

4

Allotments, gardens and garden centres

Coverage

This unit is about measures of length, weight, capacity and temperature. It covers specific metric units and some non-standard measures. At this level, learners need lots of practice using a range of common measuring instruments. They should only be expected to measure accurately in the units required, which restricts the items chosen for practical tasks, and to read scales to labelled divisions.

Estimation should be introduced but not laboured, as estimation skills are developed through experience over time.

Temperature is not measured at this level – it is about understanding temperatures in degrees Celsius, in everyday situations such as weather charts.

The unit also covers simple properties as 2-D and 3-D shapes.

Skills

MSS1/E2.5 read, estimate, measure and compare length using common standard and non-standard units (eg metre, centimetre, paces)

MSS1/E2.6 read, estimate, measure and compare weight using common standard units (eg kilogram)

MSS1/E2.7 read, estimate, measure and compare capacity using common standard and non-standard units (eg litre, cupful)

MSS1/E2.8 read and compare positive temperatures in everyday situations such as weather charts

MSS1/E2.9 read simple scales to the nearest labelled division

MSS1/E2.1 recognise and name 2-D and 3-D shapes

MSS1/E2.2 describe the properties of common 2-D and 3-D shapes

Resources needed for effective teaching of this unit:

Demonstration	Group	Pair	Individual
Metre ruler and metre tape measure	Scales weighing in kilos, e.g. bathroom scales	Examples of simple weather forecasts from newspaper	Centimetre rulers
Litre measuring jug	Adhesive tape, paper clips or staples	Thin card and scissors	Different sized rectangles of paper
Mug	Bathroom scales (if measuring learners' weights)	Metre ruler	Access to Internet desirable
Litre bottle and litre carton		Tape measure	
2-litre container, e.g. lemonade bottle			
5-litre container, e.g. empty paint tin			
Thermometer			
2-D and 3-D mathematical shapes/models			

Reminder

In the Links, H means Help, E means Extension and M means Mini-project.

Remember

Throughout the unit, be aware of the reading needs of learners.

You may need to read out parts of the text.

Words **highlighted** in **bold** will need particular clarification.

Context

- Discuss the scenario as a group.
- Be sensitive to the fact that learners may not have allotments or gardens. However, most will have seen gardening programmes on TV.

Stimulus questions

- Do you have a garden allotment?
- Have you seen gardening programmes on TV or been to a garden centre?
- Do you measure things?
- Do you read measurements on tins of food or other things you buy?
- Do you watch the weather forecast?
- What numeracy skills do you think you might need for these things?

Keep the discussion general at this stage, so that learners can share knowledge and experience.

Pages 2 and 3 How long or how deep is it?

Introduction to activity 1

- As a group, discuss when you might want to measure exactly, for example, to measure a space in a kitchen to buy a cooker that will fit; and when a rough measure is acceptable, such as measuring in the garden.
- Ask learners to identify any units of measurement of length.
- Ask learners to identify how long they think **one metre** is.
- Introduce a metre ruler.

Activity 1

- Work in pairs to measure paces against a ruler. This does not need to be exact, just an idea of how close a pace is to a metre.

- Discuss and define the dimensions length and width for your classroom.
- Learners work in pairs to measure the length and width of the room:
 - in paces
 - in metres.
- This will require discussion of what happens when the answer is not an exact number.
- This can be dealt with by:
 - rounding to the nearest whole number
 - or by description such as 'just over' or 'nearly' etc.
- Results should be compared in a class discussion. This should lead to a discussion on standard and non-standard measures.
- Discuss why we need standard measures.

Activity 2

- Individuals look at rulers and practise lining up the '0' at the start of the item to be measured.
- Beware of learners lining up to measure from '1'.
- Explain the term **interval**.
- Learners complete the activity individually.

Activity 3

- Provide or identify other objects to be measured in *either* **cm** or **m**.
- If the items are not a whole number of units, instructions must be given on how to address this (see activity 1).
- When learners become confident in measuring, encourage them to estimate (not guess) by comparison with a known length (pace, hand span or thumb width).

LINKS: H1, H2, E1, M1

Pages 4 and 5 How heavy is it?

Introduction to activity 4

- Ask learners what units we weigh potatoes in.
 - Differentiate between pounds and kilograms.
 - Discuss other measures of weight introduced by learners.
- Make sure learners understand that weight is independent of size.

Activity 4

- Discuss the example.
- The activity can be completed individually.

Talk about it

- As a group, discuss what learners might buy in kilograms, and write a list and/or make a sketch on a flipchart or board.
- Ask learners if they know what quantities they buy – 1 kg, 2 kg, 5 kg etc.
- Has anyone bought fertiliser or cement?

Practical activity

- Practical weighing is important.
- Use kitchen or bathroom scales and packaged products which weigh an exact number of kilograms, e.g. flour, sugar, potatoes (cover the labels).

LINKS: H3, M1

Pages 6 and 7

How much does it hold?

Introduction to activity 5

- Discuss capacity and elicit different types of containers that are used to hold liquids – in the garden, household, others, e.g. petrol cans.
- Introduce the litre as a measure of capacity. Do learners know other measures? They may introduce pints.
- Get learners to discuss what they might buy in litres.

Activity 5

- Questions 1–4 should be done individually.

Activity 6

- Learners need to have an idea of the capacity of different common containers and to understand that capacity cannot be determined just by looking at shape.
- Provide different shaped containers that hold the same amount (e.g. rectangular juice carton, milk and/or lemonade bottles).

- Provide different capacity containers, and get learners to guess which container holds more. Check by filling the smaller container with water and pouring it into the larger one.
- Estimate capacities in litres, and check by filling with water and pouring into a litre measuring jug.
- Practical measuring, rather than looking at labels, will depend on available facilities. It may be advantageous to use practical methods but may not always be possible.
- Learners complete the written activity.

LINKS: H4, H5, M1

Pages 8 and 9

How warm is it?

Help may be needed with reading.

Introduction to activity 7

- Discuss weather and temperature.
- Do learners know how we measure temperature? Discuss degrees C and degrees F. Stress the importance of showing which scale is being used.
- Discuss freezing point and boiling point of water (0°C or 32°F and 100°C or 212°F, respectively).
- Where can we find weather forecasts?
- Why do plants need protecting at low temperatures? (frost damage)

Activity 7

- Go through some other questions related to the weather chart, including the example. Make sure learners understand symbols
- Learners complete the activity individually or in pairs.

Activity 8

- Discuss the table of temperatures and relate them to the day.
- Use a thermometer to check the temperatures inside and outside.
- As a group, discuss what you would need to take for a day trip, depending on the weather.

- Learners complete the activity individually or as a group.

LINKS: E2, M2

Page 10

What shape is it?

Introduction to activity 9

Learners should be familiar with square, circle, rectangle and triangle from Entry 1.

Activity 9

- Revise the names of the shapes. Remind learners that a square is a special rectangle.
- Expand 2-D: meaning 2 dimensions – length and width; no thickness.
- Possibly compare with 3-D, depending on response.
- Introduce the terms **side** and **corner**. Learners should trace the sides of shapes with their fingers and feel corners. Count sides and corners as a group.
- Discuss that a circle is special because it has no corners and the side is curved.
- Learners complete the activity in pairs.

Page 11

Cylinders

Introduction to activity 10

- Demonstrate how a rectangle of paper can be rolled into a cylinder. Introduce the word cylinder.
- Discuss the shape of the ends.
- Take a label from a tin of food and look at the shape. Show the label on the tin.
- Introduce the term 'curved surface'.

Activity 10

- Learners complete the activity in pairs or as a group.

Page 12

Boxes

Introduction to activity 11

- Learners should be familiar with cube from Entry 1 and learn about cuboid, cylinder and square-based pyramid.
- Provide models of 3-D shapes.
- Revise/introduce the names of shapes.
- Expand to 3-D: 3 dimensions – width, length and thickness.
- Learners should trace along edges with fingers, feel corners and lay their palm against a face.
- Cylinders are special cases, they have no corners. The faces aren't all flat.
- Define 'curved surface'. You could include a sphere (use a ball).
- Count sides, faces, edges and corners together.
- Apply the names to everyday objects.

Activity 11

- Learners complete the activity individually or in pairs.

LINKS: E3

Pages 13 and 14

Help

H1

- Learners work in pairs.
- Show learners how to measure their height against a wall.
- Discuss the value of knowing non-standard measures in centimetres or metres as a tool for estimation.

H2

- Learners work individually.
- Remind learners to put '0' at the end of the stick.

H3

- Learners work individually.
- Discuss the scale, labelled every 2 kg, and where the odd numbers would be if they were marked.

H4

- Learners work individually or in pairs.
- Consideration needs to be given to availability of water.
- Discuss methods of estimating how much you drink in a day.
- Encourage learners to draw on the practical activity they have just done.

H5

- Work individually, in pairs or as group in class or at home.
- This involves practical activities with larger capacities.
- Consideration needs to be given to availability of water.
- Discuss ways of making the estimate.

Page 15 Extension

↑ E1

- Learners work in pairs.
- Estimate – remind learners to use something they know the length of to make a comparison.
- Discuss and suggest some items to add to the list.
- Measure the items.

↑ E2

- Learners work individually or in pairs.
- Learners access weather reports.
- Investigate the towns and countries they come from or where they have friends or family or discuss places they have visited or would like to visit.

↑ E3

- Where ICT facilities are available, learners can explore 2-D shapes using a drawing package.

Page 16 Mini-projects

- Learners do these projects individually or in groups in class or at home.
- They involve the application of skills learnt in this unit.
- Make sure learners understand exactly what they are trying to achieve.

M1

- Revise length, weight and capacity by visiting a garden centre, or by using garden catalogues or the Internet.

M2

- Discuss what might be recorded each day.

Pages 17 and 18 Check it

- Use these questions to assess how learners have coped with the skills in this unit. Ask learners to indicate the areas in which they would like more help.

How am I doing?

Learners should complete this individually, with teacher support where necessary.