


# Booragul Public School NSW Syllabus for the Australian Curriculum – Measurement and Geometry

## Sub Strand – Volume and Capacity 2

Outcome	Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
<b>Stage 2</b> A student: <ul style="list-style-type: none"> <li>› uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM</li> <li>› measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres MA2-11MG</li> </ul>		<b>Language</b> Students should be able to communicate using the following language: capacity, container, litre, <b>millilitre</b> , volume, measure, estimate. Capacity refers to the amount a container can hold, whereas volume refers to the amount of space an object or substance (including liquids) occupies. For example, we refer to the capacity of a dam (the amount of water it can hold) and the volume of water in the dam, which is usually less than the capacity of the dam.	
	<b><u>Ignition Activity</u></b> Find examples of millilitres/litres on containers in magazine pictures. Discuss need for formal units		 Critical and creative thinking Literacy Sustainability
	<b><u>Explicit Mathematical Teaching</u></b> Use scaled instruments to measure and compare capacities <ul style="list-style-type: none"> <li>• recognise the need for a formal unit smaller than the litre to measure volume and capacity</li> <li>• recognise that there are 1000 millilitres in one litre, ie 1000 millilitres = 1 litre</li> <li>• relate the millilitre to familiar everyday containers and familiar informal units, eg 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL (Reasoning)</li> <li>• make a measuring device calibrated in multiples of 100 mL to measure volume and capacity to the nearest 100 mL</li> <li>• use the millilitre as a unit to measure volume and capacity, using a device calibrated in millilitres, eg place a measuring cylinder under a dripping tap to measure the volume of water lost over a particular period of time</li> <li>• record volumes and capacities using the abbreviation for millilitres (mL)</li> <li>• convert between millilitres and litres, eg 1250 mL = 1 litre 250 millilitres</li> <li>• compare and order the capacities of two or more containers measured in millilitres</li> <li>• interpret information about volume and capacity on commercial packaging (Communicating)</li> <li>• estimate the capacity of a container in millilitres and check by measuring</li> <li>• compare the volumes of two or more objects by marking the change in water level when each is submerged in a container</li> <li>• estimate the change in water level when an object is submerged (Reasoning)</li> <li>• measure the overflow in millilitres when different objects are submerged in a container filled to the brim with water</li> </ul>		

<ul style="list-style-type: none"> <li>estimate the volume of a substance in a partially filled container from the information on the label detailing the contents of the container</li> </ul>		
<p><b><u>Whole Class Teaching</u></b></p> <p><b>One Litre Exactly (see lesson plan on pg 88-89 for more details)</b>  Students estimate, measure and record how many 100 mL cups or scoops are required to fill a litre. Students repeat this process with another small container, using the previous measure to assist in estimating before measuring.  Students calculate the capacity of their measuring cup by dividing 1000 mL by the number of cupfuls in one litre, using a calculator.  <b>Teaching Measurement Stage 2 and Stage 3 pg 86 -89</b></p>		
<p><b>Make A Litre Measure</b>  Students make a litre measure by pouring 1 L of water from a 500 mL or 1 L jug, into an empty, plastic soft drink bottle. Mark the water level on the bottle with a waterproof marker.  <i>Note: if different bottles are used, students could compare the heights and shapes of their litre measures and discuss the results.</i>  Students will relate the millilitre to familiar everyday containers and familiar informal units, eg 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL  <b>Teaching Measurement Stage 2 and Stage 3 pg 86</b></p>		
<p><b><u>Guided Group/Independent Activities</u></b></p> <p><b>How Many To The Litre</b>  Students collect containers which have a labelled capacity of less than 1 L, e.g. 500 mL, 250 mL. Students calculate how many times each container will have to be filled to make 1 L, record and then check by filling with water and pouring into the 1 L measure. Students then compare and order the capacities of the containers measured in millilitres.  Students may need to be reminded to keep an accurate tally of the number of times they filled their container.  <b>Teaching Measurement Stage 2 and Stage 3 pg 87</b></p>		
<p><b>Calibrations</b>  Students mark 100 mL gradations on an empty plastic container, using water poured from a measuring jug. Students use their calibrated container to identify single or multiple objects which displace 100 mL (marbles, golf balls, bolts, scissors or rocks) Variation: students use their calibrated container to estimate, measure and record the capacity of a variety of containers to the nearest 100 mL.  (pp. 96-97 <i>Teaching Measurement S2 and S3</i>)</p>		
<p><b>Rising levels</b>  Students use small drink bottles filled with water, or unopened bottles of water or juice. Students immerse the bottles, one at a time, in a large calibrated container of water and note the changing water level. Students estimate then measure how many bottles will be needed to displace 500 mL and 1 L of water. Record results.</p>		

(pp. 94 Teaching Measurement S2 and S3)

**Water for a day**

Pairs or small groups of students calculate how much water they use in one day. A suggested procedure is to commence by listing activities that require water, then estimate what the total may be. Students verify as many estimates as is practical, before calculating the total volume of water in litres. Information: new toilet cisterns have a 3 L half flush and 6 L full flush; older style toilet cisterns have a 15 L flush; each minute under a normal shower can use 23 L of water.

(pp. 95 Teaching Measurement S2 and S3)

**Previous NAPLAN/BST Questions**

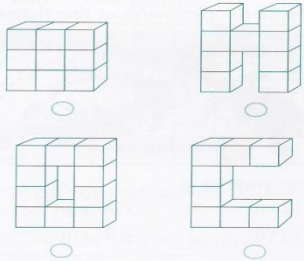
BST 2006-Year3

16 The amount of milk in a container is best measured using

- metres
- litres
- centimetres
- kilograms

BST 2006 –Year 3

15. Which one of these has the greatest volume?



BST 2005

13. Kaz drank 4 glasses of water during the day.

Each glass holds 220 mL.

How much water did Kaz drink altogether?

- 880 L
- 880 mL
- 8 L
- 88 mL

**Children's Books – Volume and Capacity**

Mr Archimedes Bath by Pamela Allen

Who sank The Boat by Pamela Allen

Counting On Frank by Rod Clements

**Planned Assessment**

**Pre Assessment**

Name everyday 1 litre containers

Estimate the volume of partially filled 1 litre containers from the information on the label.

Count the number of cubic centimetres in a 3D shape and label

**Choose Me**

Students are presented with a large group of containers of various sizes and shapes. Students choose a container which they estimate will have a capacity of one litre.

Students measure the capacity of their chosen container by using a litre measure, and record as more than 1 L, exactly 1 L, less than 1 L.

*Note:* a wide variety of containers, such as plastic drink bottles, lunch boxes, take-away food or margarine containers should be used for estimating.

**Capacity at home**

Students investigate and list items around the home that are measured in millilitres. They write a report listing items according to capacity both as litres and millilitres e.g.

Item	Capacity as described	No. of Litres	No. of Millilitres