

# Tiling Teasers

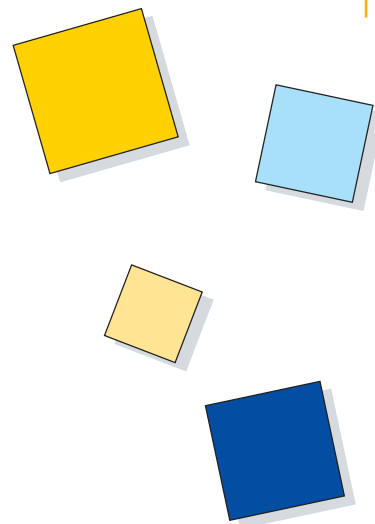
You need: a calculator, graph paper

## ACTIVITY

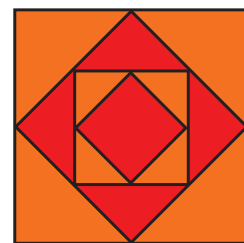
Thomas and Ria are investigating different sizes and possible patterns for painted tiles to go on a school wall. The tiles that go on the wall will need to be the same size and the same basic pattern.

They draw some square tiles and find their areas.

Side length (cm)	Area (cm <sup>2</sup> )
10	100
11	121
12	144
⋮	⋮



- Copy the table above.  
Add side lengths of 15, 20, 25, and 60 and fill in the missing areas.
- If a tile's area were 900 cm<sup>2</sup>, how long would each side be?
  - If the area were 2 500 cm<sup>2</sup>, how long would each side be?
- This is the basic design that Thomas and Ria like best.  
It has an area of 1 600 cm<sup>2</sup>.
  - How long is each side of the tile?
  - Each new square is made by taking the midpoints of the sides of the previous square and joining them to make the new square inside it.
    - What is the area of the first square drawn on the tile? How long is each of its sides?
    - Find the areas and the lengths of the sides of the two smallest squares.
- Find the square roots of 25, 36, 49, 64, 81, 100, 0, 1, 4, and 9.



- Copy this graph (use a full page).  
On it, plot 10 numbers and their square roots. Join the points with a curved line.
  - Use your graph to estimate the square roots of the following numbers. Then use a calculator to find the actual figure (to two decimal places).
    - 35
    - 62
    - 18
    - 76

