

### Round Two: Tiling the Garden

This challenge looks at problem solving and spatial/ number awareness. You should **spend no more than 30 minutes** on the challenge as a whole – try and get as far as you can, but incomplete entries can still be submitted. Make sure to show your working out!

You will need:

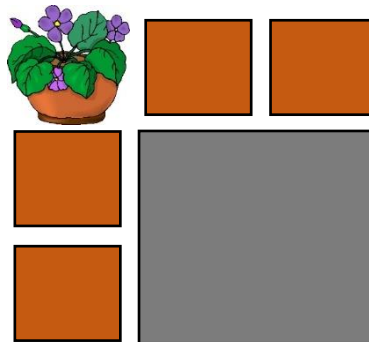
- Entry sheet
- Scrap paper/grid paper for your working out
- *Optional:* Coloured pencils (to differentiate tiles)

All of the activities featured in the challenge this year are adapted from resources from nrich at the University of Cambridge - <http://nrich.maths.org>



#### Tiling the Garden

Gideon decided to decorate his garden with square stone tiles. He chose a space of **3 metres x 3 metres**, leaving a square empty for his favourite flowers. Gideon wanted to buy as few square tiles as possible and found that he could cover the space with just 5 tiles. (See example below)



**What is the fewest number of square stone tiles Gideon would need for a 5 metres x 5 metres or 7 metres x 7 metres space?**

For groups that are able, there is an extension question for bonus points: **What would be the fewest number of square tiles needed for a 15 metres x 15 metres space?**

#### Tips for volunteers

- Discuss the example together to make sure pupils understand the activity
- Pupils should use grid paper to draw out each space. They can think spatially rather than numerically if this helps (thinking in squares as opposed to metres)
- Leaving one square empty, what is the biggest size of square tile which would fit in the 5m x 5m space? What is the smallest? What other sizes would fit? Which combination results in the fewest tiles being used? What about a 7m x 7m space?
- When moving onto bigger spaces, can any patterns be spotted? Establishing a pattern will help pupils solve the extension question without drawing out the space

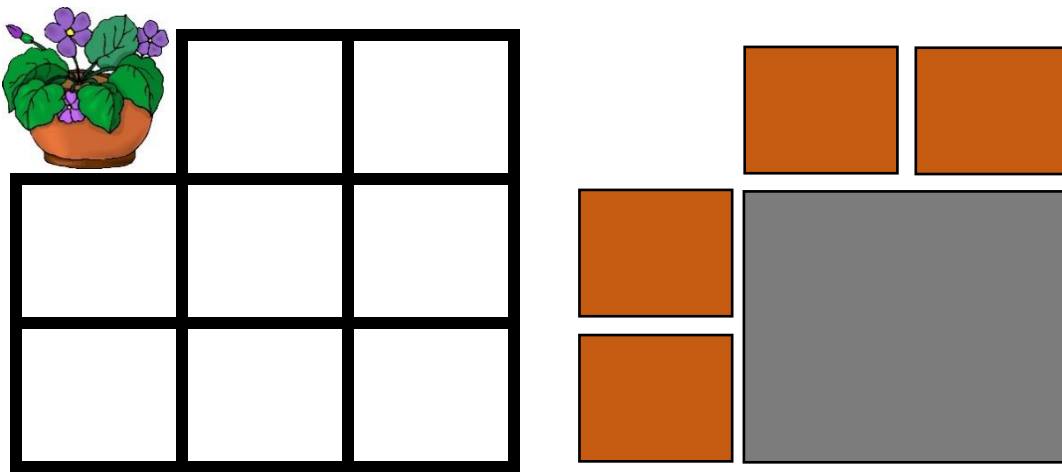


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## Round Two: Tiling the Garden

Gideon decided to decorate his garden with square stone tiles. He chose a space of **3 metres x 3 metres**, leaving a square empty for his favourite flowers.

Gideon wanted to buy as few square tiles as possible and found that he could cover the space with just 5 square tiles (*see example below*).



Gideon is now considering choosing a bigger space to tile, maybe **5 metres x 5 metres** or **7 metres x 7 metres**.

**What is the fewest number of square stone tiles Gideon would need for each space?**

When working through the problem, remember-

- To leave a 1 metre x 1 metre square empty for Gideon's flowers
- Gideon only wants to use square tiles
- To try combinations of differently-sized square tiles to see how you can use the fewest tiles possible (this may take a few attempts)

**Extension question (if you have time)**

**What would be the fewest number of square tiles needed for a 15 metres x 15 metres space?**



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# Number Partners Challenge 2017



## Team Entry Sheet: Round Two

<b>Team Name:</b>		
<b>School Name</b>	<b>Pupil Names</b>	<b>Volunteer Company</b>

What is the fewest number of tiles needed for a 5m x 5m space?	/3
What is the fewest number of tiles needed for a 7m x 7m space?	/3
Is there a pattern? <i>Explain this using a sentence.</i>	/4

### Extension

What is the fewest number of tiles needed for a 15m x 15m space? <i>(can your pattern help find the answer?)</i>	/4
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**Total**

**/14**

### Submit your entry to:

Anita Kessie, Curriculum Project Coordinator

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Deadline for all entries is **Friday, 31 March 2017**







