Willow Dene School Scheme of Work

MATHS: Capacity

About this Scheme of Work: This unit explores Capacity. The focus on Capacity enables children to explore how much space is available and have lots of practical opportunities to explore this concept using sand, water and other apparatus. The children should also have opportunities to start measuring with non-standard and standard units.

Measurement, in its simplest form, is about making comparisons. It is a key life skill, as it relates to activities such as comparing sizes, finding clothes that fit, estimating how long something will take, etc. In order to measure, a range of skills are required, including:

- *Using numbers*
- *Estimating or guessing*
- *Choosing the units of measurement needed in a certain situation*
- *Being reasonably accurate in measuring*
- *Understanding numeric processes, such as adding and subtracting*
- *Making decisions on measurements taken*
- *Using measuring tools, such as tapes measure, clock, watch, scales*

Measurement is therefore a very difficult concept to grasp. For children at very early stages of development, measurement is about developing sensory experiences related to measurement concepts (such as light and heavy) and perception skills that give them a better understanding of their world and their own activities.

- Flo Longhorn (paraphrased)

VOCABULARY:
Own names, yes, no, more, finished, like, don't like, stop, go, ready
• Words related to terms for measuring, such as: measure, size, compare, guess, estimate, about, roughly, enough, not enough, too much, too few, too little, too many, nearly, close to, about the same as, just over, just under • Words to describe capacity and volume, such as: full, empty, half full, overflowing, holds, container • Words related to comparative terms, such as: heavy / light, heavier / lighter, heaviest / lightest • Words related to units of measurement, such as: litre (l), millilitre (ml), pint, teaspoon

RESOURCES:	
• Variety of containers of different shapes and capacities, such as: ○ bottles (75cl, 1l, 2l) ○ yogurt and fromage frais pots ○ plastic milk bottles (1, 2, 4, 6 pints) ○ measuring jugs ○ fruit juice cartons and squash bottles (1l) ○ buckets ○ beakers ○ cups ○ teapots, etc.	• Materials to fill containers such as: ○ coloured water ○ sand ○ rice ○ cubes ○ buttons, ○ beads ○ drinks, etc.

LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES
• Show recognition of the operation of direct comparison using **big** / **small** • Compare the size of two containers where there is a marked difference • Find **bigger** and **smaller** containers on request • Compare the overall **size** of containers where the difference is not great • Develop a concept of **full** / **empty / half full** and communicate it with voice, sign or indicating a symbol • Make a direct comparison of the capacity of two containers with support • Indicate which holds **more** / **less** with sign / symbol / word from a choice of two • Compare directly two **containers** and say which **holds** more or less than	• Cooking activities: measuring out ingredients. Use recipes that call for measurements in cups, rather than by weight. Discuss how to measure accurately, ensuring cups are full, not partially full or overflowing. • Make shakers from bottles or cartons, filling with different amounts of dried beans. Compare sounds produced • Pour sand, water, beads, etc. from one container to another. Which holds container holds more / less? Which container can make this bottle full? Which containers are empty? • Pour drinks at snack time: will we have enough drink to fill all of the cups? How much drink should we put in each cup so we don't spill any? • Fill containers: can you make sure it's full to the top? Can you empty it? Which of these containers is full? • Cubes – which container holds more cubes? (Use Multilink or Unifix)? Can you guess (or count) how many each will hold? • Estimate how many cups can be filled with a container: will they all be full, or only half full? • Play a dice game. Put the symbols "full" and "empty" on to the dice. Give each child five containers. Throw the dice and fill up a container if a "full" symbol is thrown, but empty it if the "empty" symbol is thrown. Use sand or water to fill the containers. The first child to fill all of their containers is the winner • Fit items into a container: how many can you fit in? Differentiate by asking some children to place large items into a relatively small container and some children to place smaller objects into a larger container? E.g. Can you fit all of these apples in the bowl? • Which holds the most – Supply the children with a selection of containers of different shapes and sizes, and something to fill them with, such as rice. Which container holds the most? Do any of the containers hold the same amount? How could you find out? • Draw a "fill line" at different levels on a variety of reclaimed plastic containers and ask children to fill them with sand, rice or water to the line. Discuss which container has more / less • Use the Set of 3 Funnels to practice accurate pouring when transferring liquids between containers. Can you pour water through the funnel to fill the bottle with sand? Can you fill this bottle half full? Can you put some water in this bottle? Can you put more water in this bottle? Is this bottle full or empty?

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another container where the difference is not great	• Ask the children to find a container that hold more than a specified container from a small selection. Alternatively ask them to find a container that holds the same amount. To make it easier, ensure there is a marked difference between the choices of container offered • Use the waterworks connecting tubes for exploratory play to understand filling and emptying containers Can you use this to fill this beaker? Can you pour the water in the cylinder through this? Is it full or empty? • Give the children three templates that correspond to a container of the same shape. Give them some sand and ask them to make the container full. Ask questions, such as: What will happen if you put more sand in? Colour in one of the templates to show that it is full of sand. Next ask them to empty some of the sand and to colour the second template to show how the container looks now. Finally ask them to empty the container and how they will show this on their last template. They could label the three templates with symbols supported text. Alternatively, coloured water could be used for this activity • Popcorn – measure out a quantity of microwave popcorn in a cup. Put it in the microwave to pop then try to fit it back in the original measuring cup. What has happened? • Bowls of cereal – how many bowls of cereal do think are in this packet? Is that enough for everyone? How can we make sure that everyone has a bowl of cereal? • Give the children a range of containers which are full, partially full or empty and ask them to sort them into three hoops. Ask them to say why they have chosen to put it in a particular hoop to encourage them to use the vocabulary of capacity • Make cakes using cup measurements, then pour different amounts of cake mixture into muffin tins (tiny bit, half full, full up). Explore what happens when they cook. • Too Much – Supply a selection of pourers of different capacities and one standard jug. Challenge the children to make a set of pourers that hold too much water for the jug. Discuss how children found out • Not Enough – As above, but make a set of pourers that do not hold enough water to fill the jug • Nearly Full – As above, but make a set of pourers that nearly fill the jug. Are there any that make it overflow a little bit? • Pouring Again – Supply a selection of pourers of similar and identical capacities, which

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	look markedly different (e.g. cut down plastic bottles). Choose one bottle. Do the other bottles fill this one to the top? • Fill Them – Supply the children with a range of smallish containers and a few larger ones. Can you line up all of the small containers and find a large one that will fill all of them? • Drop stones – Can you make the water overflow by dropping stones into the water? Can you make the level of water the same in these two containers by dropping stones in? • All the Same – Supply a number of identical containers. Ask the children to fill them so that they all look the same. If children fill them all to the top, ask them to fill them with a different amount of water, but to make sure they still all look the same. • Full to the Top – Supply a number of identical containers. Pour a set that are full to the top. Can you make a set that are half full or nearly empty? • Spoon It – How many spoonfuls of sand will you need to fill this pot? Check your guess.