Fibonacci

Annotation

Tina solves the problem by using a table and a graph to represent the relationship between elements of a sequential pattern and their ordinal position. She can correctly explain in words the rule that describes the pattern. She recognizes the non-linear shape of the points in the relationship graph.

Problem: Fibonacci

The class are exploring patterns in nature by examining sunflower heads and pinecones. The teacher introduces the students to the Fibonacci number series:

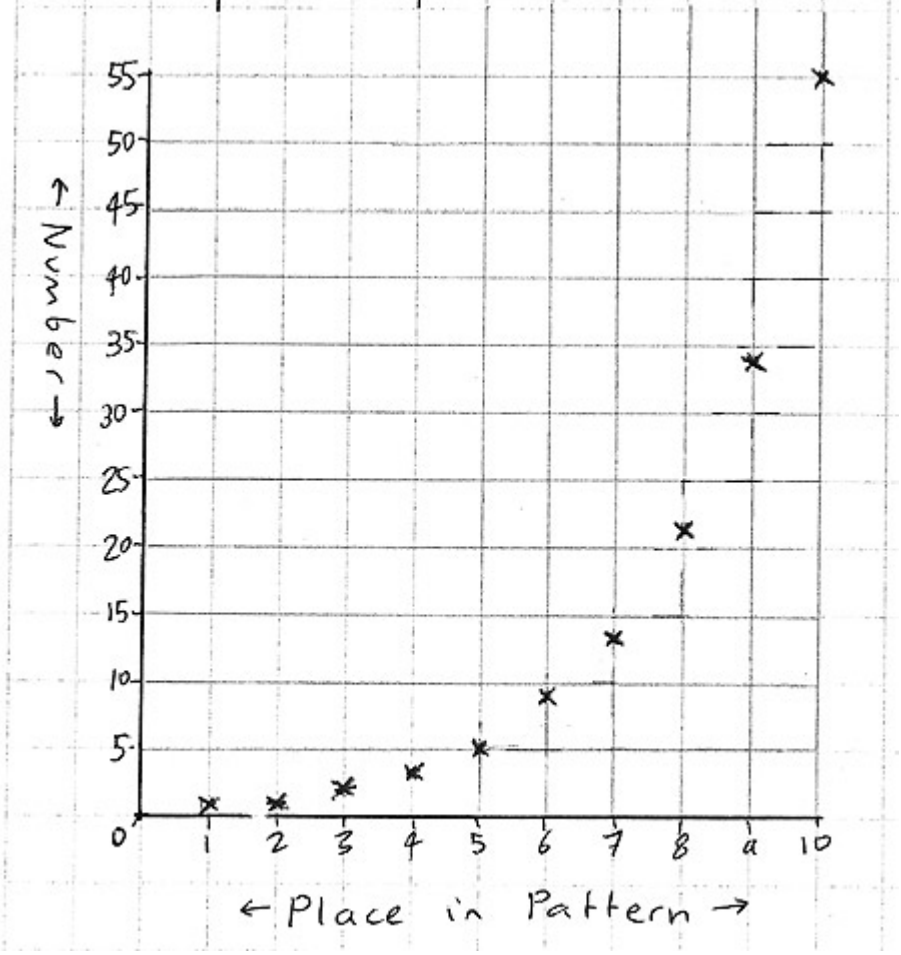
1, 1, 2, 3, 5, 8, 13, 21, 34, 55

Then the teacher poses this question:

Nature has posed for us her own clever maths problem. Can you explain what Nature is doing here?

Student Response

Place in Pattern	Number	What is Happening
1 st	1	?
2 nd	1	?
3 rd	2	1 + 1 = 2
4 th	3	1 + 2 = 3
5 th	5	2 + 3 = 5
6 th	8	3 + 5 = 8
7 th	13	5 + 8 = 13
8 th	21	8 + 13 = 21
9 th	34	13 + 21 = 34
10 th	55	21 + 34 = 55



Teacher: Tell me about what you have done.

Tina:	I listed the numbers and their place but I couldn't see a pattern. So I made a graph and could see straight away that it wasn't a linear relationship, but they do make a curve that gets steep really quickly. So I looked at the numbers again and it was only when I got down a bit that I could see that the next number in the pattern was what you got when you added together the two numbers before it. That's why further down, the numbers get bigger much quicker which explains the curve. Nature's pretty clever eh?