



Connecting Math to Our Lives and Communities

Fibonacci Numbers in Nature

Introduction

Through these activities we have been exploring how math exists in nature all around us! Have you ever picked a flower and noticed how many petals were there? The number of leaves on a tree? How many blades of grass are growing right now on your lawn? If you look you can find numbers all around you!

These numbers that we can look for throughout nature might often seem random, but what if I told you that often the number is part of a pattern that mathematicians call the Fibonacci sequence?

The Fibonacci sequence is a where each number is the sum of the two previous numbers, starting from 0 and 1. The sequence continues as follows:

$$\boxed{0} \begin{matrix} - \\ > \end{matrix} \boxed{1} \begin{matrix} -> \\ (0+1) \end{matrix} \boxed{1} \begin{matrix} -> \\ (1+1) \end{matrix} \boxed{2} \begin{matrix} -> \\ (1+2) \end{matrix} \boxed{3} \begin{matrix} -> \\ (2+3) \end{matrix} \boxed{5} \begin{matrix} -> \\ (3+5) \end{matrix} \boxed{8} \begin{matrix} -> \\ (5+8) \end{matrix} \boxed{13} \begin{matrix} -> \\ (8+13) \end{matrix} \boxed{21}$$

This is just the beginning of the sequence to introduce the pattern that we see between the numbers. This sequence continues for forever.

These numbers that are included in the sequence can be found repeatedly in nature. An excellent example of this is by looking at flower petals. Lilies and irises have 3 petals each, buttercups and wild roses have 5 petals, and marigolds have 13 petals! Nature loves these numbers because they ensure efficiency. For flowers this means that the number of petals will allow for the plant to get an even distribution of sunlight which will lead to a healthy plant.

We also see these numbers throughout human history! While the discovery of this pattern is often attributed to a European mathematician it can be seen in cultures long before his “discovery”. For example, this sequence can be found in the weaving pattern of the Ghanaian Kente cloth shown below, which was woven long before this pattern was spoken off in Europe. A kente cloth is a traditional cloth often worn by esteemed political Ghanaian leaders.

Activity

For this activity we will continue to hunt for Fibonacci numbers in nature!

Take a nature walk around your community and see how often you can spot the Fibonacci numbers! Feel free to draw your findings on the sheets provided or take pictures of any examples that you come across! If you want an extra challenge, see if you can find all the Fibonacci numbers up to 21 (1,2,3,5,8, 13, and 21) or beyond! See what else you can find in nature that has a Fibonacci numbers and see how many ways that nature makes each number!

Fibonacci Numbers in Nature Drawings:

1	2
3	5

8	13
Other:	

Send us a photo of your symmetry paintings and drawing at Connecting Math To Our Lives and Communities email (cmtolcstfx@gmail.ca)! ☺