

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 the dimensions of the splashback.
- It may be useful for the teacher to prompt a discussion on how mm are used in joinery and construction.
- They discuss how they will work out the total cost of materials when 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 common measurements in mm. They will use their number skills in the context of money adding numbers with two decimal places and use fractions to describe quantities.

What I know (think)

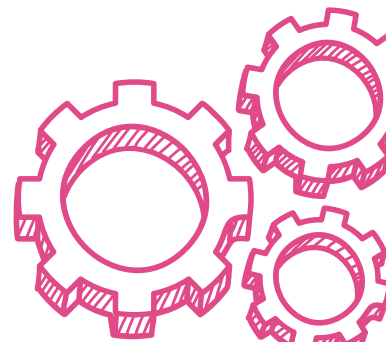
The pupils should know from the given problem:

- Nicole wishes to make a splashback above two identical sinks.
- She wants to use square mosaic tiles of side 300 mm.
- The tiles cost £14.00 each.
- The width of each identical sink is 750 mm.
- The tiles can be cut to size.
- Nicole wants each splashback to be the same width as each sink.
- The splashback is to be 450 mm high.

What I need to know (identify)

Pupils need to identify:

- how many tiles are needed to fit along the back of each sink;
- how many tiles are needed to give the required height;
- the total number of tiles needed for one splashback;
- the total number of tiles needed for both splashbacks; and
- the total cost of the tiles.



Tiling a Splashback 2 (Continued)

What I need to do (employ)

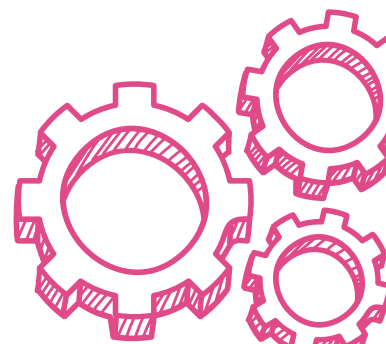
Pupils should use the information they have been given and come up with appropriate steps to help them solve the problem, for example:

- They recognise that all the sides of a square are the same length and that the width must be the same as the height.
- Using the width of the tiles and the width of the sink, pupils work out how many tiles are needed to go along the top of the sink for one splashback.
- They might use strategies such as adding on, multiplying or drawing a diagram.
- They recognise that $300\text{ mm} + 300\text{ mm} + 150\text{ mm}$ gives 750 mm and therefore they need $2\frac{1}{2}$ tiles wide.
- They also deduce that they need $300\text{ mm} + 150\text{ mm}$ to get the desired height of 450 mm therefore they need $1\frac{1}{2}$ tiles high.
- Using their calculations and/or sketch, pupils identify that $3\frac{3}{4}$ tiles are required per splashback.
- They calculate that Nicole needs to buy 4 tiles for one splashback and therefore needs 8 tiles for both splashbacks (as $2 \times 3\frac{3}{4} = 7\frac{1}{2}$).
- Pupils may calculate the price for one splashback and double it, i.e., $4 \times \text{£}14 = \text{£}56$ and $\text{£}56 \times 2 = \text{£}112$.
- Or they may calculate the cost for both splashbacks as $\text{£}14 \times 8 = \text{£}112$.

What I did (review)

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

- How did they identify how many tiles were needed for each splashback?
- Did they add on, multiply, draw a diagram, etc., for their approach?
- Did they correctly identify that 150 mm is half of 300 mm , and hence half a tile?
- Did they draw a sketch to see how many tiles were needed for one splashback?
- Did they correctly identify that 4 tiles were needed for each splashback?
- Did they double the number of tiles needed for one splashback to find how many were needed for two splashbacks?
- Did they calculate how much it would be for eight tiles?
- Did they check their answer by estimating or using a reverse calculation?



Tiling a Splashback 2 (Continued)

Curriculum Objectives

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

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

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

Cross-Curricular Skills

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



Using Mathematics

