

Tutor notes for Module 4: Shape, space and measure



Module 4: Shape, space and measure, Section B, Challenge 1

Challenge title	Gardens		
Challenge	<p>Design a garden with an area between 80m² and 120m². The garden can be any shape, but must have a fence around it.</p> <p>The garden must have at least four features (eg a lawn, flower beds, pond, vegetable patch, play area, patio). These need to be different shapes and sizes and one must be circular.</p> <p>Produce an accurate scale drawing of your garden and calculate the area of each section. You will also need to calculate the length of fence you will need. Calculate the cost of building your garden.</p>		
Aim	<ul style="list-style-type: none"> • To develop an understanding of area and drawing accurately • To demonstrate skills in measuring accurately • To develop an understanding of where area calculations are used in practice 		
Challenge ref.	4B1	Session time	10 hours
Skills	Calculating area; Drawing accurately; Estimating; Explaining thinking and justifying answers; Measuring accurately; Planning and organisation; Using scale.		

i Suggested approach

This is an open ended task that enables students to practise many of the skills developed in section A within one project. Tutors should ensure that students are using a variety of shapes in order for them to get the most out of the challenge. More able students should be calculating the area of compound shapes (ie shapes made up of a number of different shapes). These compound areas need to be made up of regular shapes to make the calculations more straightforward.

The scale drawing will be a challenge for some students; these students will benefit from using squared paper to help them, but more able students should be producing the plan on plain paper. Ensure students that use square paper to draw their plans do the calculations for the area first; they may just count squares to find the answers, but this method could be used to check their calculations.

When costing the project, students may get too involved in choosing from the wide range of different materials that are available for doing the same jobs. It is nice to allow students to research prices and materials themselves, but this may prove time consuming and detract from the mathematics. This can be avoided by providing students with a list of materials they can use; this list could include costs, but it would be more interesting for students to find the costs of particular products.

When doing the costing calculations, tutors should ensure that students use the same units that materials are priced in. Most materials will be priced per metre or per metre squared, so dimensions on their plans will need to be measured in metres. There may be some products that require conversion to litres (eg paint), which is a good additional skill.

To extend this project further and to explore more of the maths practised in section A, tutors could include some volumes for learners to calculate (eg raised beds to be filled with compost, patios to be laid on a foundation of sand, ponds to be filled with water and lined with gravel). This will require calculation of volume needed and the use of the density formula to work out the weight required.

It is important that students do not make their plans too simple, which they easily could be. Grade 4 and 5 students need to work with compound shapes for both area and volume, as well as including unit conversions in their work.

Tutor notes for Module 4: Shape, space and measure



Module 4: Shape, space and measure, Section B, Challenge 1 Continued...

Suggested resources

The following learner resources are provided for this challenge:

- Challenge walkthrough 4B1