

### Teacher Notes

#### Introduction

Pupils can work on this problem individually or with others.

- They can discuss how they will use the information on the size and shape of the tiles to work out how many are needed (given that Serena does not wish to cut the tiles).
- It may be useful for the teacher to prompt a discussion on how mm are used in joinery and construction.
- They can discuss how they will work out the total cost after they work out how many tiles are needed.
- They can compare their approach and adapt their own strategy if needed.

This problem deals with a pupil's ability to read through information and add and subtract measurements in mm before using number skills in the context of money up to £10. They may need to use the two times multiplication facts and be able to recognise tessellations through practical activities.

#### What I know (think)

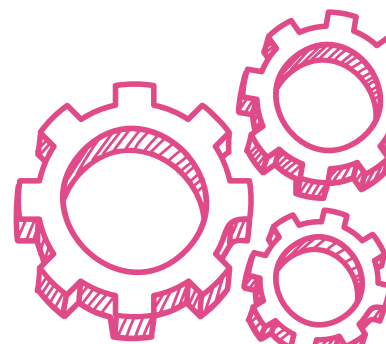
The pupils should know from the given problem:

- Serena wishes to tile a splashback above her sink using square tiles of width 300 mm.
- The width of the back of the sink is 570 mm.
- Serena does not want to cut the tiles.
- Serena is happy with up to 50 mm of the tiles extending on either end of the sink.
- They only need one row of tiles above the sink.
- They know the cost of 1 tile is £4.95.

#### What I need to know (identify)

Pupils need to identify:

- how many tiles will fit along the back of the sink;
- whether this is more than 570 mm, and if so, does it still leave less than 50 mm either side; and
- the cost of this number of tiles.



# Tiling a Splashback 1 (Continued)

## What I need to do (employ)

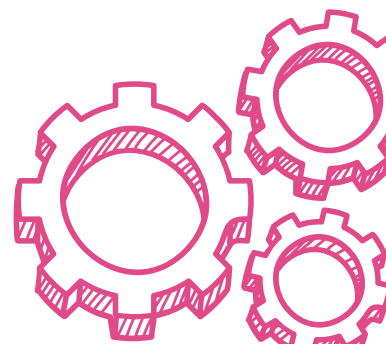
Pupils should use the information they have been given and come up with appropriate steps to help them solve the problem, for example:

- They note that one tile will not be wide enough so consider adding another tile.
- They recognise that  $300\text{ mm} + 300\text{ mm}$  (or  $300 \times 2$ ) is  $600\text{ mm}$ .
- They compare this to  $570\text{ mm}$  (width of the sink).
- They subtract  $570\text{ mm}$  from (or add up to)  $600\text{ mm}$  to find that Serena will have  $30\text{ mm}$  of extra tile.
- They recognise that  $30\text{ mm}$  is less than  $50\text{ mm}$ , so this will be fine as it extends beyond the width of the sink.
- They may divide  $30\text{ mm}$  by  $2$  to see how much the tiles would equally extend either side of the sink, to see if it is less than  $15\text{ mm}$ .
- As only a depth of  $1$  tile is needed above the sink, the pupils correctly decide that only two tiles are needed for the project.
- They calculate the total cost of the tiles needed using their chosen method, for example, they may multiply ( $\pounds 4.95 \times 2 = \pounds 9.90$ ) or add ( $\pounds 4.95 + \pounds 4.95 = \pounds 9.90$ ).

## What I did (review)

Pupils will use self-assessment, peer assessment or teacher feedback to decide whether they have approached the problem as intended.

- Did they identify that  $1$  tile was not enough?
- Did they correctly add another tile and calculate the width of  $2$  tiles?
- How did they calculate the width of  $2$  tiles?
- Did they correctly identify that there was an excess of  $30\text{ mm}$  over the width of the sink?
- Did they half this excess and check that it was less than  $50\text{ mm}$ ?
- Did they correctly deduce that  $2$  tiles were needed?
- How did they calculate the total cost of the tiles? Did this differ for other pupils?



# Tiling a Splashback 1 (Continued)

## Curriculum Objectives

This problem should enable pupils to demonstrate their knowledge, understanding and skills through:

Developing pupils as individuals	<p><b>Demonstrate an ability and willingness to develop logical arguments:</b></p> <ul style="list-style-type: none"> <li>Pupils justify how they arrived at the number of tiles needed.</li> </ul>
Developing pupils as Contributors to Economy and the Environment	<p><b>Apply mathematical skills in everyday financial planning and decision making:</b></p> <ul style="list-style-type: none"> <li>Pupils will show how they can calculate the cost of tiles required for a home improvement.</li> </ul>

## Thinking Skills and Personal Capabilities

This problem can provide an opportunity for pupils to demonstrate a variety of the following Thinking Skills and Personal Capabilities:

Managing Information	<ul style="list-style-type: none"> <li>Plan and set goals and break a task into sub-tasks</li> <li>Communicate with a sense of audience and purpose</li> </ul>
Thinking, Problem-Solving and Decision Making	<ul style="list-style-type: none"> <li>Generate possible solutions, try out alternative approaches and evaluate outcomes</li> </ul>
Being Creative	<ul style="list-style-type: none"> <li>Experiment with ideas and questions</li> <li>Learn from and value other people's ideas</li> </ul>
Working with Others	<ul style="list-style-type: none"> <li>Listen actively and share opinions</li> <li>Suggest ways of improving their approach to working collaboratively</li> </ul>
Self-Management	<ul style="list-style-type: none"> <li>Seek advice when necessary</li> <li>Organise and plan how to go about a task</li> </ul>

## Cross-Curricular Skills

This problem should enable pupils to demonstrate a variety of the following Cross-Curriculum Skills:



Using Mathematics

