

nth Term - Finding the Rule



Key idea

The n th term of a linear pattern is $an + b$: a is the constant difference, b fixes the first term.

Method

1. Find the constant difference — that is a .
2. Put $n = 1$; adjust it to give the first term.

Example

4, 7, 10, 13: difference $+3$, so start with $3n$.

$3(1) = 3$ but the first term is 4, so add 1: n th term $= 3n + 1$.

Common mistake

The coefficient of n is the **difference**, not the first term.



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nth Term - Does a Value Appear?



Key idea



To test if a number is in the pattern, set the n th term equal to it and solve for n .

Example



Rule $5n + 4$. Does 149 appear?

$$5n + 4 = 149 \Rightarrow 5n = 145 \Rightarrow n = 29.$$

Yes — it is term 29.

Common mistake

n must be a **whole positive number**. A decimal answer means the value is **not** in the pattern.



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Determining n th term of pattern or spatial pattern



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