

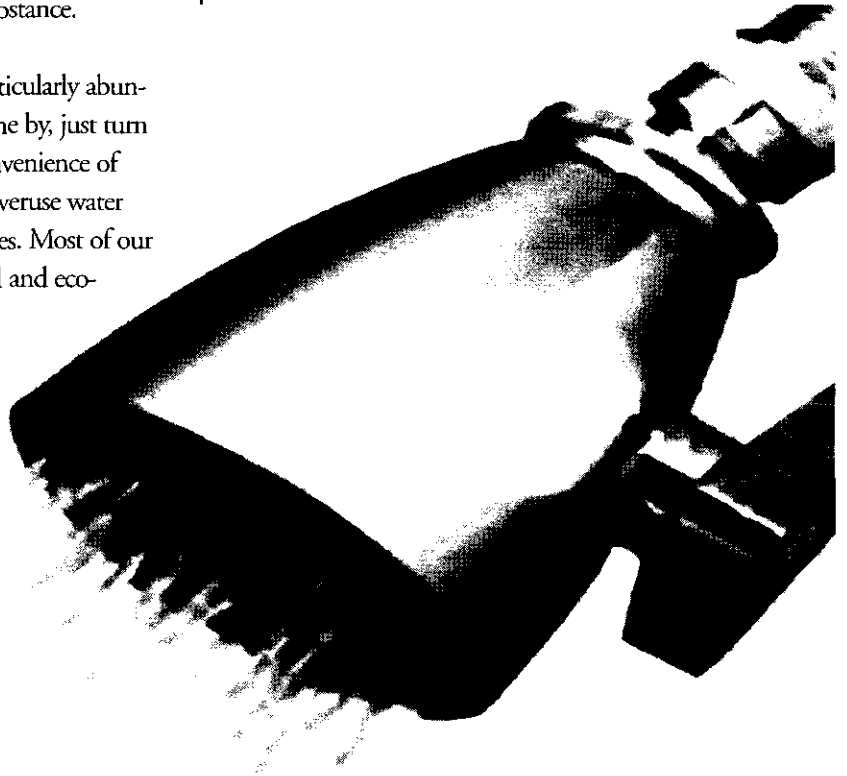
Water Conservation

Earth is often called the “water planet” because oceans or ice fields cover nearly three-quarters of its surface. This abundance might make water seem an unlimited resource. Yet, less than one-hundredth of one percent of the earth’s water, less than 1 cupful out of every 10,000 cups, is available for human consumption. Less than two-thirds of one percent of Earth’s water resides underground, much of it too deep or too brackish to be useful and little of it able to be replenished as fast as it is pumped to the surface. Water good enough to drink, to farm with, to use in factories, or to share with all the flora and fauna is a rare and precious substance.

To urban dwellers, water seems particularly abundant because it is nearly effortless to come by, just turn on the faucet, and out it pours. The convenience of pressurized plumbing makes it easy to overuse water without thinking about the consequences. Most of our water consumption results from cultural and economic habits.

Physically, the active adult human body requires only about 1 gallon (4 liters) of drinking water per day to maintain health in a moderate climate.

In the United States we average about 125 to 150 gallons (473 to 568 liters) per day, per person, most of this for washing, flushing, and watering. While drinking less water than we need for our health is a bad idea, using more water than we need for our residential purposes is a bad habit. We could get the same jobs done using half as much. Improving the efficiency of our water use will make more water available to meet the diverse demands for this limited resource. It will also help protect rivers and streams from which our water comes.



Personal Water Audit

Adapted from
<http://www.usbr.gov/mp/watershare/resources/lesson-plans/uw-jr.cfm> By following a few straightforward water conservation steps, a typical family of 4 can save 50,000 to 100,000 gallons (189,271 to 378,541 liters) of water a year.

Skills:

Observing, recording, cause and effect

Purpose:

For 24 hours students will keep track of their water use. After considering ways they can reduce the amount of water they have used, they will keep track for another 24 hours while applying the improved behaviors.

Setting:

Indoors

Time:

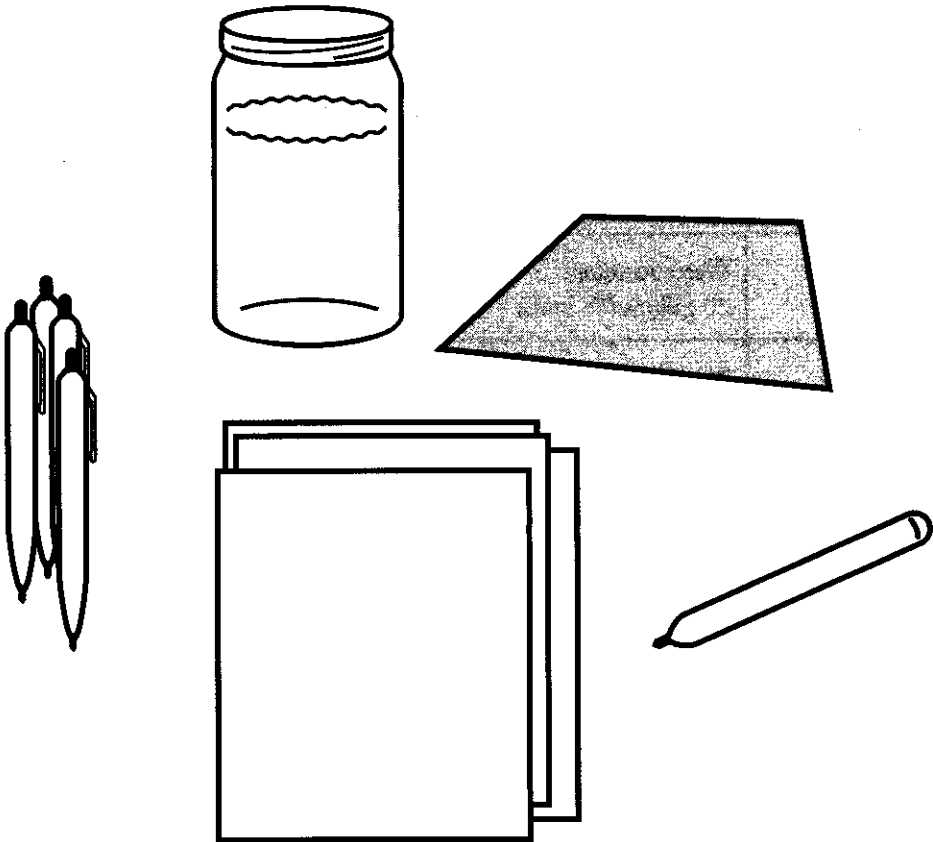
Varies

Materials:

- A glass or clear plastic gallon jug of water
- Large piece of butcher paper
- Marking pen
- Writing paper
- Pens

Procedures:

1 Print out the following table. Cover up the "Water Conserving Method" column for later use. Save the table for step #4 of the procedure.



Personal Water Audit

Task	Average Uses	Water Conserving Method
Bathing	Full tub 40 gallons (151 liters)	Low level 15 gallons (57 liters)
Showering	Water running 60 gallons (227 liters) each 10 minutes	5 minutes with low-flow showerhead 12 gallons (45 liters) total
Flushing toilet	Old regular tank 7 gallons (26 liters)	With displacement device 4.5 gallons (17 liters) Ultra Low Flush toilet 2 gallons (8 liters)
Washing hands/face	Tap running 2 gallons (8 liters)	Half-fill bowl 0.5 gallon (2 liters)
Getting a drink of water	Tap running 0.25 gallon (0.9 liter)	Pitcher in refrigerator .06 gallon (0.2 liter)
Brushing teeth	Tap running 10 gallons (38 liters)	Wet brush, rinse 0.5 gallon (2 liter)
Washing clothes	Top water level 40 gallons (151 liters) per load	Adjusted water level 25 gallons (9 liters) per load, average.
Shaving	Water running 20 gallons (76 liters)	Half-fill bowl 1 gallon (4 liters)
Watering outside	2/3 of a large water bill About 10 gallons (38 liters) per minute	_ of a smaller water bill about half the watering time
Cleaning driveway or patio	Hosing off 10 gallons (38 liters) per minute	Sweep with broom 0 gallons (0 liters)
Washing car	Water running 10 gallons (38 liters) per minute	Bucket, sponge, choke nozzle 5 gallons (19 liters) total
Washing dishes by hand	Tap running 30 gallons (114 liters)	Sponge wash and dishpan dip 5 gallons (19 liters)
Automatic dishwasher	Full cycle 15 gallons (57 liters)	Short cycle 7 gallons (27 liters)
Other	You estimate	

This data is adapted from The Official Captain Hydro Water Conservation Workbook, Teacher's Guide. Oakland, CA: East Bay Municipal Utility District, 1992.

Personal Water Audit

Questions:

1. Where does our water come from? What happens to the water that goes down the drain? Why is water important to people? Is water important to plants and animals, too? Why or why not? Why do you think we should be concerned about saving water?
2. Ask students to name all of the ways that they use water in a typical day. List these on the board. Show students the gallon jug of water, and ask them to estimate how many gallons of water they use in a typical day. Use some metric containers to make comparisons between gallon and liter measures.
3. Have students write down on a piece of paper the different water uses listed on the board. Tell them that over the next 24 hours, they are to keep track of the ways they use water by noting them on the paper. For example, one student might flush the toilet 5 times, take a 10-minute shower, brush her teeth 3 times, and water the garden for 15 minutes.
4. The next day, show students the chart (with the Water Saving Methods covered). Tell students that these are the average amounts of water for some typical water uses at home. Point out that some of the averages may seem high, but that is because most people let the water run to let it get hot or cold before they use it. We may not drink 1/4 gallon (0.9 liters) every time we get a drink of water, but we probably use 1/4 gallon (0.9 liters).
5. Have students use this information to estimate the number of gallons of water they used in the 24-hour period.
6. Lead a discussion about the class's findings:
 - How much water did you estimate you used personally in the 24-hour period?
 - People in the United States use 125 to 150 gallons (473 to 568 liters) of water per person, per day for domestic purposes. How does our use compare with the average?
 - Imagine that you did not have plumbing in your home, but had to carry water from a well. How do you think your water use would be different?
 - What simple, routine steps could we take to reduce the amount of water we use in a day?
7. Uncover the "Water Saving Methods" column of the chart, and talk about the methods listed there. How hard would it be to actually follow each of these methods?
8. Have students log their water use for another 24 hours, this time trying out as many water-saving methods as they can.
9. Ask students to calculate their water usage and compare the 2 days. Lead a discussion about the results:
 - How much did your water consumption change from the first 24-hour period?
 - What were the biggest reasons for the change?
 - For which tasks was it easy to save water?
 - For which tasks was it hard?
 - If you were allowed only 25 gallons (95 liters) of water per day, how would you use your 25 gallons (95 liters)? How would you cut back?
 - Choose 3 different water-saving methods that you could use routinely. How much water would you save in a month if you were to apply these 3 methods consistently? In a year?