

Out-of-class work #1: Week 1 - Units and conversions - Water Filtration

SKQ-101: Sections DC & DD with E.C. Darsow (Version 0.9: 13 January 2022)

Water contaminants constitute a major health concern. Although not effective at removing lead from city drinking water, active charcoal (i.e. elemental Carbon) filters like Brita and other "pitcher" style filters remove many impurities. Amazon.com advertises the following Brita filter: Study the figures closely and use them to tackle the questions that follow.

FIGURE BRITA 1:



Brita Water Filter Pitchers, Large 10 Cup, White

[Visit the Brita Store](#)

★★★★☆ 13,501 ratings

List Price: ~~\$34.99~~ Details

Price: **\$30.49** ✓prime One-Day & FREE Returns

You Save: \$4.50 (13%)

Get 5% back (\$1.52 in rewards) on the amount charged to your Amazon Prime Rewards Visa Signature Card.

May be available at a lower price from other sellers, potentially without free Prime shipping.

Style:

Pitcher

Color: White



\$30.49



\$27.99



\$27.99



\$29.97

Color	White
Brand	Brita
Capacity	40 Gallons
Model Name	Grand
Item Dimensions LxWxH	11.94 x 7.38 x 17.56 inches
Included Components	Pitcher and Filter
Item Weight	2.88 Pounds

FIGURE BRITA 2:

About this item

- The BPA-free Grand water pitcher with filter holds 10 cups of water, enough to fill 3 24-ounce reusable water bottles
- Get great-tasting water without the waste; by switching to Brita, you can save money and replace 1,800 single-use plastic water bottles a year
- This space efficient Brita pitcher fits perfectly on refrigerator shelves, features an easy-fill locking lid and is easy to pour; Height 10.16"; Width 5.77"; Length/Depth 11"; Weight 2.48 pounds
- Brita is the number 1 water filter reducing chlorine (taste & odor), Mercury, Copper, Zinc and Cadmium; always get cleaner, filtered water with an electronic indicator that makes filter reminders effortless
- Compatible with Longlast and Standard water filters; for the freshest tasting water, replace your Longlast filter after 120 gallons or approximately every 6 months or Standard filter after 40 gallons or approximately every 2 months; 16.9 oz water;Based on IRI data;vs. tap

[Compare with similar items](#)

New & Used (9) from **\$28.05** ✓prime

Question Brita 1 - Capacity and size: The promotional material for this mid-range cost Brita filter (FIGURE BRITA 1) lists the capacity of this product to be _____ (don't forget units!)

The items dimensions are reported to be: _____ (use units!)

Use our standard conversion table (on Schoology and textbook) to convert the dimensions of the product to the same units of volume listed in the product listing. Note all assumptions you use in your calculations. Box your answer. (hint: is item dimension a perfect measure of filter device volume?)

Question Brita 2 - Agree or disagree: Do you affirm or do you disagree the manufacturer's claim about product capacity you investigated in question 1? Defend your response with quantitative data in a well-crafted sentence.

Question Brita 3 Thinking: Do a little thinking. If you disagree with the manufacturer's claim, what error might have been made that led to the published mistake? Try some calculations to show your thinking. If you agreed with the manufacturer, you can skip this question.

Question Brita 4 - Weighing a car in Britas:

What does the manufacturer list as the product's weight? _____

In class you looked up the fuel efficiency of a vehicle of your choice. Use The Interwebs to look up the listed gross weight of this vehicle and record your findings below:

Year: _____ Make: _____ Model: _____ Gross weight: _____

Source of weight information: _____

Since you are now a water filter masta, state the weight of your chosen vehicle in the units of "Brita Grand Water Filters". Box your response.

Question Brita 5 - Refills until replacement: Using FIGURE BRITA 2, record the volume this filter's standard capacity filtering unit can purify: _____ (use units!)

You're considering dedicating some resources to cleaning your municipal water but aren't quite sure if this filtering capacity is a lot or a little compared to the filter's reservoir capacity. Undertake calculations to convert the standard filter's capacity to the unit of "Brita water pitchers" (i.e. the reservoir volume). Another way of asking this question: how many times can I completely fill this Brita filter pitcher before I should replace the filtering unit? State any assumptions you are using in your computations. Box your answer.

Question Brita 6 - Filter life: Hmm you think. How long will this filter last me, then? Estimate using either established best health practices for human hydration OR your actual average daily water intake levels. State this value in your response and any source or computations you used to arrive at that estimate. Then create a computation to arrive at an expected filter life and state your answer in **days**, rounded to 1 decimal point.

Question F: Calibration disclosures

How many minutes did you dedicate to this HW assignment? _____

To what degree did you find yourself needing to use outside resources (people, books, videos) to help you solve these problems?

How could Eric have supported you better in completing this assignment?