Generating Linear Sequences

Answers

1. For each sequence, write down the first **5** terms.

   a. $2n + 2$

   4, 6, 8, 10, 12

   b. $3n + 5$

   8, 11, 14, 17, 20

   c. $5n + 3$

   8, 13, 18, 23, 28

   d. $2n - 3$

   -1, 1, 3, 5, 7

   e. $n + 4$

   5, 6, 7, 8, 9

   f. $4n - 5$

   -1, 3, 7, 11, 15

   g. $5 + 2n$

   7, 9, 11, 13, 15

   h. $10 + n$

   11, 12, 13, 14, 15

   i. $0.1n + 0.1$

   0.2, 0.3, 0.4, 0.5, 0.6

   j. $3n + 6$

   9, 12, 15, 18, 21

   k. $0.25n + 2$

   2.25, 2.5, 2.75, 3, 3.25

l. $0.5n + 0.75$

1.25, 1.75, 2.25, 2.75, 3.25

2. The n^{th} term of a sequence is given by $2n - 5$. Write down the 100th term.

$2 \times 100 - 5 = 195$

3. The n^{th} term of a sequence is given by $4n + 2$. Write down the 20th term.

$4 \times 20 + 2 = 82$

4. The n^{th} term of a sequence is given by $5n - 4$. Write down the 200th term.

$5 \times 200 - 4 = 996$

5. The n^{th} term of a sequence is given by $4n + 4$. Is 82 a term in this sequence?

$4n + 4 = 82$

$4n = 78$

$n = 19.5$

No, 82 is not a term in this sequence.

6. The n^{th} term of a sequence is given by $2n - 5$. Is 105 a term in this sequence?

$2n - 5 = 105$

$2n = 110$

$n = 55$

Yes, 105 is a term in this sequence.

7. The n^{th} term of a sequence is given by $3n + 2$. Is 96 a term in this sequence?

$3n + 2 = 96$

$3n = 94$

$n = \frac{94}{3} = 31\frac{1}{3}$

No, 96 is not a term in this sequence.

8. The n^{th} term of a sequence is given by $10n + 6$. Is 166 a term in this sequence?

   $10n + 6 = 166$

   $10n = 160$

   $n = 16$

   Yes, 166 is a term in this sequence.

9. The n^{th} term of a sequence is given by $3.5n + 2$. Is 37 a term in this sequence?

   $3.5n + 2 = 37$

   $3.5n = 35$

   $n = 10$

   Yes, 37 is a term in this sequence.

10. The n^{th} term of a sequence is given by $7n + 6$. Is 221 a term in this sequence?

    $7n + 6 = 221$

    $7n = 215$

    $n = \frac{215}{7} = 30\frac{5}{7}$

    No, 221 is not a term in this sequence.

Challenge

A sequence of numbers starts at 15 and follows the rule 'quadruple the last number and add 6.'

15, 66, 270, ...

The number 17 406 is in the sequence. Calculate the number which comes immediately before 17 406 in this sequence.

17 406 – 6 = 17 400

17 400 ÷ 4 = 4350