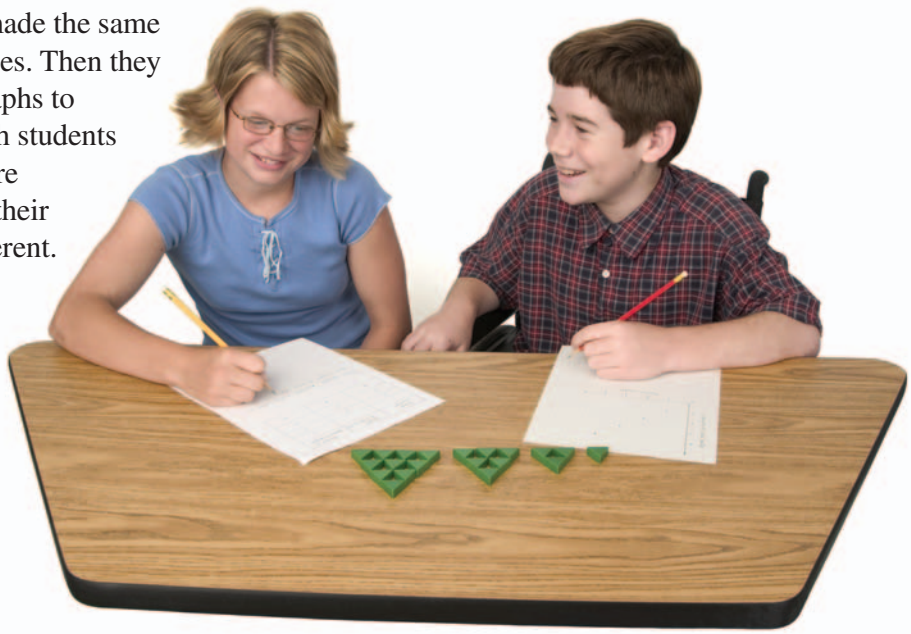
8.1 Exploring Pattern Representations

You will need
- grid paper
- a ruler
- a calculator
- triangle dot paper
- coloured pencils
- square dot paper

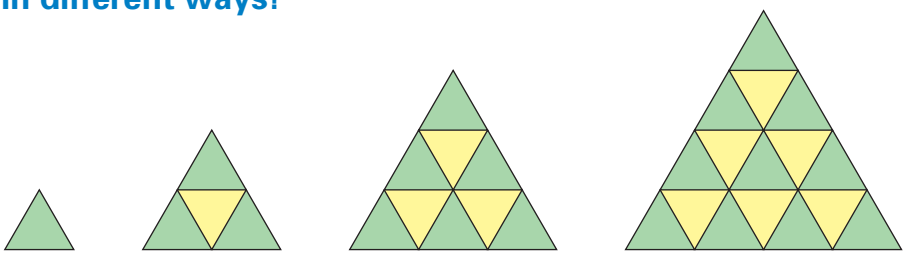
GOAL
Explore different ways of describing a pattern.

Explore the Math

Both Colin and Kaitlyn made the same growing pattern of triangles. Then they used tables, rules, and graphs to represent the pattern. Both students were correct, but they were surprised to find out that their representations were different. They decided to find as many ways as they could to represent the pattern.



? How can you represent this triangle pattern in different ways?



A. Look for different patterns. For example, find changes for these:
- number of rows
- number of small triangles
- number of yellow triangles
- number of green triangles
- lengths of sides

B. Choose one of the patterns. Make a table of values for the pattern.

C. Describe the pattern rule using words and numbers.

D. Make a scatter plot for the pattern. Use your graph to name the 10th term in the pattern.

E. Repeat steps B, C, and D for at least three other patterns.

F. Create your own pattern with squares, and represent it in different ways.

Reflecting

1. Which representation (the table of values, the pattern rule, or the scatter plot) would you use to determine the 57th term of the triangle pattern? Explain your reasoning.

2. Which representation for your square pattern would you find most helpful to show how the term values grow? Explain.

3. What are some advantages of each representation for describing a pattern?

4. What are some disadvantages of each representation for describing a pattern?

Mental Math

SUBTRACTING DECIMALS IN PARTS

You can mentally subtract hundredths from a whole number by subtracting in parts.

Example 1:

$6.00 - 0.65$
$= 6.00 - 0.60 - 0.05$
5.40
5.35

Example 2:

$6.00 - 4.65$
$= 6.00 - 4.00 - 0.60 - 0.05$
2.00
1.40
1.35

1. Show how to add in parts to check the answer.

2. What number adds to 0.65 to make 1? What number adds to 1 to make 6?

3. Subtract in parts.

a) $7.00 - 0.65$ **b)** $6.00 - 0.35$ **c)** $3.00 - 0.45$ **d)** $5.00 - 0.85$ **e)** $9.00 - 1.35$ **f)** $10.00 - 5.25$ **g)** $50.00 - 2.99$ **h)** $100.00 - 3.95$