

# Spirals and Fibonacci

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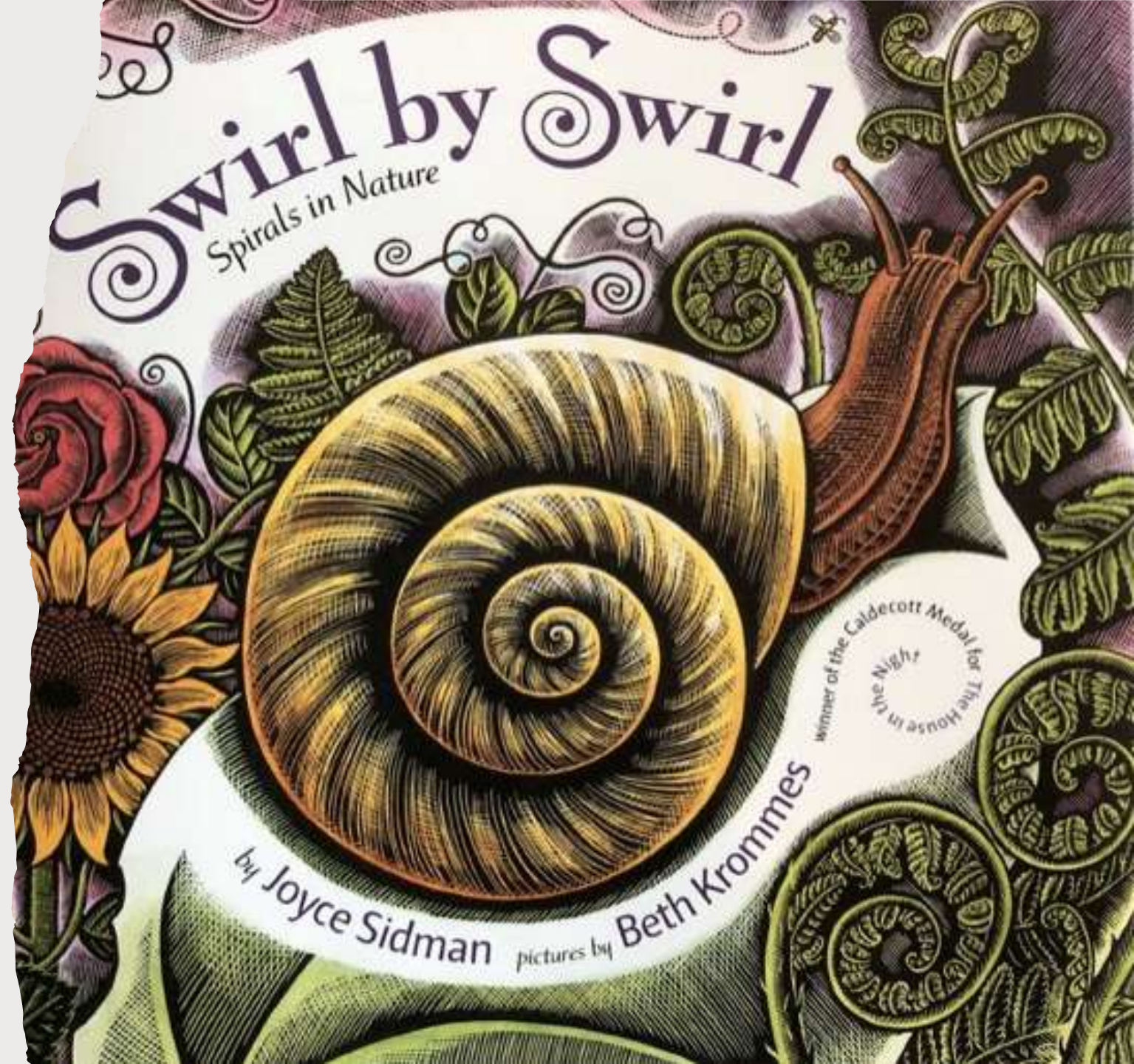
# School Wide Exploration of Spirals and the Fibonacci Sequence



- Teaching through the land and our place
- Teaching through story
- Connecting to Indigenous culture

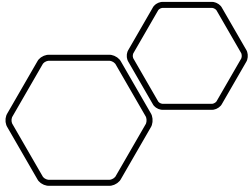
# Number Talk

- Images from the book “Swirl by Swirl; Spirals in Nature”
- What do you see?
- What do you think?
- What do you wonder?









**Creating Spirals  
with Nature –  
Grade 5**











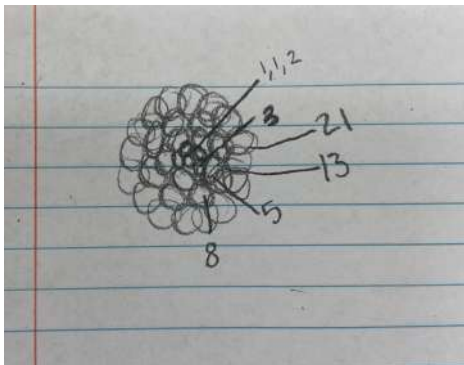
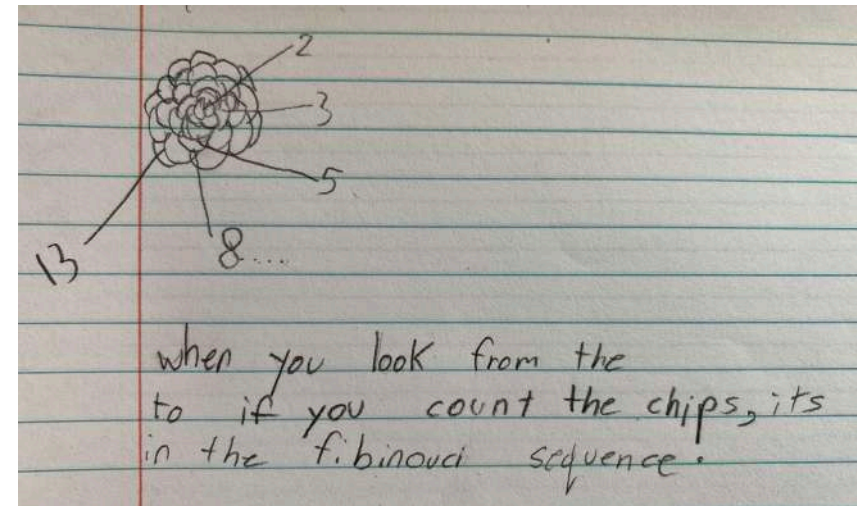
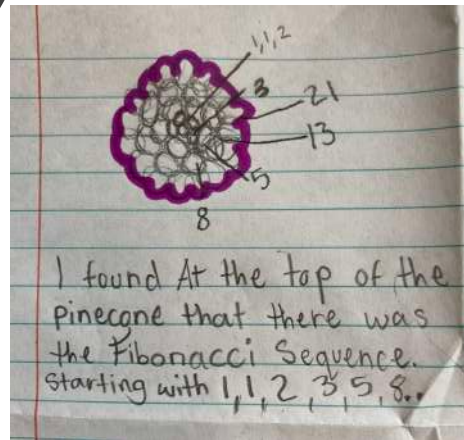
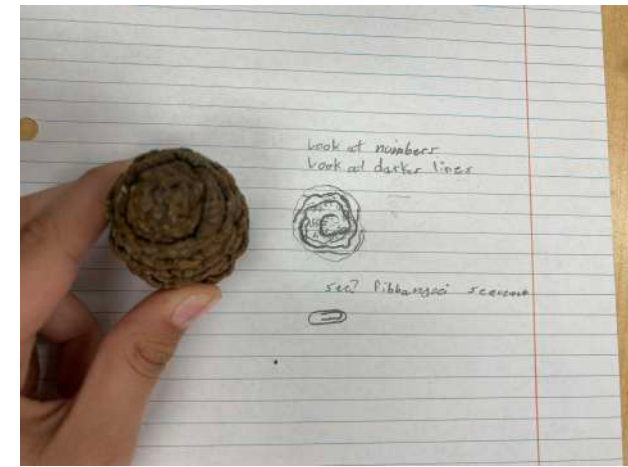
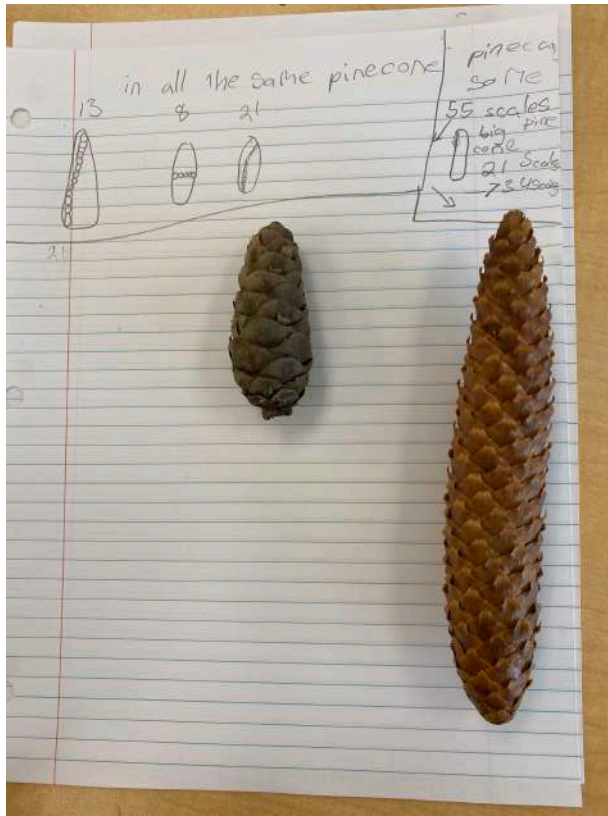
- Using a picture book to learn about the Fibonacci Sequence
- How and where it is found in nature

## Connecting to the Fibonacci Sequence

# Exploring Pinecones



- Building on learning from "Growing Patterns"
- Investigating different kinds of pinecones
- Looking for spirals and Fibonacci Numbers



## Ojibwe Dreamcatcher Legend



This is the way the old Ojibwe say Spider Woman helped bring Grandfather Sun back to the people. To this day, Spider Woman will build her special lodge before dawn. If you are awake at dawn—*as you should be*—look for her lodge and you will see how she captured the sunrise as the light sparkles on the dew which is gathered.

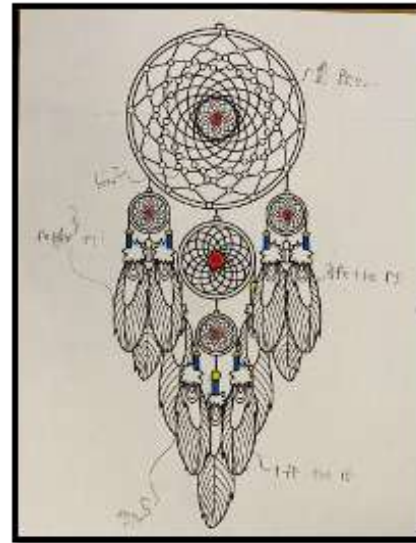
Spider Woman took care of her children, the people of the land, and she continues to do so to this day. Long ago, in the ancient world of the Ojibwe Nation, the Clans were all located in one area called Turtle Island. When the Ojibwe Nation dispersed to the four corners of North America, Spider Woman had a difficult time making journeys to all those baby cradle boards, so the mothers, sisters, and grandmothers weaved magical webs for the new babies using willow hoops and sinew.

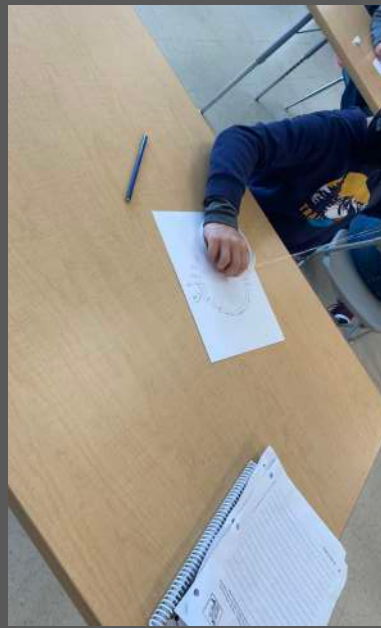
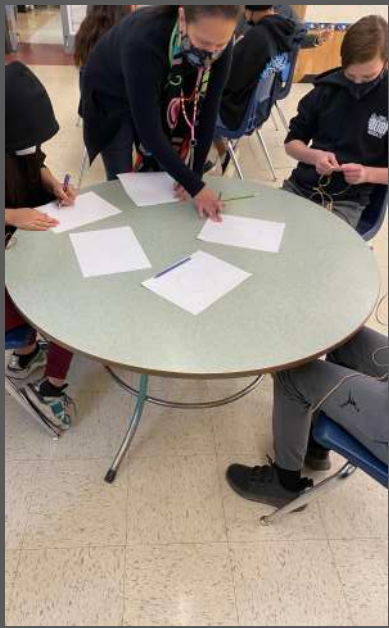
# Creating Fibonacci Dreamcatchers

In the Ojibwe Dreamcatcher legend, there are Fibonacci numbers

- Mothers, sisters, grandmothers – 3 women
- 1 circle – represents Grandfather Sun
- 1 hoop or feather in the center
- 8 points of connect the web to the hoop to honour Spider Woman

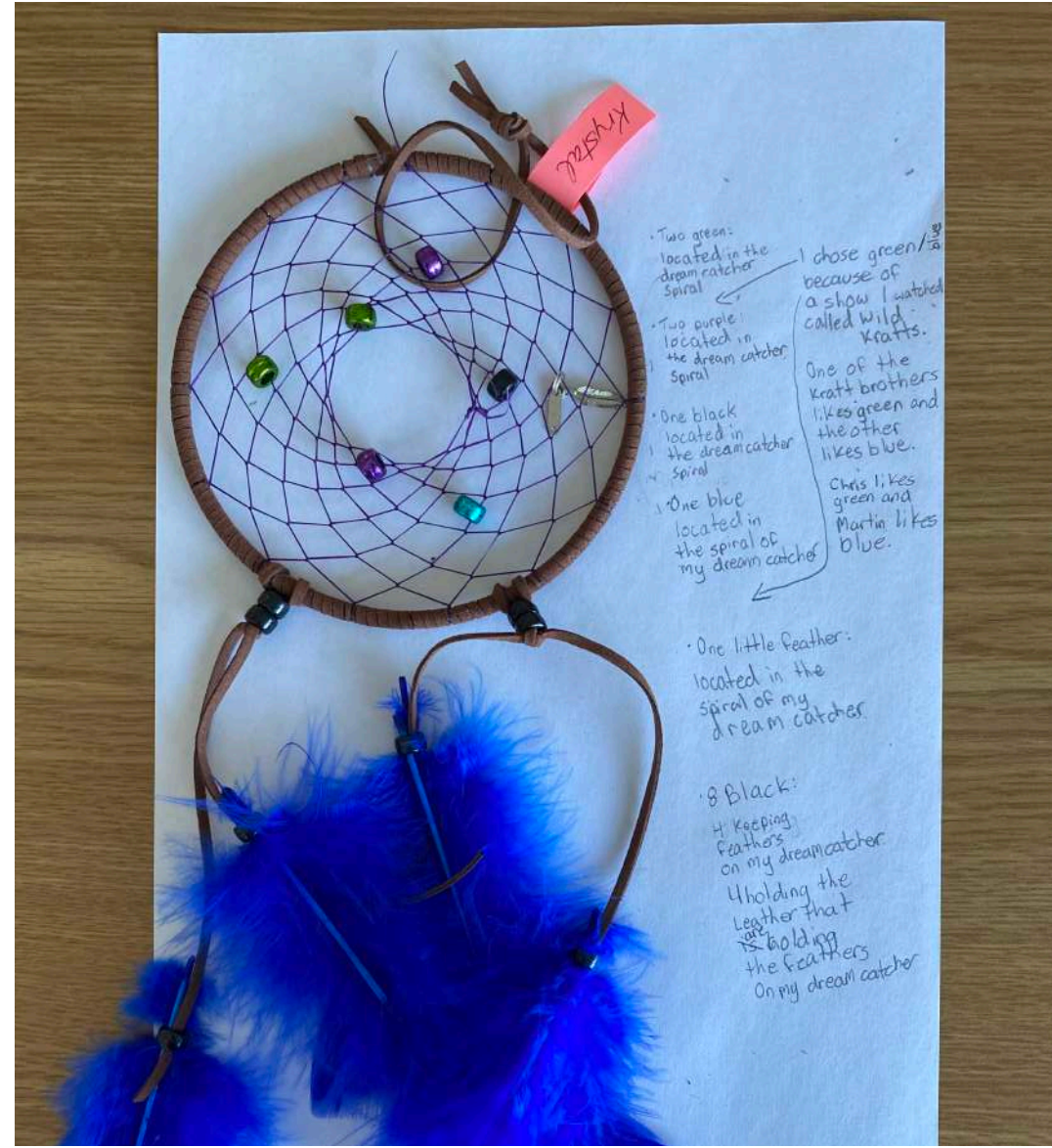
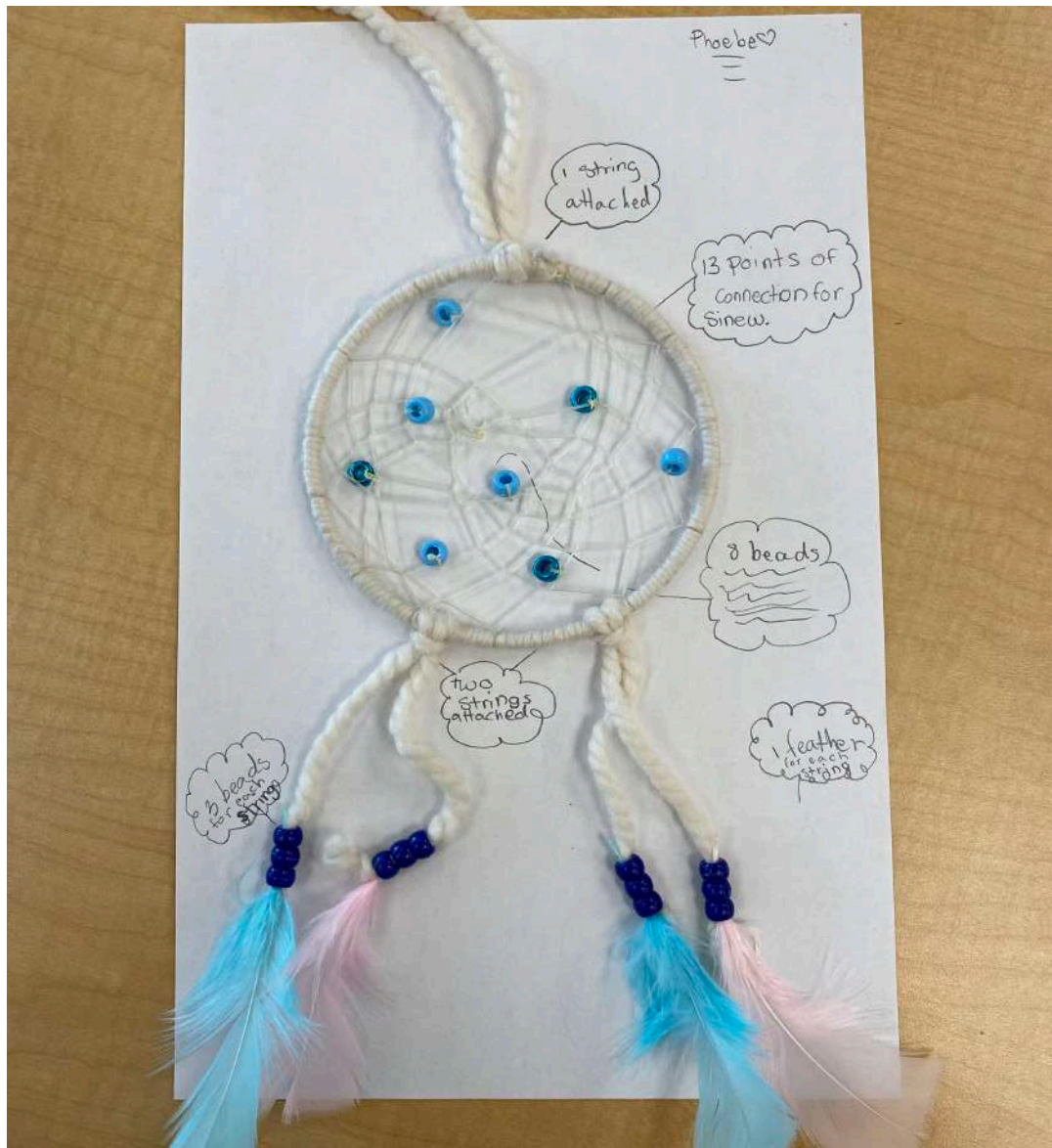
# PRIMARY STUDENTS





## INTERMEDIATE STUDENTS


Built their own dream catchers, intentionally including Fibonacci Numbers in them





FIBONACCI  
DREAM CATCHERS  
Can you find the Fibonacci  
Numbers in our dream  
catchers?

Ojibwe Dreamcatcher Legend



This is the story that Ojibwe say. In the beginning, God created the world and the people. He made the sun, the moon, the stars, and the earth. He made the trees, the flowers, and the animals. He made the people, and he gave them the gift of the dreamcatcher. The dreamcatcher is a magic object that can help you see your dreams and catch the bad ones. It is made of a web of spider silk, which is a natural material that has a spiral pattern. This spiral pattern is based on the Fibonacci sequence, which is a series of numbers that starts with 0 and 1, and each number after that is the sum of the two numbers before it. The Fibonacci sequence is a very important part of nature, and it is also a very important part of the Ojibwe culture.

# Celebrating our Learning



Create  
Feathers  
2015  
2015  
3000  
3000



Feathers  
2015  
2015  
3000  
3000



Feathers  
2015  
2015  
3000  
3000



Feathers  
2015  
2015  
3000  
3000

# Next Steps...Future Ideas

## ***SPIRALS AND FIBONACCI***

- Kindergarten exploration
- Extending knowledge about Fibonacci Sequence
- Extending into other curricular areas
- Inquiry into significant numbers in other cultures
  - Indigenous cultures
  - Non-Indigenous cultures

## ***CULTURALLY RESPONSIVE TEACHING***

- Continue to be open-minded
- Intentionally connect story to math as much as possible
- Using the land and our place to make real-life connections to math