



EXAM PAPERS PRACTICE

GCSE OCR Math J560

Sequences Linear

Answers

*"We will help you to
achieve A Star "*



Answer 1

Ben says that 150 is in the sequence.

(b) Is Ben right?

You must explain your answer.

$$\begin{aligned} \text{TRY SOLVING: } 6n - 3 &= 150 \\ +3 \qquad \qquad +3 & \\ 6n &= 153 \end{aligned}$$

6 DOES NOT GO INTO 153

SO n WILL NOT BE A
WHOLE NUMBER SO BEN
IS WRONG.



Answer 2

(b) Is 150 a term of this sequence?

You must explain how you get your answer.

$$\text{FIND } n : \quad 150 = 7n - 4$$

$+4 \qquad \qquad \qquad +4$

$$\frac{154}{7} = \frac{7n}{7}$$

$$\underline{\underline{n = 22}}$$

WHOLE NUMBER SO 150 IS A TERM OF THIS SEQUENCE.



Answer 3

- * (b) Is 86 a term in the sequence?
You must give a reason for your answer.

Solve

$$86 = 4n - 2$$

$+2$ $+2$

$$\frac{88}{4} = \frac{4n}{4}$$

$$\underline{n = 22}$$

So 86 is the 22nd term in the sequence.



Answer 4

- (b) Is 121 a term of this arithmetic sequence?
You must explain your answer.

IF IT IS n WILL BE A WHOLE NUMBER

$$6n + 5 = 121$$

$$\begin{array}{r} -5 \quad -5 \\ \hline \end{array}$$

$$\frac{6n}{6} = \frac{116}{6}$$

$$n = \frac{2 \times 58}{2 \times 3}$$

$$n = \frac{58}{3}$$

So 121 is NOT A TERM IN
THIS SEQUENCE



Answer 5

- (b) Is 299 a term of this sequence?
You must give a reason for your answer.

(IF n IS A WHOLE NUMBER FOR 299 THEN YES)

$$\begin{aligned} 3n - 1 &= 299 && +1 \\ &+1 && \\ \hline 3n &= 300 && \\ &\frac{3}{3} && \frac{3}{3} \\ \hline n &= 100 && \text{So } \underline{\underline{YES}} \end{aligned}$$

Answer 6

Here are the first four terms of an arithmetic sequence.

$n = 1 \quad 2 \quad 3 \quad 4$
6 10 14 18
 ↗ ↗ ↗
 +4 +4 +4

- (a) Write an expression, in terms of n , for the n th term of this sequence.

$n^{\text{th}} \text{ Term} = 4n + k$

FIND A VALUE OF k
WHICH MAKES THIS
WORK FOR $n=1$

$n=1: \quad 6 = 4 \times 1 + k$
 -4 -4
 2 = k

So $n^{\text{th}} \text{ Term} = \underline{\underline{4n + 2}}$



Answer 7

Here are the first 5 terms of an arithmetic sequence.

$$3 \xrightarrow{+6} 9 \xrightarrow{+6} 15 \xrightarrow{+6} 21 \xrightarrow{+6} 27 \xrightarrow{+6} \dots$$

(a) Find an expression, in terms of n , for the n th term of this sequence.

$$n^{\text{th}} \text{ Term} = 6n + k$$

$$\text{When } n=1 \quad 6n + k = 6 + k = 3$$

$$\Rightarrow k = -3$$

$$n^{\text{th}} \text{ Term} = \underline{\underline{6n - 3}}$$

Answer 8

Here are the first four terms of an arithmetic sequence.

$$3 \xrightarrow{+7} 10 \xrightarrow{+7} 17 \xrightarrow{+7} 24$$

(a) Find, in terms of n , an expression for the n th term of this arithmetic sequence.

$$n^{\text{th}} \text{ Term} = 7n + k \quad \leftarrow \text{ "MAKES IT WORK" }$$

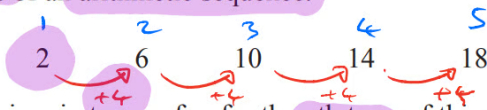
LOOKING AT $n=1$, 1st term = 3, so $k = -4$

$$n^{\text{th}} \text{ Term} = \underline{\underline{7n - 4}}$$



Answer 9

Here are the first five terms of an arithmetic sequence.



(a) Write down an expression, in terms of n , for the n th term of this sequence.

$n^{\text{th}} \text{ TERM} = 4n + k$ → CHOOSE k TO MAKE THE FIRST TERM WORK

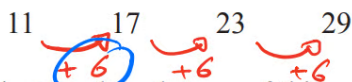
WHEN $n = 1$, 1ST TERM IS 2

So $k = -2$

$n^{\text{th}} \text{ TERM} = \underline{\underline{4n - 2}}$

Answer 10

Here are the first four terms of an arithmetic sequence.



(a) Find, in terms of n , an expression for the n th term of this arithmetic sequence.

$n^{\text{th}} \text{ TERM} = 6n + k$ → CHOOSE k TO MAKE THE FIRST TERM WORKS

$n = 1$: 1ST TERM = $6 + k = 11$
So $k = \underline{\underline{5}}$

$n^{\text{th}} \text{ TERM} = \underline{\underline{6n + 5}}$



Answer 11

Here are the first five terms of an arithmetic sequence.

$$2 \quad 5 \quad 8 \quad 11 \quad 14$$

↗ +3 ↘ ↗ +3 ↘ ↗ +3 ↘ ↗ +3 ↘

(a) Write down an expression, in terms of n , for the n th term of this sequence.

$n^{\text{th}} \text{ term} = 3n + k$ FIND k TO MAKE THE FORMULA WORK FOR $n=1$

WHEN $n=1$ TERM = 2.

So k MUST BE -1 so $n^{\text{th}} \text{ term} = \underline{\underline{3n - 1}}$

Answer 12

(c) Write down an expression, in terms of n , for the $(n + 1)$ th term of this sequence.

$$n^{\text{th}} \text{ term} = 3n - 1$$

So $(n+1)^{\text{th}} \text{ term} = \underline{\underline{3(n+1) - 1}}$



Answer 13

- (b) Is 108 a term of this sequence?
Show how you get your answer.

IT WILL BE IF n IS A WHOLE NUMBER IN

$$108 = 3n + 5$$

-5 -5

$$\frac{103}{3} = \frac{3n}{3}$$

$$n = \frac{103}{3}$$

THIS IS NOT A WHOLE AND SO 108 IS
NOT A TERM IN THIS SEQUENCE