Parent Guide

How can I use this with my children?

This activity can be completed at home to support homework about linear number sequences or to help your child if they are learning about linear number sequences at school.

How does this help my children's learning?

This will help your child find, understand and describe linear number sequences by finding the nth formula.

Ideas for further learning:

Write some of your own linear number sequences and ask your child if they can find the nth formula for the sequence.

Parent/Carer Guide to Linear Number Sequences

What is a linear number sequence?

A linear number sequence is a sequence of numbers where the difference between each number in the sequence is the same. For example, look at the following sequence:

4 7 10 13 16 19

The difference between each number in the sequence is 3 and you could continue to add 3 to find the following numbers in the sequence.

What is a 'term'?

The term is the name for each number in the sequence. For instance, in the example above, the first term is 4, the second term is 7, the third term is 10 and so on.

What is the nth term in a linear sequence?

The nth term is a formula for calculating any term in a linear number sequence without having to go up from one term to the next and calculate all the terms in the sequence. For example, if you wanted to know the 50th or 100th term in a linear sequence, you would use a formula involving n to calculate this number.

How do you work out the formula?

Let's use the number sequence from above:

4 7 10 13 16 19

Firstly, you need to calculate the difference between each term in the sequence. In this case, it is going up by 3 (or + 3). Now we can use this knowledge to try and find a formula using n to represent each term. We could try to find the first term by doing 3n (3 × n). Because we are trying to find the first term, n = 1, so 3 × 1 = 3. This wouldn't give us the first term which is 4. However, if we did 3n + 1 (or 3 × 1 + 1) this would give us the first term, 4. We can try this formula for the second term 3n + 1 (or 3 × 2 + 1) which equals 7. We now have a formula for finding any term in the sequence. If we wanted to find the 50th term in the sequence, we would use the formula 3n + 1 (or 3 × 50 +1) which equals 151.

Creecher the Cryptologist

Creecher the Skeleton Cryptologist needs your help. He needs to calculate the nth term formula for each of the sequences below and then find the 10th term in each sequence. Help Creecher by calculating the nth formula for each sequence below. The first has been done for you.

1. `5   8   11   14   17`

The formula is: _____3n + 2_____

Find the 10th term: _____32_____

2. `6   10   14   18   22`

The formula is: _____

Find the 10th term: _____

3. `9   11   13   15   17`

The formula is: _____

Find the 10th term: _____

4. `2   5   8   11   14`

The formula is: _____

Find the 10th term: _____

5. `0   3   6   9   12`

The formula is: _____

Find the 10th term: _____

6. `4   9   14   19   24`

The formula is: _____

Find the 10th term: _____

7. `7   10   13   16   19`

The formula is: _____

Find the 10th term: _____

Creecher the Cryptologist - Answers

Creecher the Skeleton Cryptologist needs your help. He needs to calculate the nth term formula for each of the sequences below and then find the 10th term in each sequence. Help Creecher by calculating the nth formula for each sequence below. The first has been done for you.

1. 5   8   11   14   17

The formula is: **3n + 2**

Find the 10th term: **32**

2. 6   10   14   18   22

The formula is: **4n + 2**

Find the 10th term: **42**

3. 9   11   13   15   17

The formula is: **2n + 7**

Find the 10th term: **27**

4. 2   5   8   11   14

The formula is: **3n - 1**

Find the 10th term: **29**

5. 0   3   6   9   12

The formula is: **3n - 3**

Find the 10th term: **27**

6. 4   9   14   19   24

The formula is: **5n - 1**

Find the 10th term: **49**

7. 7   10   13   16   19

The formula is: **3n + 4**

Find the 10th term: **34**