

# Year 6 Patterns and Sequences: A Step-by-Step Guide for Parents

This step-by-step explanation to patterns and sequences can help you support your child's learning at home. The subject is broken down into manageable chunks, providing you with a simple guide to follow when exploring patterns and sequences together, either as part of homework or if you decide to give your child some extra support. Whether your child is building up confidence with patterns and sequences, or they are secure in their learning and want further practice, you will find a step that matches where your child is at then have ideas for where to go next.

Within **this area of the website**, you will find a selection of resources intended to help your child learn about each step of this guide. Each step also contains a keyword or phrase that you can use to search the Twinkl site for more resources and activities designed to support your child in achieving that stage. Simply type the keyword or phrase into the search bar and press enter to explore together.

generating and describing linear number sequences



Click here



We hope you find the information on our website and resources useful. The contents of this resource are for general, informational purposes only. This guide is intended to offer parents general guidance on what subject areas tend to be covered in their child's year group and where they could support their children at home. However, please be aware that every child is different and information can quickly become out of date. There are some subject areas that we have intentionally not covered due to the nature of how they are taught or because a trained professional needs to teach these areas. We try to ensure that the information in our resources is correct but every school teaches the national curriculum in its own way. If you would like further guidance or are unsure in any way, we recommend that you speak to your child's teacher or another suitably qualified professional.

# Patterns and Sequences

## What Are Patterns and Sequences?

In mathematics, patterns and sequences often refer to a set of objects – usually numbers – that follow a distinct order or rule. Patterns and sequences are important because by studying them, they allow us to predict trends and interpret statistics.

In year 6, your child will continue to build on their knowledge of linear number sequences – where the difference between all the terms in the sequence is the same. For example, in the number sequence 1, 5, 9, 13, the number four is added each time.

Your child will then extend their knowledge to learn how to generate and describe number sequences using simple formula to find the 'nth term'. This means that 'n' stands for the position in the sequence. So, to find the 8<sup>th</sup> term, you would substitute 8 into a formula in place of 'n', meaning you don't have to count up in the sequence, you can just calculate the 8<sup>th</sup> term.

For example, the formula  $3n - 1$  can be used to create the following sequence:

2                      5                      8                      11

n = the position of the number in the sequence.

To work out the first number in the sequence, calculate  $3 \times 1 - 1 = 2$ . To calculate the second position it's  $3 \times 2 - 1 = 5$ , the third would be  $3 \times 3 - 1 = 8$  and so on. You can use this formula to calculate a future number in the sequence, for example, the seventh term would be  $3 \times 7 - 1 = 20$ .

As well as using the resources in this category and the keyword searches to help your child learn about patterns and sequences, below are a few ideas for games and activities to help your child practise and become more familiar with the concept of patterns and sequences at home.

### Explore the Fibonacci Sequence

0, 1, 1, 2, 3, 5, 8...

Encourage your child to investigate the Fibonacci Sequence. Start with the numbers 0 and 1. You find the next number by adding the previous two numbers together, so  $0 + 1 = 1$ . You would work out the next number by adding  $1 + 1 = 2$  then  $1 + 2 = 3$ ,  $2 + 3 = 5$ , and so on. How far can you go?

### Make Your Own Sequence

Use coins or counters to make patterns of your own.

For example, use 1 coin for your first term, 4 coins to create a  $2 \times 2$  square for the next term, 8 coins to create a  $3 \times 3$  square for the next term and 12 coins to create a  $4 \times 4$  square for the final term. Can your child come up with a formula for this sequence? Can they use it to predict the nth term?

### Investigate Pascal's Triangle

To recreate Pascal's triangle, start with a number 1 at the top. Then place numbers underneath in a triangular pattern. Each number is the sum of the numbers directly above it. Once you've built 8 layers of the triangle, see if you can spot any patterns within it.

### Investigate Semi-Regular Tessellations

A semi-regular tessellation is a pattern made of two or more regular polygons (shapes with three or more identical straight sides). The pattern at each corner must be the same and the shapes must fit together without any gaps or overlapping.

## Step 1

### Generating and Describing Linear Number Sequences

In year 6, your child will continue to build on their knowledge of linear number sequences (see explanation on previous page). They may be asked to find missing numbers, describe a rule and to extend the number sequence using the rule. Our resource packs and PowerPoints are a great way to reinforce learning at home in this area.



## Using Formula to Predict the 'nth Term'

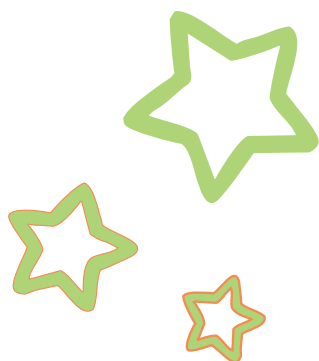
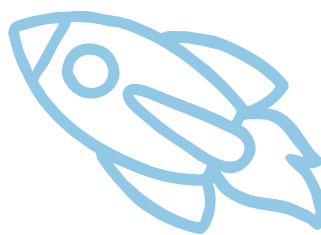
At this stage, your child will begin to use simple algebraic formulas to predict what the 'nth term' in a sequence of numbers might be. (See explanation on the previous page about 'nth terms'). You can look through our Algebra Maths Warm Up PowerPoint to practise working out formulae and predict the nth term in a given number sequence then use our algebra challenge cards to extend learning further.

## Step 2

## Step 3

### Investigating further

Have fun exploring further number sequences. Once you've worked out the Fibonacci sequence for example, you can extend your child's learning by looking at some of the patterns in the sequence and create beautiful pieces of art based on Fibonacci numbers. Check out our PowerPoint and resource pack to explore further.



# Explore and Discover More

Twinkl Go! is a digital platform, hosting interactive content such as videos, games, audiobooks and more. Twinkl Go! enables digital content to be streamed to your computer or mobile device.

The Twinkl Go! logo, featuring the word 'twinkl' in a blue cloud shape and 'Go!' in white text below it, all within a blue circle with a pink border. To the right of the circle are two lightbulb icons, one larger and one smaller, both with rays emanating from them.

twinkl  
Go!

The Twinkl Book Club logo, featuring the word 'twinkl' in a blue cloud shape and 'Book Club' in a colorful, blocky font below it, all within a blue circle with a pink border. To the left of the circle are three orange stars of varying sizes.

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Book Club

Twinkl Book Club is our book subscription service. Enjoy our original works of fiction in beautiful printed form, delivered to you each half-term and yours to keep!

The Twinkl Boost logo, featuring the word 'twinkl' in a blue cloud shape and 'Boost' in white text below it, all within a blue circle with an orange border. To the right of the circle is a green rocket ship icon.

twinkl  
Boost

Twinkl Boost is a range of intervention resources, created to support and lift learning with children at every level. These include our easy-to-use SATs and Phonics Screening resources.

The Twinkl Imagine logo, featuring the word 'twinkl' in a blue cloud shape and 'imagine' in a white, lowercase font below it, all within a blue circle with a green border. To the left of the circle are two purple heart icons.

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imagine

Imagine resources are designed to help your children to think creatively, question and imagine. Every week, a new topic consisting of five photos, each with related activities, is created.

Twinkl Originals are engaging stories written to inspire children from EYFS to KS2. Designed to encourage a love of reading and help curriculum-wide learning through accompanying resources.

The Twinkl Originals logo, featuring the word 'twinkl' in a blue cloud shape and 'ORIGINALS' in a white, all-caps font below it, all within a blue circle with an orange border.

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ORIGINALS

The Twinkl Kids' TV logo, featuring the word 'twinkl' in a blue cloud shape and 'KIDS' TV' in a colorful, blocky font below it, all within a blue circle with a green border.

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KIDS' TV

Twinkl Kids' TV is our wonderful YouTube channel dedicated to fun and informative video-style resources full of new and creative activities you can try at home!