

THE CAMPBELL HOUSE MUSEUM

"TELLING" STORIES—A BATHTUB

Bathtub

Mid-19th Century

America

Copper and iron: 13 inches high, 33 inches diameter

Campbell House Museum



Focus: Observation, math calculation, creative writing, craft production

Getting Started: Under what circumstances have you carried a large container filled with water? Describe. Now look carefully at this copper tub.

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What catches your attention about this object? How much do you think it weighs?

Do you think you could lift this by yourself? How do you think this object was used?

Read and discuss the essay on the bathtub.

Classroom Activities

Math Computation and Problem Solving:

It is the 1850s and you are a servant working in the Campbell home. One of your jobs is to prepare someone's bathwater. Calculate how much water is needed as well as the effort involved in carrying the water upstairs. The tub only needs to be filled half way so there's room for the bather.

- First, calculate the volume of water in cubic inches using this formula and these measurements: R—Radius at mid-point of tub = 14"; r—radius at bottom of tub = 12"; h—height of water = 5" (NOTE: Use 3.1415 for Pi)

$$V = \frac{\pi h}{3} (R^2 + Rr + r^2)$$

The formula is for a Frustum, a cone shape with the bottom cut off.

- Next, how many buckets of water would need to be carried upstairs? There are 1,728 cubic inches in a cubic foot and 7.48 gallons in a cubic foot. Calculate the number of gallons to be carried upstairs. Each gallon weighs 8.34 pounds. A standard bucket is 4.5 gallons. Remembering the weight of the water, decide how much you can carry up the stairs without spilling. Then determine the number of trips from the kitchen pump to the 2nd floor bedroom where the tub is located.

- If you didn't know the specific dimensions of the tub or how much water the bucket held, how else would you determine the number of trips you would need to make?

Make a plan and explain your solution.

MO Show-Me Standards/Goals: M1, M2; 1.2, 1.6, 3.2, 3.4, 3.5, 4.1