

Engineering - Paper Water Tank - GRASPS



$$\frac{\text{Amount of H}_2\text{O Held (mL)}}{\text{Mass of Water Tank (g)}} = \text{Score}$$

DIVIDE

HIGHER IS BETTER

Goal

Your goal is to design a water tank from a minimum amount of newspaper, popsicle sticks, and tape to hold 200 mL of water for three minutes.

Role

You are a recently-hired engineer in a large construction company. Your training requires that you solve problems in an efficient manner with limited resources.

Audience

Your supervisor at the large construction company will evaluate how well you addressed the problem, researched and developed ideas, decided on a solution, gathered data while testing your tank, and reflected on your learning.

Situation

Your newspaper water tank design will be developed, built, and tested by you and other “trainees” at your table. Reporting will be done by you alone through writing and sketching.

Your team’s materials are limited to

- 1 sheet of newspaper (57.5 x 44 cm, 12.1 g)
- 4 wooden popsicle sticks (4.4 g)
- 80 cm of masking tape (1.5 g)

Maximum Total Mass = 18 g

Product/Performance and Purpose

The product is a water tank of minimum mass made from newspaper, popsicle sticks, and/or masking tape that holds as much water as possible for three minutes (200 mL will be used).

Standards & Criteria for Success

- The tank shall stand on its own on a flat horizontal surface. It shall not be supported by anything other than the approved materials. It cannot be taped to any surface.
- The tank shall hold as much of the 200 mL of water as possible for three minutes. After three minutes, the water in the tank shall be poured out and measured by the supervisor.
- Success will be determined mathematically: The amount of water held after three minutes divided by the mass of the materials used. The higher the quotient, the greater the success (i.e., the more efficient the tank).

