times 8 - 3 \\
 &= 80 - 3
 \end{aligned}$$

77

(1)

(b) Work out the 20<sup>th</sup> term of the sequence

$$\begin{aligned}
 &10 \times 20 - 3 \\
 &= 200 - 3
 \end{aligned}$$

197

(1)

(Total for Question 5 is 2 marks)



6 The  $n$ th term of a sequence is  $20 - 3n$



(a) Work out the 1<sup>st</sup> term of the sequence

$$\begin{aligned}
 & 20 - 3 \times 1 \\
 = & 20 - 3
 \end{aligned}$$

17

(b) Work out the 7<sup>th</sup> term of the sequence

$$\begin{aligned}
 & 20 - 3 \times 7 \\
 = & 20 - 21
 \end{aligned}$$

-1

(1)

(Total for Question 6 is 2 marks)

7 The  $n$ th term of a sequence is  $8 - n$



(a) Work out the 5<sup>th</sup> term of the sequence

$$8 - 5$$

3

(b) Work out the 12<sup>th</sup> term of the sequence

$$8 - 12$$

-4

(1)

(Total for Question 7 is 2 marks)



8 The  $n$ th term of a sequence is  $n^2 + 3$



(a) Work out the 3<sup>rd</sup> term of the sequence

$$= 3^2 + 3$$
$$= 9 + 3$$

12

(b) Work out the 4<sup>th</sup> term of the sequence

$$= 4^2 + 3$$
$$= 16 + 3$$

19

(1)

(Total for Question 8 is 2 marks)

9 The  $n$ th term of a sequence is  $n^2 - 30$



(a) Work out the 5<sup>th</sup> term of the sequence

$$= 5^2 - 30$$
$$= 25 - 30$$

-5

(b) Work out the 8<sup>th</sup> term of the sequence

$$= 8^2 - 30$$
$$= 64 - 30$$

34

(1)

(Total for Question 9 is 2 marks)





10 The  $n$ th term of a sequence is  $2n^2$

(a) Work out the 3<sup>rd</sup> term of the sequence

$$2 \times 3^2 = 2 \times 9$$

18

(1)

(b) Work out the 5<sup>th</sup> term of the sequence

$$2 \times 5^2 = 2 \times 25$$

50

(1)

(Total for Question 10 is 2 marks)

11 The  $n$ th term of a sequence is  $n^2 - 2n$



(a) Work out the 3<sup>rd</sup> term of the sequence

$$3^2 - 2 \times 3 = 9 - 6$$

3

(2)

(b) Work out the 4<sup>th</sup> term of the sequence

$$4^2 - 2 \times 4 = 16 - 8$$

8

(2)

(Total for Question 11 is 4 marks)



- 12 The  $n$ th term of a sequence is  $7n - 1$   
Work out the first term in the sequence that is greater than 50



$$7 \times 7 - 1 = 48$$
$$7 \times 8 - 1 = 55$$

55

(Total for Question 12 is 2 marks)

- 13 The  $n$ th term of a sequence is  $9n + 20$   
Work out the first term in the sequence that is greater than 100



$$9 \times 8 + 20 = 92$$
$$9 \times 9 + 20 = 101$$

101

(Total for Question 13 is 2 marks)

- 14 The  $n$ th term of a sequence is  $15 - 4n$   
Work out the first term in the sequence that is negative.



$$15 - 4 \times 3 = 3$$
$$15 - 4 \times 4 = -1$$

-1

(Total for Question 14 is 2 marks)



15 The  $n$ th term of a sequence is  $3n - 13$   
 Work out the first term in the sequence that is positive.



$$3 \times 4 - 13 = -1$$

$$3 \times 5 - 13 = 2$$

2

(Total for Question 15 is 2 marks)

16 The  $n$ th term of a sequence **A** is  $3n + 8$   
 The  $n$ th term of a sequence **B** is  $n^2 + k$



The 5<sup>th</sup> term of sequence **A** is equal to the 4<sup>th</sup> term of sequence **B**.

Work out the value of  $k$ .

$$3 \times 5 + 8 = 23 \quad (5^{\text{th}} \text{ term of A})$$

$$4^2 + k = 23$$

$$16 + k = 23$$

$$k = 7$$

7

$k =$  .....

(Total for Question 16 is 3 marks)

