DRIPS ADD UP: A DRIP GAUGE ACTIVITY

GRADE LEVEL

3 - 5

DURATION

45 minutes - 1 hour

ESSENTIAL QUESTION

What impact can wasting water have on our natural resources?

MATERIALS

Pencil
Paper
Paper towels or hand towel
Drip gauge
Calculator
Access to a faucet
Empty gallon jug (as a visual aid)

NORTH CAROLINA STATE STANDARDS

NC.3.3.MD.2 Solve problems involving measurement.

NC.4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.

NC.4.MD.1 Solve problems involving measurement.

SS.5.G.1 Understand how human activity has and continues to shape the United States.

NC.5.MD.1 Convert like measurement units within a given measurement system.

SUMMARY

Participants create a leak and use a drip gauge to estimate how many gallons of water are wasted. *This is a student lead exercise that can be done at home with minimal direction.*

BACKGROUND

Take a minute to check the faucets at home or at school. Are any of them dripping? Maybe it's just a small drip. It is true that a single drip won't waste much water, but imagine if that drip keeps dripping all day long. What if every faucet in your town or in your state also dripped? The drips would really add up. The average household's leaks can waste nearly 10,000 gallons of water every year. It is estimated that 1 trillion gallons of water are wasted by small household leaks each year in the US. Many of the leaks are easy to catch and easy to fix. If you spot a leaky faucet, shower or toilet, be sure to let an adult know. Fixing leaks quickly means saving more water.

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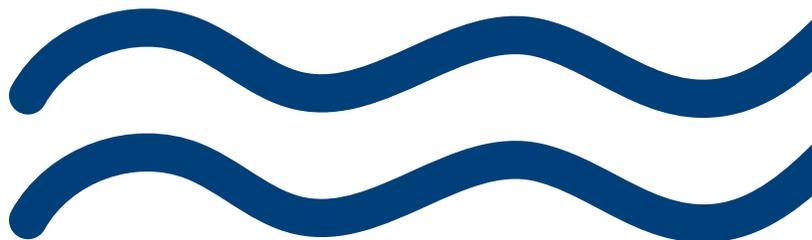
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PROCEDURE

1. Think about a dripping faucet and consider how much water a small leak would waste if it dripped all day long for a 24-hour period.

2. Identify an indoor or outdoor faucet at your home or school.

3. Open it up to create a very minor drip, creating a small leak.

4. Take a picture of your leak to document the drip and compare to others in your class.

5. By looking at the leak, guess how many gallon jugs would fill up with that dripping water if it was left to drip for 24 hours. Write down your estimate on the data sheet provided.

6. Place your gauge under the faucet for five seconds. If you need, you can count to yourself or out loud "one Mississippi, two Mississippi..." etc.

7. At the end of five seconds, remove the gauge from the faucet drip.

8. Set the gauge down on a flat surface to make sure the that the water line is level.

9. Read the number in the GDP (Gallons Per Day) column and make sure you are **reading the number just above the top of the water.**

10. Record your results on the data sheet provided.

11. Repeat this two more times, for a total of three trials.

12. Use the handout to compute other measurements to help you better understand water waste over time.

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Drip Gauge Data Sheet

Your estimate: _____ GPD

DATA

Trial 1: Volume of water = _____ GPD
Trial 2: Volume of water = _____ GPD
Trial 3: Volume of water = _____ GPD

CALCULATIONS

Total Volume = _____ GPD (add the GPD for all three trials)
Average = _____ GPD [divide the total volume by the number of trials (3)]

ADDITIONAL CALCULATIONS

Compute the volume of water wasted for the following time periods based on the average volume from the calculations above

One hour = _____ GPH (gallons per hour - divide average by number of hours in a day [24])

One week = _____ GPW (gallons per week - multiply average by number of days in a week [7])

One month = _____ GPM (gallons per month - multiply average by number of days in a month [30])

One year = _____ GPY (gallons per year - multiply average by the number of days in a year [365])

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VOCABULARY

Estimate. A guess of the value of something.

Gauge. A device for measuring the amount, or contents of something, typically something you can look at to find the information.

Valve . Something that controls the passage of fluid through a pipe.

Volume. The amount of space that a something takes up.

Natural Resource. Natural assets (raw materials) found in nature that can sold and consumed.

Finite Resource. A resource that is created at a rate much slower than the rate it is used. Earth's water is finite, meaning that the amount of water on our planet does not increase or decrease.

GPD. Gallons Per Day

1 gallon = 3.78541 liters

FOLLOW-UP

- How does your estimate compare to the results ?

- How does a gallon compare to a liter? Use the gauge to help.

- What should you do if you see a leak at an indoor faucet, shower, outdoor faucet or if you hear a toilet running? Find out how to check your toilet for leaks with this video.

- Do you know where your water meter is located? You can locate your water meter with the help of this video.

- Do you have a water shut off valve for your home? Ask an adult to help you locate it. Knowing where the water comes into your home and identifying the valves to turn off the water can be helpful when you have a leak.

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