

# LESSON 20



# Go for H<sub>2</sub>O

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The background information in this lesson is a duplicate of lesson 8 in the fourth-grade lesson set, although the worksheet activities are more complex to meet the needs of fifth graders.

## Background

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A total of 85% of a child's body weight is water! It is in every part of the body. Water is essential to human survival, optimal functioning, and health. Whereas human beings can survive weeks without food, we can live only a few days without water. Water is needed to transport nutrients in our blood and to help with digestion and the absorption of those nutrients. It helps maintain our body temperature through sweating. We get rid of our body's waste products by losing water through our breath, sweat, and urine. To replenish our bodies' supply of water and keep hydrated, it is best to drink plain water.

Water is calorie free, cheap, and the best thirst quencher. Juice drinks and sports drinks are often viewed as healthy alternatives to other sugary drinks such as soda. Yet, in reality, such drinks contain mostly the same ingredients—basically, sugar and water (for more on sugary drinks, see lesson 19). And sports drinks can have large amounts of sodium. Only on rare occasions, when kids play vigorous sports for long periods of time, should parents consider supplementing water with a sports drink.

Fruit juice made from 100% fruit can be a healthy choice, but only in small amounts. Although 100% juice has a lot of nutrients, it also has a lot of sugar. Six ounces (170 ml) of 100% orange juice, for example, has about 77 calories and 15 grams of sugar. Six ounces (about half of a can, or 170 ml) of soda has around 70 calories and 20 grams of sugar. Fruit juice that is 100% from fruit should be limited to no more than 4 to 6 ounces (120-170 ml) a day.

Water should be everyone's main beverage of choice; other sugary drinks such as soda, sports drinks, energy drinks, juice drinks, and even 100% fruit juice should be a distant second choice. Artificially sweetened beverages such as diet soda should also be avoided, because the long-term effects of artificial sweetener consumption are unknown, and drinking them may encourage a taste for sweetness. Water is the best way to hydrate our bodies, it is calorie free and sugar free, it tastes clean and fresh, and it is just about cost free when taken from the tap.

## Estimated Teaching Time and Related Subject Areas

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**Estimated teaching time:** 1 hour, 40 minutes (over two sessions)

**Related subject areas:** math, health

## Objectives

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- Understand and be able to demonstrate the relationship between standard English measures of volume, such as ounces, cups, pints, quarts, and gallons.
- Measure their water consumption and compare it to their consumption of other beverages.
- Understand the health benefits of water and why it is the healthiest beverage choice.
- Learn to replace sugary drinks with water.

## Materials

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- Measuring cups (1 cup, 1/2 cup, 1/4 cup)
- Empty containers of various sizes (1 gallon, 1/2 gallon, 20-ounce bottle, 1 pint, 12-ounce can, 6-ounce juice box)



## Procedure

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### Part I: Volume Conversions (40 minutes)

1. Divide students into groups of four, or use table groups.
2. Give each group a 1 cup measuring cup. Ask the groups to discuss what it is, what it is used for, and any mathematical information they know about a cup.
3. After five minutes, have each group report what they discussed. Write answers on the board, correcting information if needed. Possible responses: It's used for baking; it's used in the kitchen; it's used for measuring flour; it can measure how much liquid is in something; my dad drinks a cup of coffee every morning; 1 cup has 8 ounces; 1 pint has 2 cups.
4. Tell the students that a cup is a standard unit of measurement in the United States. In liquid measurement, 1 cup equals 8 ounces of liquid.
5. Ask students if they've ever seen on the labels of their drinks where it shows how many ounces, pints, or gallons the drink contains. Explain that almost all types of beverages you buy in the store show how much liquid they contain. This is usually in ounces but can be other common measurements, too (pints, quarts, gallons). Show beverage containers of various sizes (e.g., a gallon, half gallon, juice box, soda bottle, soda can) and where students can see how much fluid each contains. This information is usually on the front label of a beverage, rather than on the nutrition facts label, which often lists smaller serving sizes rather than total volume.
6. Distribute Worksheet 20.1, *An Ounce by Any Other Name*. Review the conversion chart at the top, and work through the sample problem as a class. Have students complete parts A and B on their own or in small groups.
7. Review and correct worksheets as a class. Review strategies for doing conversions, focusing on problem areas.
8. Ask the students to estimate what percentage of their bodies are made up of water. Write estimates on the board and guide the discussion to the correct answer: 85%.
9. Ask the class about different ways their bodies can lose water. Possible answers: sweat, breath, waste (urine). Explain that just in their normal functions, their bodies use up a lot of water. When they work hard in sports or when it's really hot outside, they lose even more through sweat. All this lost water needs to be replaced every day.
10. Explain that as a class they are going to collect data to see how much they drink and what types of drinks they drink in a single day. Each student will keep a drinking log over the next 24 hours. Tomorrow the class will analyze the data to see how much they drank and what they chose to drink.
11. Distribute the 16-ounce plastic cups (one per student) and permanent markers (one per group). Explain that they will make a 1-cup gauge that will help them estimate how much they drink over the next 24 hours.
12. Have each student pour 1 cup of water into the plastic cup and then mark the plastic cup on the outside at the 1-cup level. *Emphasize that they should not use it for drinking* because it can be hard to keep clean. Instead, they should use it to visually estimate how much water and other liquids they drink when they don't know for sure. Have them look at how much water is in the cup. Seeing how much 8 ounces of fluid actually is can help them estimate correctly for their data logs.
13. Distribute Worksheet 20.2, *Water Logged*, to each student. Explain that this is the log in which they will write down all the liquids they drink between now and the next class. Review the columns and examples, and remind students that some containers have the measurement right on them, such as the milk containers in the

cafeteria. For many of the things they drink, they will have to estimate. Using the gauge can help.

14. Have students practice by entering in their logs what they drank at their most recent meal or snack.
15. Remind the students that because they need to mark down everything they drink, they should keep the log with them wherever they go. It's easier to record at the time they drink than to remember it later. Instruct them to bring the log to class the following day to review their results.

## Part II: Beverage Tracking (60 minutes)

1. Distribute Handout 20.1, Why Drinking Water Is the Way to Go. Have students read the article and share their ideas on the following questions:
  - Why is water important? (Example: needed to keep cells alive and to digest food)
  - How much water should they drink each day? (Example: regularly throughout day; more if thirsty or if it's warm or if playing sports)
  - How will they know if they haven't had enough water? (Example: urine is dark yellow)
2. Explain to students that now that they know how important water is and what it does for them, they will analyze the data in their water logs to see how much they drank over the past day and what types of drinks they drank.
3. Have students take out their Water Logged worksheets (Worksheet 20.2). Ask how the data collection went. What did they notice? Did anything surprise them? What type of drink did they drink the most of? The least? Optional: Write answers on the board.
4. Explain that they will be taking the data in their logs and turning it into a graph to see how much and what types of liquids they drank.
5. Distribute Worksheet 20.3, Chart Topper, and walk students through the steps to convert all their logged drinks into cups, put their drinks into categories, and create their charts and answer the questions.
6. Ask students what they learned from looking at their charts, using Chart Topper questions as a guide. Write the answers on the board to guide the discussion. Following are key questions from the worksheet:
  - How many cups of all types of beverages combined did you drink?
  - What type of drink did you drink most?
  - What type of drink did you drink least?
  - Which did you drink more of: water or nonwater drinks?
  - What was your healthiest drink? Why?
  - What do you think was your least healthy drink? Why?
  - What surprised you most about what you saw in your chart?
  - Are there any changes you could make to be healthier?

## Extension Activities

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1. Have students develop a marketing campaign that promotes drinking water to share at the next class. It should include a print advertisement, such as they'd see in a magazine, and at least two online social media posts.

To help with this, distribute Worksheet 20.4, Water Wise, and tell students to pour a glass of water (use clean water and a clean glass) and spend 5 to 10 minutes

thinking about its qualities. How does it taste? How does it feel when you drink it? Is it cool? Is it warm? What does it look like? (Have them pour some on their skin.) What does it feel like on your skin?

They can use their answers to help develop their marketing campaigns.

2. Students continue to track their beverage intake for a week, creating a seven-day chart.