NRICH

Teachers: Early Years

Water, Water ... !

Comparing capacities

Counting





Children often enjoy playing with water, pouring and filling containers.

Adults could set up a water tray with coloured water, and some bottles and flasks of varying dimensions, with some plastic cups.

The Activity
We want to take some bottles of lemonade (home made!) to the park for our outing. Which bottles will hold the most?

Encouraging mathematical thinking and reasoning:

Describing
What do you notice about the bottles? How are they different?
What happens if you pour this one into this other one?

Reasoning
How can we find out which hold the most?
How do you know which one holds more?

Opening Out
How many cups will they each fill up?
Can we put them in order from the smallest to the biggest / from which holds the most to the least?

Recording
Can we put labels on the bottles to help us remember how much is in them?

The Mathematical Journey

Same and different
• Discussing how containers are different shapes or have a greater capacity than others, progressing from just 'bigger' to 'shorter', fatter', 'taller', 'thinner' and 'holds more than'.

Counting and cardinality
• Counting how many cups are filled

Matching numerals and amounts
• Making labels to show how many cups each bottle holds

Properties of shapes
• Describing shapes e.g. 'round', 'bendy' or 'straight' and 'square'.

Size and measures
• Explaining how they know containers hold more: 'This is smaller because when you pour from the bigger one it overflows'; 'This is smaller because when you pour it into the big one the water only comes up to there'; or 'This is bigger because you get 6 cups and that one only fills four cups.'
Conservation: explaining that the water levels are different in different containers because

Development and Variation

How much lemonade do we have to make so that everyone can have a cupful? Two cups-full?

Plan for a smaller group of children, or some toys having a party.

Pour one cupful of coloured water into each of some tall thin and short fat transparent containers. Discuss what happens to the water level in each and why.

Resources

A varied collection of bottles, containers and flasks for lemonade and cups
Funnels, jugs and tray
A collection of transparent containers - some short and fat, some tall and thin
Food colouring

Photo acknowledgements