Take This

Bottles, buckets and bowls

Years 5-6

GEOMETRY

Shape
Present a poster showing practical ways of using cylindrical plastic bottles (or parts thereof). Eg. as a bird feeder, small garden cloche.

Explore and demonstrate in a practical way, the relationship between an inverted plastic bucket (truncated cone) and a cone.

Transformation
Cut paper for a label that covers half of the surface area of the cylindrical part of a water bottle. Pretend the container holds Invisibility Potion. Create a label that includes reflection and translation in its design elements.

GEOMETRY

Position and orientation
Make a still life drawing of an arrangement of a bottle, bucket and bowl, from three viewpoints. Write about what they notice.

MEASUREMENT

Have students work in pairs to:
Choose a container. Find a way to quantify the amount that the container holds and create their own measurement scale using their chosen unit of measure. Explain how their measurement scale works.

Refine understanding of conservation of liquid quantity. Pose: We can tell which container holds the most liquid just by just looking. Have students record predictions of capacity, ordering a range of containers from 'holds least' to holds most'. Investigate by accurately using standard measures (L, mL) to find how much water each holds, and record results for each using appropriate abbreviations. From their investigation, accept or reject the statement, using their evidence.

Explore the capacity of a range of plastic bottles of 'popular products' (eg. empty hair shampoo, dressings, sauces, mouthwash containers). Fill each with water and weigh. For each, record on a table the official measurement information from the packet, and the measured volume and mass.

Look for any patterns and relationships between volume and mass, and any 'discrepancies in information on labels.' Draw conclusions about bottle shapes and packaging.

STATISTICAL INVESTIGATIONS AND LITERACY

Gather multivariate data to answer summary and comparison questions such as: Do girls in Y5/6 drink more water daily than boys in Y5/6? Do more year 5/6 students than year 3/4 students believe that water is more healthy than fruit juice, Make a display and present results.

Design, carry out and present results of an investigation into plastic bottle (container) reuse and recycling (at home or school).

Critique each other's presentations, discuss validity of results, identify appropriate displays and conclusions, and suggest alternative methods or displays.

NUMBER AND ALGEBRA

As a part of ongoing numeracy learning, apply additive and simple multiplicative strategies to:
- Measurement tasks
- Investigate open-ended questions, eg.
  - Bottles of water cost: 750ml = $1.24, 500ml = $1.06, 350ml = $1.01. If you spent $20 on some of each size, what might you buy?
  - A bucket holds 9L. If you emptied water bottles of at least two sizes into the bucket, what combinations might you use?
  - If a bottle holds 2/5 of the amount of water that a bowl can hold, how much might a bowl hold?

Investigate patterns, eg; Cartons, each with 12 of full water bottles are stacked in a pyramid with 1 carton on the top of the pyramid, 2cartons below that, 3 below that etc. If there were 10 rows, how many cartons is that, how many bottles is that? Show on a table how you know. Create your own similar algebra problem.

Explain reasoning and justify strategies and solutions.