



Generating Sequences



REVISE THIS TOPIC



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

1 (a) Work out the 3rd term of the sequence [1 mark]

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

Answer 18

1 (b) Work out the 5th term of the sequence [1 mark]

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

Answer 28

1 (c) Work out the 9th term of the sequence [1 mark]

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

Answer 48

1 (d) Work out the 12th term of the sequence [1 mark]

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

Answer 63





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

2 (a) Work out the 2nd term of the sequence

[1 mark]

$$\begin{aligned} & 3 \times 2 - 2 \\ & = 6 - 2 \\ & \quad \quad \quad 4 \end{aligned}$$

Answer _____

2 (b) Work out the 8th term of the sequence

[1 mark]

$$\begin{aligned} & 3 \times 8 - 2 \\ & = 24 - 2 \\ & \quad \quad \quad 22 \end{aligned}$$

Answer _____

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

3(a) Work out the 1st term of the sequence

[1 mark]

$$\begin{aligned} & 2 \times 1 - 10 \\ & = 2 - 10 \\ & \quad \quad \quad -8 \end{aligned}$$

Answer _____

3 (b) Work out the 9th term of the sequence

[1 mark]

$$\begin{aligned} & 2 \times 9 - 10 \\ & = 18 - 10 \\ & \quad \quad \quad 8 \end{aligned}$$

Answer _____





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

4 (a) Work out the 5th term of the sequence

[1 mark]

$$4 \times 5 + 11$$
$$= 20 + 11$$

Answer 31

4 (b) Work out the 10th term of the sequence

[1 mark]

$$4 \times 10 + 11$$
$$= 40 + 11$$

Answer 51

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

5(a) Work out the 8th term of the sequence

[1 mark]

$$10 \times 8 - 3$$
$$= 80 - 3$$

Answer 77

5 (b) Work out the 20th term of the sequence

[1 mark]

$$10 \times 20 - 3$$
$$= 200 - 3$$

Answer 197





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

6 (a) Work out the 1st term of the sequence

[1 mark]

$$20 - 3 \times 1$$
$$= 20 - 3$$

Answer 17

6 (b) Work out the 7th term of the sequence

[1 mark]

$$20 - 3 \times 7$$
$$= 20 - 21$$

Answer -1

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

7 (a) Work out the 5th term of the sequence

[1 mark]

$$8 - 5$$

Answer 3

7 (b) Work out the 12th term of the sequence

[1 mark]

$$8 - 12$$

Answer -4





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

8 (a) Work out the 3rd term of the sequence

[1 mark]

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

Answer 12

8 (b) Work out the 4th term of the sequence

[1 mark]

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

Answer 19

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

9 (a) Work out the 5th term of the sequence

[1 mark]

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

Answer -5

9 (b) Work out the 8th term of the sequence

[1 mark]

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

Answer 34





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

10 (a) Work out the 3rd term of the sequence

[1 mark]

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

Answer 18

10 (b) Work out the 5th term of the sequence

[1 mark]

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

Answer 50

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

11 (a) Work out the 3rd term of the sequence

[2 marks]

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

Answer 3

11 (b) Work out the 4th term of the sequence

[2 marks]

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

Answer 8





12 The n th term of a sequence is $7n - 1$

Work out the first term in the sequence that is greater than 50

[2 marks]

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

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

Answer 55

13 The n th term of a sequence is $9n + 20$

Work out the first term in the sequence that is greater than 100

[2 marks]

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

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

Answer 101

14 The n th term of a sequence is $15 - 4n$

Work out the first term in the sequence that is negative.

[2 marks]

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

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

Answer -1





15 The n th term of a sequence is $3n - 13$

Work out the first term in the sequence that is positive.

[2 marks]

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

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

Answer 2

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 5th term of sequence **A** is equal to the 4th term of sequence **B**.

Work out the value of k .

[3 marks]

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

$$4^2 + k = 23$$

$$16 + k = 23$$

$$k = 7$$

$k =$ 7

