

Fibonacci Numbers in the Grocery Store

We have been studying the Fibonacci numbers, named for Leonardo Fibonacci, who wrote about them around 1200 AD, but was better known during his time as a champion of the Indo-Arabic numeral system. They were also known to Pingala, who lived in India around 300-200 BCE, and who used them to analyze poetry and music.

Find a plant (preferably not a pine cone) exhibiting the Fibonacci numbers: 1,1,2,3,5,8,13,21, ... You may find one at the grocery store, in your yard, or elsewhere. Answer the following questions in what you turn in (do not just write the answers on this page after the question, include them in the paragraphs you write!)

- (1) Describe where and when you found the plant.
- (2) Find the particular Fibonacci numbers present in spirals in the plant. How many spirals are there in the clockwise direction when looked at from the top? How many in the counterclockwise direction?
- (3) Draw a picture or diagram of the plant, showing exactly how the Fibonacci numbers occur. You may insert a photo if you like, but you **MUST** indicate how many spirals go in each direction.
- (4) Show this plant or object to someone **NOT** in the class, and explain the Fibonacci numbers to them. Describe their reaction in your paper. You should use both pictures and words in carrying out this assignment!