

Sequences and equations

ANSWERS

1

Which term of this sequence is 65?

5 8 11 14 ...

$$\begin{aligned} n\text{th term } 3n+2 &= 65 \\ 3n &= 63 \\ n &= 21 \end{aligned}$$

Answer the 21st term

2

Which term of this sequence is 83?

7 11 15 19 ...

$$\begin{aligned} n\text{th term } 4n+3 &= 83 \\ 4n &= 80 \\ n &= 20 \end{aligned}$$

Answer the 20th term

3

Which term of this sequence is 147?

2 7 12 17 ...

$$\begin{aligned} n\text{th term } 5n-3 &= 147 \\ 5n &= 150 \\ n &= 30 \end{aligned}$$

Answer the 30th term

4

Which term of this sequence is -16?

20 17 14 11 ...

$$n = 13$$

Answer the 13th term

5

Is 100 a term of this sequence?
Explain how you know.

3 8 13 18 ...

$$5n-2 = 100 \text{ gives } n = 20.4, \text{ not a whole number}$$

Answer No

6

Find the first term of this sequence that is greater than 200.

9 16 23 30 ...

$$7n+2 > 200, \text{ so } n = 29$$

Answer 205

7

Sequence A: 43, 46, 49, 52, ... Sequence B: 15, 20, 25, 30, ... Which term number is the same in both? What is the term?

$$3n+40 = 5n+10$$

Answer the 15th, 85

8

In a linear sequence the 5th term is 23 and the 9th term is 39. Find the n th term.

? ? ? ? 23 ...

$$\text{four steps add 16, so each step is 4}$$

Answer $4n+3$

Sequences and equations further practice

ANSWERS

9

Which term of this sequence is 60?

1.5 3 4.5 6 ...

$$1.5n = 60$$

Answer the 40th term

10

Is -50 a term of this sequence?
Explain how you know.

34 30 26 22 ...

$$38-4n = -50 \text{ gives } n = 22$$

Answer Yes, the 22nd

11

Which pattern uses exactly 100 matches?

Pattern 1 Pattern 2 Pattern 3

$$4, 7, 10: 3n+1 = 100$$

Answer Pattern 33

12

How many terms of this sequence are positive?

120 113 106 99 ...

$$127-7n > 0, \text{ so } n < 18.1$$

Answer 18

13

The n th term of a sequence is $an+5$. The 4th term is 29. Find a , then the 10th term.

$$4a+5 = 29$$

Answer $a = 6, 65$

14

Zara saves £25 in week 1 and then £15 more each week. In which week does she first have more than £400?

£25 £40 £55 £70 ...

$$15n+10 > 400, n > 26$$

Answer week 27

15

One sequence goes down: 97, 94, 91, ... The other goes up: 6, 10, 14, ... Which term number is the same in both?

$$100-3n = 4n+2$$

Answer the 14th, 58

16

Mia says 75 is in this sequence because every term ends in 4 or 9 and 75 does not. Is 75 in the sequence? Show it with an equation.

4 9 14 19 ...

$$5n-1 = 75$$

Answer No, $n = 15.2$