Explore

Ernesto made a 1-m square garden this year.
He plans to enlarge the garden by
increasing the side lengths by 2 m each year.
What will the perimeter and area of
Ernesto's garden be in 6 years? 52 m; 169 m^2

Show *and* Share

Describe the strategy you used to solve the problem.

Connect

Helen raises Angora goats.
When Helen got her first pair of goats,
she built a 2-m by 1-m pen for them.
As Helen's goat population grew, she increased
the size of the pen by doubling the length and the width.
What were the perimeter and area of Helen's pen
after she increased its size 5 times? 192 m; 2048 m^2

Strategies

- Make a table.
- Use a model.
- Draw a diagram.
- Solve a simpler problem.
- Work backward.
- Guess and check.
- Make an organized list.
- Use a pattern.
- Draw a graph.

Understand

What do you know?
- Helen's first pen measured 2 m by 1 m.
- She increased the size of the pen by doubling the length and width.
- She did this 5 times.

Plan

Think of a strategy to help you solve the problem.
- You can **use a pattern**.
- Use Colour Tiles to model each pen.
- List the dimensions, the perimeter, and the area of each pen.

Record your list in a table.

	Length	Width	Perimeter	Area
Original Pen	2 m	1 m	6 m	2 m²
First Increase	4 m	2 m	12 m	8 m²
Second Increase				

Look for patterns.
Continue the patterns to find
the perimeter and area after 5 increases.

Check your work.
What pattern rules created the patterns in your table?

Practice

1. Harold is designing a patio with congruent
   square concrete tiles. He has 36 tiles.
   Use grid paper to model all the possible rectangular patios 1 by 36, 2 by 18,
   Harold could build. Label the dimensions in units.   3 by 12, 4 by 9, 6 by 6
   Which patio has the greatest perimeter? The least perimeter?   1 by 36; 6 by 6

2. Suppose you have a 7-cm by 5-cm rectangle.
   You increase the length by 1 cm and decrease the width by 1 cm.
   You continue to do this.
   What happens to the perimeter of the rectangle? The area?
   Explain why this happens.

Reflect

How does using a pattern help you solve a problem?
Use pictures, words, or numbers to explain.