

# Nth term

Next





**$n^{\text{th}}$  term:** The rule to find any term in a sequence.

Complete the table.

<b>n</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>50</b>
<b><math>3n + 2</math></b>							



**This is the  $n^{\text{th}}$  term**

You can find any term in the sequence by multiplying by 3 and adding 2.

$$3n + 2$$



There are just two number we need to know about.

Complete the table.

n	1	2	3	4	5		50
$3n + 2$	5	8	11	14	17		152

+3

+3

+3

+3

This is the  $n^{\text{th}}$  term

You can find any term in the sequence by multiplying by 3 and adding 2.

$$3n + 2$$

This is the difference between each term, the term to term rule.

Complete the table.

n	1	2	3	4	5		50
$3n + 2$	5	8	11	14	17		152
	+3	+3	+3	+3			

This is the  $n^{\text{th}}$  term

You can find any term in the sequence by multiplying by 3 and adding 2.

$$3n + 2$$

Now we just have to make the first term by adding 2.

**7, 11, 15, 19, 23...**

- 1 What is the difference between each term?
- 2 Write this number in front of **n**.
- 3 What do you need to add to get to 7?
- 4 Now find the 50<sup>th</sup> term.

**7, 11, 15, 19, 23...**

1 What is the difference between each term? **+ 4**

2 Write this number in front of **n**. **4n**

3 What do you need to add to get to 7? **4n + 3**  **n<sup>th</sup> term**

4 Now find the 50<sup>th</sup> term. **4 x 50 + 3 = 203**

Another example

**2, 7, 12, 17, 22...**

1 What is the difference between each term?

2 Write this number in front of **n**.

3 What do you need to subtract to get to 2?

4 Now find the 50<sup>th</sup> term.

**2, 7, 12, 17, 22...**

1 What is the difference between each term? **+ 5**

2 Write this number in front of **n**. **5n**

3 What do you need to subtract to get to 2? **5n - 3** ← **n<sup>th</sup> term**

4 Now find the 50<sup>th</sup> term. **5 x 50 - 3 = 247**

Another example

**4, 10, 16, 22, 28...**

1 What is the difference between each term?

2 Write this number in front of **n**.

3 What do you need to subtract to get to 4?

4 Now find the 50<sup>th</sup> term.



**4, 10, 16, 22, 28...**

1 What is the difference between each term? **+ 6**

2 Write this number in front of **n**. **6n**

3 What do you need to subtract to get to 2? **6n - 2** ← **n<sup>th</sup> term**

4 Now find the 50<sup>th</sup> term. **6 x 50 - 2 = 298**

Another example

**9, 11, 13, 15, 17...**

1 What is the difference between each term?

2 Write this number in front of **n**.

3 What do you need to add to get to 9?

4 Now find the 50<sup>th</sup> term.

**9, 11, 13, 15, 17...**

1 What is the difference between each term? **+ 2**

2 Write this number in front of **n**. **2n**

3 What do you need to add to get to 9? **2n + 7**  **n<sup>th</sup> term**

4 Now find the 50<sup>th</sup> term. **2 x 50 + 7 = 107**

# Test your understanding

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Find the  $n^{\text{th}}$  term and the  $50^{\text{th}}$  term for the following sequences.

1 **10, 13, 16, 19, 22...**

2 **1, 5, 9, 13, 27...**

3 **10, 7, 4, 1, -22...**

4 Find the  $100^{\text{th}}$  term of the sequence, 6, 15, 24, 33, 42...

5 Find the  $n^{\text{th}}$  term of the sequence, 0.5, 2.5, 4.5, 6.5, 8.5...

6 Find the  $n^{\text{th}}$  term of the sequence, 100, 50, 0, -50, -100...

7 Find the  $n^{\text{th}}$  term of the sequence,  $\frac{3}{8}, \frac{5}{11}, \frac{7}{14}, \frac{9}{17}, \frac{11}{20}, \dots$

Find the  $n^{\text{th}}$  term and the  $50^{\text{th}}$  term for the following sequences.

1 **10, 13, 16, 19, 22...**

$$3n + 7$$

$$157$$

2 **1, 5, 9, 13, 27...**

$$4n - 3$$

$$197$$

3 **10, 7, 4, 1, -22...**

$$-3n + 13$$

$$-137$$

4 Find the  $100^{\text{th}}$  term of the sequence, 6, 15, 24, 33, 42...

$$897$$

5 Find the  $n^{\text{th}}$  term of the sequence, 0.5, 2.5, 4.5, 6.5, 8.5...

$$2n - 1.5$$

6 Find the  $n^{\text{th}}$  term of the sequence, 100, 50, 0, -50, -100...

$$-50n + 150$$

7 Find the  $n^{\text{th}}$  term of the sequence,

$$\frac{3}{8}, \frac{5}{11}, \frac{7}{14}, \frac{9}{17}, \frac{11}{20}, \dots$$

$$\frac{2n + 1}{3n + 5}$$

# End of the lesson

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**Well done for completing the lesson.**



## Reflections

A large, empty rounded rectangular box with a black border, intended for student reflections.