



Every Drop Counts

Water Use at Home

Students can make a big difference by learning about how their families use water at home. By reducing water usage, our cities will be more sustainable, and there will be enough water for people, agriculture and ecosystems.

This unit, for upper elementary and middle school classrooms, includes 3 hands-on activities to help students learn about household water use.

- **Circle Graph Activity: Average Indoor Water Useages**
- **Measurement Activity: Down the Drain**
- **Our Daily Water Use: Check Out Your Bill**

Students will use a variety of math skills, including decimals, percentages, calculating angles, making a pie chart, measuring flow and budgeting water use.

We would appreciate your feedback about the unit; email us at info@earthsbirthday.org. Please feel free to share it in your community. Thanks to Jason Kirkman for developing the activities.

Introduction

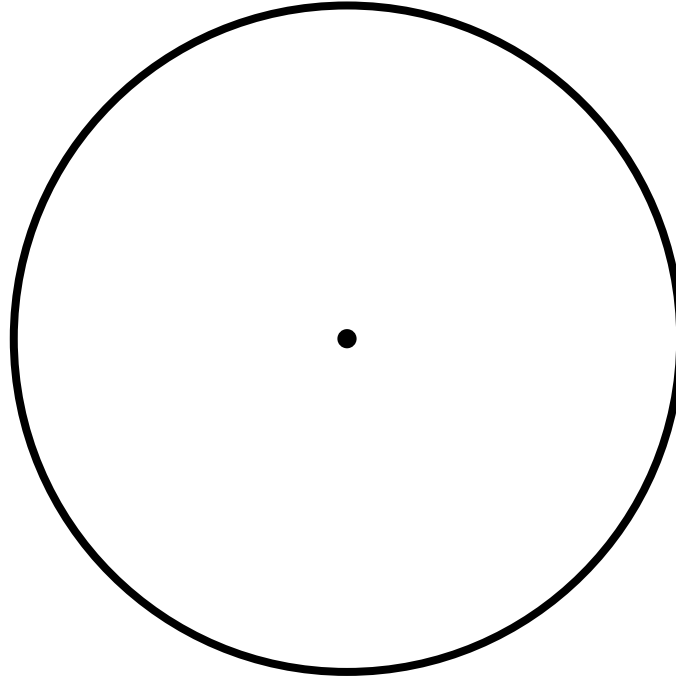
Pour yourself a glass of water. Hold it up to the light. Drink it. Imagine life without water. Impossible. It is our most precious resource. All life on this planet depends on it. **Now think of this: the average American uses 176 gallons per day (www.water.org). A gallon of water weighs 8 lbs, so that's 1408 lbs of water used by each person, every day.** If we had to carry the water we use every day, like many people in the world still do, you can be sure we'd start changing our habits immediately. We'd figure out how to use less. It wouldn't be worth carrying the burden. But when we draw water from our faucets, using 1408 lbs of water doesn't feel like a burden to us – we don't directly feel the consequences of using so much water. Are there any consequences?

From Atlanta to Los Angeles, American cities and states are concerned about overuse of water resources. Water shortages and drought have serious consequences for agriculture, businesses and families. We can all become more aware of our water consumption and discover ways to use less water.

Circle Graph Activity: Average Indoor Water Useages

Activity

Using the information in the table, make a circle graph that shows how a typical family uses its water.



AVERAGE INDOOR WATER USE		
<i>Use</i>	<i>Percent of Total</i>	<i>Angle (degrees)</i>
Toilets	27%	
Showers	17%	
Baths	2%	
Washing Machine	22%	
Dishwasher	2%	
Faucets	16%	
Leaks	14%	

- Convert each percent to a decimal and then multiply each decimal by 360° .
 Example: Toilets 33% $33\% = 0.33$ $0.33 \times 360 = 118.8^\circ$
 The section of the circle graph representing toilets will have an interior angle of 118.8°
 Fill in column above.
- Use a protractor and ruler to draw each angle with its vertex on the center of the circle. This process will divide the circle into six different sectors.
- Label and color each sector.

Circle Graph Activity: Average Indoor Water Useages

Questions

Which of these water uses do you think would be the easiest to reduce in your home?

Why?

What habits could you change to actually make this reduction in your home?

Have you asked family members to help you reduce water use?

Measurement Activity: Down the Drain

Measure the rate of flow of your shower and calculate water savings expected from decreased shower time.

Materials

A measuring cup
A large container such as a bucket, large bowl, large pot etc.
A timepiece such as a clock, watch, cell phone, etc.

Procedure

1. Collect the water: turn your shower on full blast and collect all of the water in the large container for 30 seconds.
2. Measure the water: Use the measuring cup to measure the amount of water you collected.

Challenge: Use the water for some other purpose and don't just pour it down the drain—water plants or animals, fill a sink for washing dishes at a later time, fill a bucket for mopping, etc.

Data and Calculations

1. How many cups of water did you collect? _____ cups
2. You calculated the amount of water collected in 30 seconds.
How much water would be collected in one minute? _____ cups
Covert cups to gallons: 8 ounces = 1 cup
 2 cups = 1 pint
 2 pints = 1 quart
 4 quarts = 1 gallon
3. How many cups are in 1 gallon? _____ cups/1 gallon
4. Divide the amount of water you collected (measured in cups) by the answer to #3 to determine how many gallons of water you use for each minute in the shower.
My family uses _____ gallons of water every minute someone is showering.
My family uses _____ gallons per month.
5. Figure out how many showers, on average, your entire family takes each week.
My family takes _____ showers per week which is _____ per month.
6. By how many minutes do you think you could reasonably reduce each shower that you take? _____
7. How much water would your family save if each person reduced his/her shower time by _____ minutes? (*use number from above*)
If we reduced our shower time by _____ minutes, we would save _____ gallons of water per shower, which would be _____ gallons per week, and _____ gallons per month.

Our Daily Water Use: Check-Out Your Bill

Procedure

Find a copy of your monthly water bill. It will show how many gallons your family consumed and how much it cost.

Looking at your water bill – how many gallons does your family use each month?

My family uses _____ gallons of water each month

Divide this figure by the number of days in the month to come up with how much water your family uses each day.

My family uses _____ gallons of water each day

Now divide this number by the number of people in your family.

Each person in my family uses _____ gallons of water each day.

The average person in the US uses _____ gallons of water each day.

Each member of my family uses more less than the US average.

Checklist

If each person in your city can reduce his or her water use by seven gallons, we could save thousands of acre feet of water a year. Look at the checklist of water conservation ideas:

- Only run the washing machine and dishwasher when you have a full load
- Flush the toilet only when necessary – do not use the toilet as a trash can for tissues
- Fill a pitcher of water and put it in the fridge for drinking, rather than run the tap
- Use the garbage disposal sparingly, like every other day – or better yet, compost
- If your shower fills a gallon bucket in less than 20 seconds, replace your shower-head with a water-efficient model
- Collect the water you use for rinsing fruits and vegetables and use it to water houseplants
- Fix a leaky faucet or toilet. (To find if your toilet leaks, put a few drops of food coloring in the reservoir. If you see food coloring in the bowl without flushing – it's leaky!)
- Re-use your towels to cut down on laundry
- Each person can use only one designated drinking glass or bottle each day to reduce washing dishes
- When washing hands, turn off faucet while you lather
- When cleaning fish tanks, give the nutrient-rich water to the plants
- Fill a bucket when waiting for the water to heat up for your shower. Use this water to water plants or to mop a floor

What would be the easiest habits for your family to adopt in order to reduce your use per person by seven gallons per day?