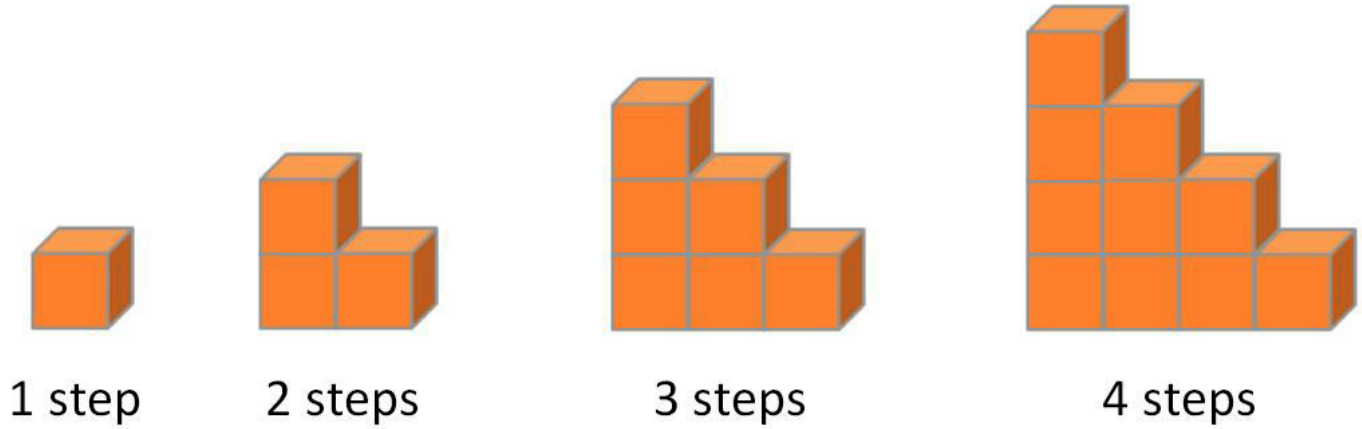
Little boxes

Annotation

Marnie solves the problem representing the relationship between elements of a sequential pattern and their ordinal position, using a table and a graph. She can state the rule in words that correctly explain the pattern, and can describe and explain the shape of the line on the relationship graph.

Problem: Little boxes

Room 2's technology inquiry unit includes construction with cardboard boxes. The student begins in the following way:



Then the teacher poses this problem:

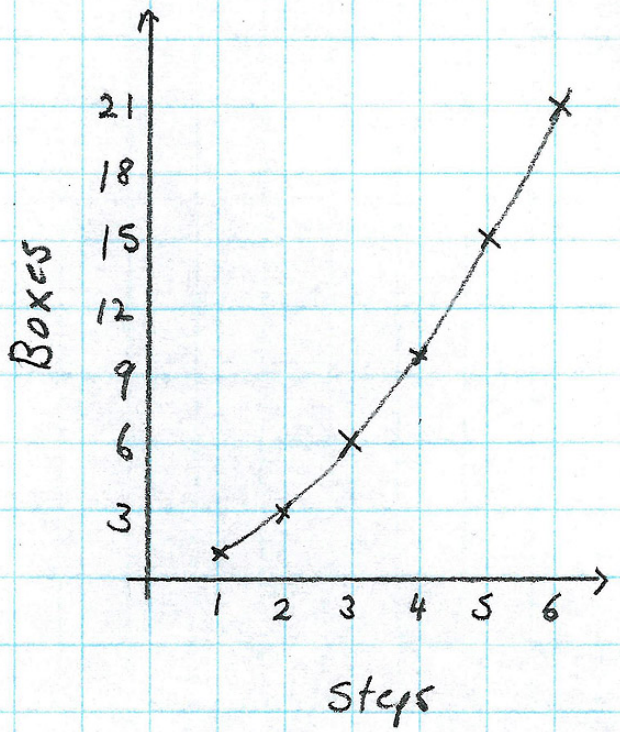
It looks like you are going to need quite a few boxes if your model is going to be as high as you have planned.

Can you show me how you could work out the connection between the number of boxes and the sets of steps?

Student Response

Marnie draws the following table and graph:

Steps (Boxes high)	Number of boxes
1	1
2	3
3	6
4	10
5	15
6	21



Teacher: Tell me about what you have done.

Marnie: I made the table, and it showed me what was going on with the numbers. On the graph, I had to show one for the first step, three for the second, six for the third and 10 for the fourth. So I could see that one box was needed, then two more were needed, then three more, then four more, and I could see it would be five more, then six more.
The slope on the graph is getting steeper because, each time, the extra number of boxes needed for the steps keeps getting bigger by one from the time before. So the rule is: add what you added before plus one more. You are right. I am going to need lots of boxes!