Name Date

## Water, Water: Customary Units



When NASA operated the space shuttle program, each space shuttle astronaut was allotted 6 gallons of water a day. This restriction was necessary because water is heavy. Extra weight on the space shuttle required extra fuel for liftoff. Water also took up space that could be used for other payloads and experiments.

1. Estimate your daily water usage and express each amount in pints, cups and gallons.
   * List all of the ways that you use water each day.
   * Estimate how much you need for each use of water. Express your estimates in pints.
   * Convert each estimate of pints to cups. Write the operation that’s needed to convert pints to

cups and make the conversion.

* + Convert each estimate of pints to gallons. Write the operation that’s needed to convert pints

to gallons and make the conversion.

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| **Water use** | **Estimated amount of water (pints)** | **Operation required to convert to cups** | **Estimated amount of water (cups)** | **Operation required to convert to gallons** | **Estimated amount of water (gallons)** |
| *Example: brush teeth* | *¼ pint* | *Multiply by 2* | *¼ x 2 = 2/4 or ½ cup* | *Divide by 8* | *¼ ÷ 8 = 1/32*  *gallons* |
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1. Based on your estimates, about how much water do you use each day?

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1. Do you think you could manage in space on 6 gallons of water a day? Why or why not?
2. How much do you think 1 gallon of water weighs?
3. Use a scale to weigh 1 pint of water and determine its weight in ounces . Use that weight to determine how many ounces one gallon of water weighs.

Weight of 1 pint of water (ounces)

Weight of 1 gallon of water (ounces)

1. Use your estimated daily water usage to determine the weight of the water you use each day.
2. It’s recommended that people drink 8 cups of water each day.
   * How many pints does that equal?
   * How many quarts does that equal?
   * How many gallons does that equal?
   * How many ounces would 8 cups of water weigh?
   * How many pounds would 8 cups of water weigh?
   * Did you include 8 cups of water in your estimated daily use?
3. If 7 astronauts went on a trip on the space shuttle for 2 weeks and each astronaut is allocated 6 gallons of water per day, how much would their water weigh for the entire trip? Express your answer first in ounces, then in pounds.