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sweet dimensions
...adapted from **METRIC MEASURING #35** by TOPS Learning Systems

1. Fold two 3″x 5″ index cards in the middle, and tape them to make 4 walls of a box.

2. How many dimensions can you measure using sugar cubes?

VOLUME = 4 x 4 x 5 sugar *cubes*.

HEIGHT = 5 sugar *lengths*

AREA = 5 x 4 sugar *sides*.

LENGTH = WIDTH = 4 sugar *lengths*

VOLUME · LENGTH · WIDTH · HEIGHT · AREA

OBJECTIVE

To measure a box in 1, 2, and 3 dimensions. To calculate area and volume by multiplying lengths.

LAB NOTES

Introduction: Ask students to identify each dimension below as YOU act it out. Then call out dimensions for THEM to act out.

1-dimension = Width, Length, Height *or* Depth: Pantomime stretching out invisible string.

2-dimensions = Area: Pantomime wiping an invisible, flat surface.

3-dimensions = Volume: Move hands in all three directions to occupy 3-D space.

Step 1. Fold the cards evenly in half. Match and secure edges with tape. Prop open into a "box."

Step 3. All dimensions come out about even. Students can stack sugar cubes to find answers, or multiply the sides to find area and volume.

EVALUATION

Trim paper to 25.6 cm by 19.2 cm. Ask your students to find its area. *(192 sugar squares).* Also find folded areas for $1/2$, $1/4$, $1/8$, $1/16$!

ANSWERS

2. height or depth = 5 sugar "lengths"
length or width = 4 sugar "lengths"
area of any side = 20 sugar "squares"
area of top or bottom = 16 sugar "squares"
volume of box = 80 sugar "cubes"

EXTENSION

Measure a paper grocery bag in sugar cubes. Round lengths up or down to whole sugar edges.
Results for a paper bag we measured:
length = 19 sugar lengths
width = 11 sugar edges
bottom area = 19 x 11 = 209 sugar squares
height = 27 sugar edges
side areas = 19 x 27 = 513 sugar squares,
and = 11 x 27 = 297 sugar squares
volume = 209 x 27 = 5,643 sugar cubes

MATERIALS

- Two 3 x 5 inch index cards and clear tape.
- Sugar cubes (not bricks). Use C&H or equivalent one-teaspoon cubes, measuring 5/8 inch (16mm) on each edge. *If not available in your area, you can order from TOPS.*

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