TITLE: Uno's Garden by Graeme Base   **GRADE LEVEL(S)**: 2 to 7
LESSON FOCUS: Patterns and Relations

LEARNING OUTCOMES:

Grade 2:

B1 Demonstrate an understanding of repeating patterns (three to five elements) by: **(a)** describing **(b)** extending **(c)** comparing **(d)** creating patterns using manipulatives, diagrams, sounds, and actions.

B2 Demonstrate understanding of increasing patterns by: **(a)** describing **(b)** reproducing **(c)** extending **(d)** creating patterns using manipulatives, diagrams, sounds and actions (numbers to 100).

Grade 3:

B2 Demonstrate understanding of increasing patterns by: **(a)** describing **(b)** reproducing **(c)** extending **(d)** creating patterns using manipulatives, diagrams, sounds and actions (numbers to 1000).

B2 Demonstrate an understanding of decreasing patterns by: **(a)** describing **(b)** extending **(c)** comparing **(d)** creating patterns using manipulatives, diagrams, sounds, and actions (numbers to 1000).

Grade 4:

B1 Identify and describe patterns found in tables and charts, including a multiplication chart.

B2 Reproduce a pattern shown in a table or chart using concrete materials.

B3 Represent and describe patterns and relationships using charts and tables to solve problems.

Grade 5:

B1 Determine the pattern rule to make predictions about subsequent elements *(with and without concrete materials)*.

Grade 6:

B1 Demonstrate an understanding of the relationships within tables of values to solve problems *(concretely, pictorially and symbolically)*.

B2 Represent and describe **patterns** and relationships using graphs and tables.

Grade 7:

B1 Demonstrate an understanding of oral and written patterns and their equivalent linear relations.

B2 Create a table of values from a linear relation, graph the table of values and analyze the graph to draw conclusions to solve problems.

MATERIALS: Multi-links or centimetre cubes, base ten blocks, graph paper and T charts (different colours – perhaps blue, green, yellow), scissors, and summary charts for each Home Group. Also a large piece of chart paper for each of the home groups

EXPLORE: The students should have had multiple exposures to the text and illustrations prior to beginning any mathematical investigations.

Divide the class into Home Groups of 6 (triads of student pairs). One pair in each triad will investigate the relationship between the numbers of plants to animals. They will be called plants and will use the green black line masters. The second pair will investigate the relationship of the numbers of buildings to animals. They will be called buildings and will use the blue black line masters. The last pair will chart the number of Snortlepigs and people to animals. This pair will have the easiest task. They will be called the people and will use the yellow black line masters. All the plants could work together sharing books, all the buildings could work together and all the people could work together.

Each pair will start at the first page by building the number (plants, buildings, or people) out of multi-links or centimetre blocks. They will then represent the area of the number on the grid paper. The area represented by each number will be cut out (one single piece) and then recorded in the T-chart.

For example the Plant group would start by making a 10 by 10 square out of the cubes for 100 plants. Then cut out a 10 by 10 square of graph paper. On the T-chart under animals they would put 10 and under plants they would put 100. See the sample in the package. Continue through each of the pages of the books until they reach the page of <u>0 ANIMALS AND 0 PLANTS</u>.

Looking at the T-chart can they see a pattern?? Record the pattern rule at the bottom of the T-chart.

From: J. Bruce and teachers from Nanaimo SD68

SHOW AND SHARE: Go back to your Home Group and share. *Take turns and share your thinking. How are the patterns the same? Different?*
In your Home Group on your large piece of chart paper glue your rectangles and T Tables. As a group search for any other patterns. Complete the summary chart together.
CONNECT: Observe and support the students by asking questions*. What patterns did you see? What rules did you discover? How does it help?*

PRACTICE: Each Home Group shares out their findings. How are they the same and different? Then altogether finish the book and recording the Numbers of Plants, Buildings, and People. *Which were the easiest patterns to predict – the first half or the second have of the book?*

REFLECT: *Use diagrams, words, tables and numbers to explain what patterns your home group was able to find. (Grade 6 and 7 can also use linear graphs to represent the patterns.)*
Choose one: Plants, Building, or People. What might your T – chart have looked like if there were 12 animals to start instead of 10? Can you think of other patterns that the author might have chosen when creating this book?
Use the stop light strategy with the particular outcomes you chose.