



n^{th} term of Linear Sequences



REVISE THIS TOPIC



1 A linear sequence starts

3 6 9 12 ...

Work out an expression for the n^{th} term of the sequence. [1 marks]

Answer $3n$

2 A linear sequence starts

+4 ↘ 2 4 6 8
6 8 10 12 ...
 ↗ +2 ↗ +2 ↗ +2

Work out an expression for the n^{th} term of the sequence. [2 marks]

Answer $2n + 4$

3 A linear sequence starts

-1 ↘ 3 6 9 12
2 5 8 11 ...
 ↗ +3 ↗ +3 ↗ +3

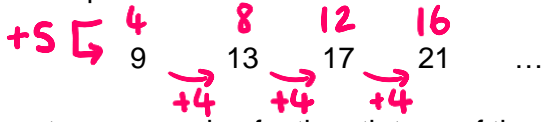
Work out an expression for the n^{th} term of the sequence. [2 marks]

Answer $3n - 1$





4 A linear sequence starts

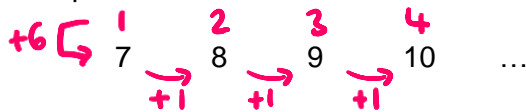


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $4n + 5$

5 A linear sequence starts

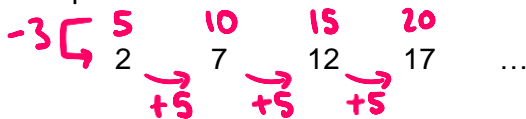


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $n + 6$

6 A linear sequence starts



Work out an expression for the n th term of the sequence.

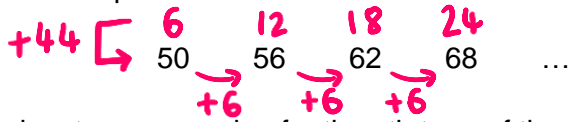
[2 marks]

Answer $5n - 3$





7 A linear sequence starts

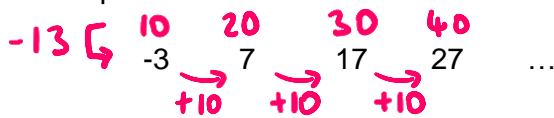


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $6n + 44$

8 A linear sequence starts

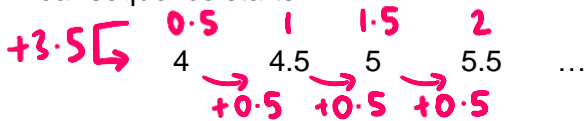


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $10n - 13$

9 A linear sequence starts



Work out an expression for the n th term of the sequence.

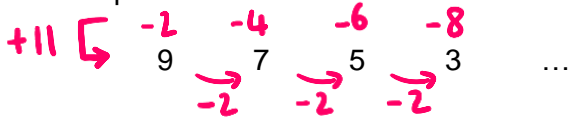
[2 marks]

Answer $0.5n + 3.5$





10 A linear sequence starts

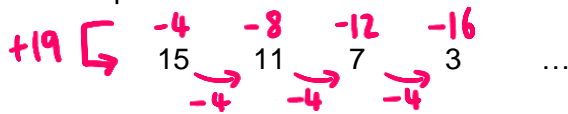


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-2n + 11$

11 A linear sequence starts

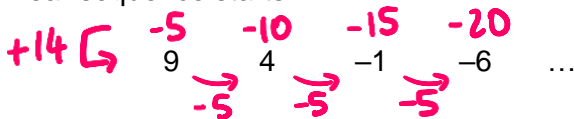


Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-4n + 19$

12 A linear sequence starts



Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-5n + 14$





13 A linear sequence starts

$$\begin{array}{cccccc}
 +10 \left[& -9 & -18 & -27 & -36 & \\
 & 1 & -8 & -17 & -26 & \dots
 \end{array}$$

$\xrightarrow{-9} \quad \xrightarrow{-9} \quad \xrightarrow{-9}$

Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-9n + 10$

14 A linear sequence starts

$$\begin{array}{cccccc}
 +111 \left[& -11 & -22 & -33 & -44 & \\
 & 100 & 89 & 78 & 67 & \dots
 \end{array}$$

$\xrightarrow{-11} \quad \xrightarrow{-11} \quad \xrightarrow{-11}$

Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-11n + 111$

15 A linear sequence starts

$$\begin{array}{cccccc}
 +6.2 \left[& -0.2 & -0.4 & -0.6 & -0.8 & \\
 & 6 & 5.8 & 5.6 & 5.4 & \dots
 \end{array}$$

$\xrightarrow{-0.2} \quad \xrightarrow{-0.2} \quad \xrightarrow{-0.2}$

Work out an expression for the n th term of the sequence.

[2 marks]

Answer $-0.2n + 6.2$





16

A linear sequence starts

$$\begin{array}{cccccc}
 & +1 & \boxed{5} & & 10 & 15 & 20 & 25 & \dots \\
 & & \downarrow & \rightarrow & \downarrow & \rightarrow & \downarrow & \rightarrow & \dots \\
 & & 6 & & 11 & & 16 & & 21 & & 26 & & \dots \\
 & & & & +5 & & +5 & & +5 & & +5 & & \dots
 \end{array}$$

Work out the 20th term of the sequence.

[3 marks]

$$5n + 1$$

$$5 \times 20 + 1$$

$$= 100 + 1$$

Answer

101

17

A linear sequence starts

$$\begin{array}{cccccc}
 & -5 & \boxed{6} & & 12 & 18 & 24 & 30 & \dots \\
 & & \downarrow & \rightarrow & \downarrow & \rightarrow & \downarrow & \rightarrow & \dots \\
 & & 1 & & 7 & & 13 & & 19 & & 25 & & \dots \\
 & & & & +6 & & +6 & & +6 & & +6 & & \dots
 \end{array}$$

Work out the 50th term of the sequence.

[3 marks]

$$6n - 5$$

$$6 \times 50 - 5$$

$$= 300 - 5$$

Answer

295

18

A linear sequence starts

$$\begin{array}{cccccc}
 & -2 & \boxed{4} & & 8 & 12 & 16 & 20 & \dots \\
 & & \downarrow & \rightarrow & \downarrow & \rightarrow & \downarrow & \rightarrow & \dots \\
 & & 2 & & 6 & & 10 & & 14 & & 18 & & \dots \\
 & & & & +4 & & +4 & & +4 & & +4 & & \dots
 \end{array}$$

Work out the 100th term of the sequence.

[3 marks]

$$4n - 2$$

$$4 \times 100 - 2$$

$$= 400 - 2$$

Answer

398





19 A linear sequence starts

4 7 10 13 16 ...

Is the number 91 in the sequence?

Tick **one** box

Yes

No

Show working to support your answer.

[3 marks]

$$3n + 1 = 91$$

$$3n = 90$$

$$n = 30$$

It is the 30th term

20 A linear sequence starts

3 7 11 15 19 ...

Is the number 201 in the sequence?

Tick **one** box

Yes

No

Show working to support your answer.

[3 marks]

$$4n - 1 = 201$$

$$4n = 202$$

$$n = 50.5$$

50.5 is not an integer





21 A linear sequence starts

7 13 19 25 31 ...

Is the number 124 in the sequence?

Tick **one** box

Yes

No

Show working to support your answer.

[3 marks]

$$6n + 1 = 124$$

$$6n = 123$$

$$n = 20.5$$

20.5 is not an integer

22 A linear sequence starts

50 47 44 41 38 ...

Is the number -10 in the sequence?

Tick **one** box

Yes

No

Show working to support your answer.

[3 marks]

$$-3n + 53 = -10$$

$$-3n = -63$$

$$n = 21$$

It is the 21st term

