

## Unit 4 Measures - Capacity

Year 3  
Summer term

### Unit Objectives Year 3

- Read and begin to write the vocabulary related to capacity.
- Measure and compare using *litres* and *millilitres*, and know the relationship between them.
- Suggest suitable units and equipment to estimate or measure capacity.
- Read scales. Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 *litres*).
- **Choose appropriate number operations** and calculation methods **to solve** measurement **word problems** with one or more steps.
- **Explain** and record **method**.

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This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

### Resources needed to teach this unit:

- Resource Sheet 4.1
- Activity Sheet 4.2
- Activity Sheet 4.3
- Activity Sheet 4.4
- Activity Sheet 4.5
- Large sheet of paper
- Whiteboards
- Whiteboard pens
- 5 containers per group, labelled A-E, with a variety of shapes and capacities.
- A selection of 1 litre containers
- A half-litre container
- A 100ml container
- Measuring cylinder ITP
- Variety of containers, including those with capacities marked on, e.g. drinks bottles, shampoo bottles
- Post-it notes
- Blank number line
- Measuring cylinders
- Sand or water for measuring

### Link Objectives

Year 2

Year 4

- Use and begin to read the vocabulary related to capacity.
- **Estimate, measure then compare capacities using litres.**
- **Suggest suitable units and equipment for such measurements.**
- **Read a simple scale to the nearest labelled division.**

- **Know and use the relationships between familiar units of capacity**
- Use, read, write *litre* (l), *millilitre* (ml), *pint*.
- **Know  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{10}$  of 1 litre in ml.**
- Suggest suitable units and equipment to estimate or measure capacity.
- Read scales.
- Record measurements to suitable degree of accuracy, using mixed units, or the nearest whole/half/quarter unit (e.g. 3.25 *litres*).
- **Choose appropriate number operations and calculation methods to solve measurement word problems with one or more steps.**
- Explain working.

(Key objectives in bold)

Planning Sheet	Day 1	Unit 4 <i>Measures – Capacity</i>	Term: Summer	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Suggest suitable units and equipment to estimate and measure capacity.</p> <p>Read and begin to write the vocabulary related to capacity.</p> <p>Read scales.</p> <p>VOCABULARY litre l millilitre ml half-litre full, half full empty holds, contains container estimate capacity measure</p> <p>approximately</p> <p>RESOURCES Large sheet of paper Whiteboards Whiteboard pens 5 containers per group, labelled A-E, with a variety of shape and capacities. A selection of 1 litre containers A half-litre container A 100ml container</p>	<ul style="list-style-type: none"> <li>Ask the children to discuss in pairs what they know about the topic of capacity. Take feedback and create a list or web of ideas, terms and concepts on a large piece of paper. <b>(Need to keep for Friday)</b>. Pull out key terms, especially the standard units of measurement, <i>l</i> and <i>ml</i>.</li> <li>Show children a variety of containers labelled A-E, and ask them to put the containers in order from smallest capacity to largest capacity. Please note – try to use a variety of container types, eg bottles, jugs, plastic boxes etc to promote thought and discussion.</li> </ul> <p>Children to work in groups to order containers.</p> <p>Bring groups back together to take feedback from activity and confirm order of containers.</p> <p><b>Q</b> How did you decide which order the containers went in?</p> <p><b>Q</b> Which container was the most useful?</p> <ul style="list-style-type: none"> <li>Remind children of the units of measurement from the web of ideas at the beginning of the lesson.</li> </ul> <p><b>Q</b> Which of the containers do you think holds the same as 1 litre?</p> <ul style="list-style-type: none"> <li>Give children time to discuss this with a partner and take feedback.</li> </ul> <p>Ask children:</p> <p><b>Q</b> Why did you think that container held 1 litre?</p> <ul style="list-style-type: none"> <li>Pass round a range of containers which hold 1 litre – eg measuring , bottle, cylinder, jug. Ask children to discuss in pairs their observations about the size and shape of containers. Take feedback.</li> <li>Children to go back into groups with their 1 litre container. They should now sort their 5 containers into groups of 'Holds less than 1 litre', 'Holds about the same as 1 litre' and 'Holds more than 1 litre'.</li> <li>Take feedback from groups.</li> </ul> <p><b>Q</b> Do we just measure things as more/less/the same as 1 litre?</p> <p><b>Q</b> What other measures might we use?</p> <ul style="list-style-type: none"> <li>Introduce <math>\frac{1}{2}</math> litre and repeat sorting activity, they should sort their 5 containers into groups of 'Holds less than <math>\frac{1}{2}</math> l', 'Holds about the same as <math>\frac{1}{2}</math> l' and 'Holds between <math>\frac{1}{2}</math> l and 1l', 'Holds about the same as 1l', 'Holds more than 1l'.</li> <li>Take feedback. Teacher can demonstrate with a measured amount that the containers are correctly sorted.</li> </ul>	<p>Take two containers from the group 'Holds less than <math>\frac{1}{2}</math> litre'.</p> <p><b>Q</b> Do these hold the same amount?</p> <p>Confirm that although these two boxes contain less than <math>\frac{1}{2}</math> litre, they do not hold the same amount.</p> <p><b>Q</b> What units of measure do we know that are smaller than 1l?</p> <p>Take feedback. Introduce the terminology millilitres if not forthcoming from the children.</p> <p>Remind children that we have already used millilitres today.</p> <p><b>Q</b> How many millilitres are there in 1 l or <math>\frac{1}{2}</math> ml?</p> <p>Pass round a container with a capacity of 100 ml. Ask children to identify which of the containers holds the same as 100 ml.</p> <p>Explain to the children that tomorrow they will be using litres and millilitres to measure the capacity of different containers.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li><b>Compare and order capacities relative to 1 l and <math>\frac{1}{2}</math> l.</b></li> <li><b>Have a clear understanding of a litre as a unit of measure.</b></li> <li><b>Use comparative vocabulary related to capacity.</b></li> </ul> <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p>

<b>Planning Sheet</b>	<b>Day 2</b>	<b>Unit 4 Measures - Capacity</b>	<b>Term: Summer</b>	<b>Year Group: 3</b>
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Teaching Activities/Focus Questions</b>
		<p>Suggest suitable units and equipment to estimate or measure capacity.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 l).</p> <p>Read scales.</p> <p><b>VOCABULARY</b>          litre l          millilitre ml          half-litre          full, half full          empty          holds, contains          container          estimate          capacity          measure</p> <p><b>RESOURCES</b>          Measuring cylinder ITP          Selection of containers as used in Day 1</p>	<p>Show Measuring Cylinder ITP. Set the scale to maximum 1000, scale 50 and hide the scale display. Use the fill facility to show different amounts and ask the children to read the scale, e.g., - 4l, 2 ½ l, 7 l, 1 ½ l etc.</p> <p>Show answers on whiteboards. Children can be encouraged to use 1 ½ litres or 1 litre 500 ml.</p> <p>Set the scale to maximum 1000/ Scale 100. Show the scale display. Use the fill facility to show different amounts and ask children to read the scale.</p> <p>Children to show amount on whiteboards.</p> <p>Children to work in groups using measuring cylinders and containers from Day 1 to estimate first and then record the capacity of each container using sand/water. Children should fill each container first, then transfer the sand to a measuring cylinder and read the scale.</p> <p>Children to record estimates and measurements as e.g. nearly 1 and a half l, or 1.5 l. or about the same as 600 ml.</p>	<p>Take feedback from activity to ensure that children are comfortable with recording using mixed units.</p> <p>Using Measuring Cylinder ITP. Using scales from earlier in the lesson, ask questions such as;          - how much liquid is in the cylinder?          - what amount of liquid would I add to make the cylinder hold ...?</p> <p>Children to have time to discuss and show answers on whiteboards.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li>• <b>Estimate and measure capacity in litres.</b></li> <li>• <b>Have a clear understanding of a litre as a unit of measure.</b></li> <li>• <b>Read scales to the nearest whole or half litre, or 100 ml.</b></li> </ul> <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p> </div>

Planning Sheet	Day 3	Unit 4 <i>Measures - Capacity</i>	Term: Summer	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Suggest suitable units and equipment to estimate or measure capacity.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 l).</p> <p>Read scales</p> <p>VOCABULARY</p> <p>litre l millilitre ml half-litre full, half full empty container holds, contains estimate capacity measure</p> <p>RESOURCES</p> <p>Variety of containers, including those with capacities marked on, e.g. drinks bottles, shampoo bottles Post-it notes Blank number line Sand or water for measuring</p>	<p>Recap yesterday's lesson and use of vocabulary, l and ml. Ask children how many millilitres are in 1 litre.</p> <p>Show children a range of containers of different capacities including those where the capacities are labelled on the bottle, e.g. medicine spoon, drinks bottles, shampoo bottles, fabric conditioner etc.</p> <p>Discuss in pairs how much each container holds, then show the children where the capacity is displayed on the container.</p> <p>Give each group of children a set of containers, which hold whole/half litres and other familiar amounts. (Try to include different-shaped containers, which have the same capacity.) Explain that today they are going to find out exactly how much one holds.</p> <p><b>Q</b> What units would you use to measure this?</p> <p>Give children time to discuss with partners and take feedback.</p> <p>Firstly, allow groups to make predictions of each capacity. Take feedback of estimates. Ask groups to place estimates on a blank number line displayed on wall.</p> <p>Explain to children that they are now allowed to choose one of their containers, and measure its capacity, using sand and a calibrated measuring jug or cylinder. Ensure a range of sizes of cylinders or jugs are available.</p> <p><b>Q</b> How could we find out how much this container holds?</p> <p>Teacher to model filling container (i.e. level), pouring this amount into a measuring cylinder and reading the scale.</p> <p>Explain to children that knowing the capacity of this container, and using the sand it contains will help them to revise their estimates for their other containers.</p> <p>Ask children to place their revised estimates on number line. <b>(Keep the number line and estimates for the next lesson).</b></p>	<p>Take feedback from activity.</p> <p>Children to suggest reasons for estimates.</p> <p>Take feedback.</p> <p>Children to show answers on whiteboards to questions such as:</p> <p>Would you expect:</p> <ul style="list-style-type: none"> <li>- a cup of tea to hold 250ml or 250 litres?</li> <li>- a bucket to hold 5 litres or 50 litres?</li> <li>- a teaspoon to hold 5ml or 50 ml?</li> </ul> <p>Discuss how they know.</p> <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li>• <b>Estimate and measure capacity in litres and ml.</b></li> <li>• <b>Have a clear understanding of a litre as a unit of measure.</b></li> </ul> <p>(Refer to supplement of examples, section 5, pages</p> </div>

<b>Planning Sheet</b>	<b>Day 4</b>	<b>Unit 4 Measures - Capacity</b>	<b>Term: Summer</b>	<b>Year Group: 3</b>
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Teaching Activities/Focus Questions</b>
		<p>Suggest suitable units and equipment to estimate or measure capacity.</p> <p>Read scales.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 kg).</p> <p><b>VOCABULARY</b> litre l millilitre ml half-litre full, half full empty holds, contains container estimate capacity measure</p> <p><b>RESOURCES</b> Resource Sheet 4.1 Measuring Cylinders Sand Number line from previous day Variety of containers from previous day</p>	<ul style="list-style-type: none"> <li>Recap previous lessons.</li> </ul> <p><b>Q</b> What units have we been using to estimate and measure so far?</p> <p>Take feedback. Litres, half-litres and millilitres.</p> <p>Refer children to the number line with the estimates on, from the previous day, and remind them of the activity they carried out.</p> <p>Explain that they are going to use the measuring cylinders and sand to find the actual capacity of each of their containers. Allow the children to use sand and measuring cylinders to accurately measure the capacity of each of their containers.</p> <p>Ask children to place post-its of actual estimates on number line.</p> <p>Take feedback from the activity.</p> <p><b>Q</b> Were your estimates very different from your actual measurements?</p> <p><b>Q.</b> Why do you think this is?</p>	<p>Using Resource Sheet 4.1, allow children time in pairs or groups to work out the capacity of 5 bottles.</p> <p>Ask children to explain their strategies.</p> <p>Answers: Bottle A holds 800 m; Bottle B holds 150 ml Bottle C holds 400 ml Bottle D holds 200 ml</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li><b>Read scales to the nearest whole or half litre.</b></li> <li><b>Record measurements using mixed units.</b></li> </ul> <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p>

<b>Planning Sheet</b>	<b>Day 5</b>	<b>Unit 4 Measures - Capacity</b>	<b>Term: Summer</b>	<b>Year Group: 3</b>
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Teaching Activities/Focus Questions</b>
		<p>Choose an appropriate number operation and calculation method to solve word problems.</p> <p>Explain and record method informally.</p> <p>VOCABULARY litre l millilitre ml half-litre full, half full empty holds, contains container estimate capacity measure</p> <p>RESOURCES Activity Sheet 4.2 Activity Sheet 4.3 Activity Sheet 4.4 Activity Sheet 4.5 Whiteboards Whiteboard pens Web of ideas on capacity from Day 1</p>	<p>Explain that today they are going to be looking at how what they have learnt this week will help them to solve problems involving capacity.</p> <ul style="list-style-type: none"> <li>Using Activity Sheet 4.2 cut up into pieces; explain to the children that on these strips of paper are a problem and some information.</li> </ul> <p>Put one of the pieces of paper on the board at random.</p> <p><b>Q</b> Does this piece of information help us?</p> <p>Allow children time to discuss and take feedback.</p> <p>Repeat with other 5 strips of paper, one at a time.</p> <ul style="list-style-type: none"> <li>Ask a child to come and sort the information into that which is needed and that which is not.</li> </ul> <p><b>Q</b> Why do we not need to know that Sam doesn't like cola?</p> <p>Explain that because we know the question is asking us how much pop is in the glass, the flavour does not matter.</p> <p><b>Q</b> Would we have been able to throw this clue away before we knew what the question was?</p> <p>Take feedback. No, because the question could have been about what flavour pop the children liked..</p> <ul style="list-style-type: none"> <li>Ask children to work in pairs to find a solution to the problem.</li> </ul> <p>Ask a pair of children to go through their solution explaining their method and reasoning.</p> <ul style="list-style-type: none"> <li>Children to work in groups to solve the problems on Activity Sheets 4.4, 4.5 and 4.6. in the same way as has been modelled in the whole class group.</li> </ul>	<p>Take feedback from groups regarding their methods for solving the problems.</p> <p>Encourage children to explain their methods and show recording.</p> <p>Ask children to work in pairs to think of a question that they would ask somebody about an aspect of mass from the week's lessons.</p> <p>Children to read questions and others to answer as appropriate.</p> <p>Put up web / list of ideas about capacity from Monday. Go through items and ask children what they would like to add that they have learnt during the week.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li><b>Choose an appropriate number operation and calculation method to solve word problems.</b></li> <li><b>Explain and record method informally.</b></li> </ul> <p>(Refer to supplement of examples, section 5, pages 70 to 77)</p>