



Lesson 1

What's in Your Drink?

Overview

Students will learn about the effects of excessive sugar consumption on their health. Students will work in small groups to read Nutrition Facts labels and Ingredient Lists to compare and to evaluate types and amounts of sugar in the beverages.

Materials and Preparation

- *Learning the Facts* cards; *Learning the Facts Bingo* page; *Learning the Facts Bingo Answer Key*; *Drink Label Cards Calculations Key*; *Drink Label Cards*; *How Much Sugar? worksheet*; *How Much Sugar?* sample calculation worksheet; *Nutrition Facts Label Scavenger Hunt* worksheet
- 35 Sugar cubes per each group of 2-3 students
- Two small plastic re-sealable bags per each group of 2-3 students
- Teacher Preparation: 45 minutes
- Class time: 100 minutes

Learning Objectives 1A

1. Learn the effects of excessive sugar consumption on overall health.
2. Increase awareness of what beverages students and their peers choose to drink and reasons for choosing specific beverages.

Learning Objectives 1B

1. Identify the importance of accessing valid health information.
2. Use Nutrition Facts labels to compare and to contrast sugar content in a variety of beverages.
3. Use Ingredient Lists to identify the different types of sugar in sweetened beverages.
4. Measure the amount of sugar in beverages and discuss the results.

California Health Education Content Standards – High School

- Essential Concepts
 - 1.4.N - Describe dietary guidelines, food groups, nutrients, and serving sizes for healthy eating habits
 - 1.5.N - Describe the relationship between poor eating habits and chronic diseases, such as heart disease, obesity, cancer, diabetes, hypertension, and osteoporosis
- Accessing Valid Information
 - 3.3.N - Describe how to use nutrition information on food labels to compare products

*Note: For suggestions on linking this lesson to other content areas, please see **Extensions/Links** in Lessons 1A and 1B*

California Nutrition Education Competencies – Grades 9-12

- Overarching Nutrition Education Competency 1: Essential Nutrition Concepts
 - All students will know the relationship between nutrition, physiology, and health
 - 1b - Know nutrition and health guidelines
 - 1f - Explain the influence of nutrition and physical activity on health
- Overarching Nutrition Education Competency 3: Accessing Valid Nutrition Information
 - All students will demonstrate the ability to access and analyze nutrition information, products, and services to analyze the accuracy and validity of nutrition claims.

Rethink Your Drink Key Messages:

- Drink water instead of sugar-sweetened beverages (e.g., sodas, sports drinks, energy drinks, and juice drinks).
- Choose from a variety of healthy drink options, such as water, 1% milk, fat-free milk, 100% fruit juice, or unsweetened tea over sugar-sweetened beverages.
- Use the Nutrition Facts label to choose foods with less total sugars.
- Use the Ingredient List to choose foods with little or no added sugars.

Teacher Background

- Water is an essential nutrient for life and represents two-thirds of our body weight. Water is part of every living cell, a medium for all metabolic changes (digestion, absorption, and excretion), and transports nutrients. Physically active teens need fluids, preferably water, to replace those lost by sweating.
- Though not differentiated on the Nutrition Facts label, most beverages contain two types of sugar: naturally occurring sugar and added sugar. Naturally occurring sugars are found in raw or basic foods and drinks (e.g., lactose in milk and fructose in fruit and fruit juice). Added sugars are found mainly in processed foods and drinks (e.g., high fructose corn syrup, cane sugar, raw sugar, molasses, etc.).
- The *Dietary Guidelines for Americans, 2015*, emphasize drinking water instead of beverages with added sugars. The *Dietary Guidelines* also suggest choosing nutrient-dense beverages that contain vitamins and minerals such as calcium, vitamin A, and vitamin C (as well as other nutrients). Examples of nutrient-dense beverages include nonfat and low-fat milk, and 100% fruit and vegetable juices.
- Major sources of added sugar in the American diet are sugar-sweetened beverages, including soda, energy drinks, fruit drinks and sports drinks. Strong evidence shows that children and adolescents who consume more sugar-sweetened beverages have a higher body weight than those who drink less. Sugar-sweetened beverages frequently provide excess calories and often provide few essential nutrients to the diet.
- Sugar-sweetened beverages contain added sugar, water, calories, and sometimes caffeine (or other food additives). Teens that drink excessive amounts of sweetened beverages are at risk for weight gain.
- Accessing valid information is an important skill for students to develop. Students should use the Nutrition Facts label and Ingredient List to critically think about the foods they eat and beverages they drink through identifying, analyzing and comparing nutritional content, and then selecting health-promoting products.

References

1. Babey SH, Jones M, Yu H, Goldstein H. *Bubbling Over: Soda Consumption and Its Link to Obesity in California*. Los Angeles, CA: UCLA Center for Public Health Advocacy; 2009
2. Health Education Content Standards for California Public Schools, Kindergarten Through Grade Twelve. Adopted by the State Board of Education, March 2008. Retrieved from: <http://www.cde.ca.gov/be/st/ss/documents/healthstandmar08.pdf>
3. *U.S. Department of Agriculture Dietary Guidelines for Americans, 2015*. Washington, DC: U.S. Government Printing Office; December 2015
4. Gortmaker, S, Long, M, & Wang YC. The Negative Impact of Sugar-Sweetened Beverages on Children's Health, November 2009. Retrieved from: <http://www.rwjf.org/content/dam/farm/reports/reports/2009/rwjf50143>.
5. The Nutrition Source: Healthy Drinks. Retrieved from the Harvard School of Public Health website: <http://www.hsph.harvard.edu/nutritionsource/healthy-drinks/>
6. Water: The Nutrient. Retrieved from University of Nebraska - Lincoln Extension, Institute of Agriculture and Natural Resources website: <http://extensionpublications.unl.edu/assets/pdf/g918.pdf>



Lesson 1A

Learning the Facts

Lesson Overview

Time

- Teacher Preparation: 20 minutes
 - Classroom Activity: 50 minutes
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Materials

- *Learning the Facts* cards
 - *Learning the Facts Bingo* page
 - *Learning the Facts Bingo Answer Key*
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Preparation

- Review teacher background information and additional website links, as necessary
 - Copy and cut *Learning the Facts* cards—one card per student
 - Copy *Learning the Facts Bingo* page—one copy per student pair
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Lesson Outline

- Warm-up
- *Learning the Facts* Card Match-up
- *Learning the Facts Bingo*
- Discussion
- Check for Learning

Vocabulary (See Glossary for definitions)

- Sugar-sweetened beverages
- Added sugars
- Natural sugars
- *Dietary Guidelines for Americans, 2015*

Steps for Classroom Activity

Warm-up

- Share the *Lesson 1A* learning objectives with students:
 1. Learn the effects of excessive sugar consumption on overall health.
 2. Increase awareness of what beverages students and their peers choose to drink and reasons for choosing specific beverages.
- Ask students to think about the last beverage they drank and then share with the class. Record their answers on the board, grouping similar drinks together. Then determine:
 1. How many students drank water? Soda? Sports drinks? Sweetened teas? Sweetened coffee drinks? Fruit flavored drinks? Energy drinks? (or other types of sugar-sweetened beverages)?
- Ask students to think about and then to share why they chose to drink that beverage over another one.
 1. *For example: it tastes good; it has caffeine to keep me awake; it has vitamins; my friends drink it; it was accessible/fast, etc.*
- Record on the board, the top three reasons for choosing a specific beverage.
- Ask students how they think the beverages they choose impact their health. Discuss short-term and long-term effects.

Some potential responses to the impact to their health are:

Short-term: weight gain, using sugar-sweetened beverages to replace meals (this reduces overall diet quality), tooth decay, and sleep or mood disturbances related to caffeine intake.

Long-term: obesity, heart disease, and type 2 diabetes.

1. Tip: If students don't have thoughts on the impact to their health, ask if they have seen an impact on older friends or relatives.

Activity

- Distribute a *Learning the Facts* card to each student. Explain that students will be “learning the facts” about a variety of beverages frequently consumed and how the nutrition content of these beverages relates to health.
- Tell the students that each card has a number and suit (like a deck of cards). The students need to find and pair up with the student who has the corresponding number and opposite suit of the same color. (There are only hearts and diamonds in the *Learning the Facts* cards.) *For example: The student with the ace of hearts card should find the student with the ace of diamonds card.*
 - Tip: To make it more challenging for students, have them try to locate their partner without talking.
- Once students pair up, the student with the Fact Card reads the fact aloud to their partner. The student with the Definition Card reads the corresponding definition to expound on the fact shared.
- Have pairs that are finished sharing their “Fact” and “Definition” information turn to another pair and share what they have learned as a foursome.
 - Tip: If more time is allotted for the *Learning the Facts* match-up, have each specific “Fact” and “Definition” pair continue the above process and locate another pair to share their information.
- Keep student-pairs together and pass out copies of *Learning the Facts Bingo* (one per pair). Student-pairs will continue to move around the room together and find other student-pairs that have the information needed to complete each of the eight squares on the bingo card. Student-pairs providing information will initial each square to ensure that the information recorded in the square is correct.

Cool Down

- Have students return to their seats. Ask some students to share a fact and/or definition that was new to them. Ask students if they would think more about their next drink choice knowing this information. If not, why?
 - Note: Students may not have a very elaborate response at this point. The purpose of the subsequent *Rethink Your Drink* lessons will be to help students develop skills (decision making and goal setting) to support them in practicing and applying their knowledge.
- Summarize concepts learned in the activity.

- Now that students have acquired information on the effects of excessive sugar consumption and the importance of choosing water or nutrient-dense beverages over sugar sweetened beverages, ask students how they would decide if a drink is really healthy or not. The next activity will help answer this important question.

Check for Learning

- Review the following with students:
 - What are some of the effects of excessive sugar consumption on our bodies?
 - List some of the nutrients that are found in food and used by our bodies for growth, function, and repair.
 - What is the difference between added sugar and natural sugar?

Home Connection (Optional)

- Homework Option:
 - Have students ask a family member about the beverages he/she drank that day and how he/she feels the beverages impact his/her health. Ask students to record the family member's response and bring it to class the next day. Encourage students to share the information they learned from the *Learning the Facts* activity with their family.
- Share the Key Messages for *Rethink Your Drink* with family members.

Extensions/Links

- Physical Education:
 - Teach High School Course 1 from *Tools for Learning Fuel for Moving*:
http://www.cdph.ca.gov/programs/cpns/Documents/NetworkTools%20for%20Learnin%20Fuel%20for%20MovingRev2_2010.pdf
- Science:
 - Have students describe how sugar is broken down by the body through the physiological processes of digestion, absorption, and metabolism.

Lesson 1B

Sugar Sleuths

Lesson Overview

Time

- Teacher Preparation: 25 minutes
- Classroom Activity: 50 minutes

Materials

- Drink Label Cards Calculations Key
- Drink Label Cards
- Per small group of 2-3 students:
 - Two Drink Label Cards from popular types of beverages
 - 35 Sugar cubes
 - Two small plastic re-sealable bags for sugar cubes
- *How Much Sugar?* worksheet
- *How Much Sugar?* sample calculation worksheet
- *Nutrition Facts Label Scavenger Hunt* worksheet (homework)

Preparation

- Review teacher background information and additional website links, as necessary
- Copy one per student:
 - *How Much Sugar?* worksheet

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Vocabulary (See Glossary for definitions)

- Nutrition Facts label
- Ingredient List
- Serving Size
- Sugars
- Daily Value (DV)
- % Daily Value (%DV)

Steps for Classroom Activity

Warm-up

- Share the *Lesson 1B* learning objectives with students:
 1. Identify the importance of accessing valid health information.
 2. Use Nutrition Facts labels to compare and to contrast sugar content in a variety of beverages.
 3. Use Ingredient Lists to identify the different types of sugar in sweetened beverages.
 4. Measure the amount of sugar in beverages and discuss the results.
- Ask students: Where would you look to find information on nutrients in foods and beverages? Why?
- Tell students the Nutrition Facts label and Ingredient List would be good places to start to find information on nutrient amounts and ingredients.
- Ask students: Why would it be important to consider where information comes from? What does the term *valid information* mean? (*Valid information* is well-founded and justifiable information.)
- Tell students they should consider researching and learning more about the source, purpose, and timeliness of the information when determining its validity. Questions to think about include:
 - Source: Who provided the information? What are his/her credentials? Or, what type of organization provided the information?

- Generic drink labels – 2 labels per group of 2-3 students each
- *How Much Sugar?* sample calculation worksheet
- *Nutrition Facts Label Scavenger Hunt* worksheet (homework)
- Post a list of added sugars on the board (see highlighted box on next page)
- Purpose: For what purpose is the information provided?
- Timeliness: When was the information presented? Is it updated on a continual basis?
- Explain the importance of identifying valid information in relation to health. Tell students it involves critical thinking— to seek out and to identify valid sources of information, to analyze the data from the source, and to select health-promoting products and services.
 - Note: It is important to seek out good sources of nutrition information because nutrition is a science, and just like any other science, our understanding of food, health, disease, and the ways in which nutrients affect our bodies changes quite frequently. This is why the *Dietary Guidelines for Americans* are updated every five years.

Lesson Outline

- Warm-up
- Label reading review
- Label reading activity
- Measuring sugar cubes activity
- Discussion
- Check for Learning
- The Nutrition Facts label is a valid source of information since it is regulated by the United States Food and Drug Administration (FDA) and follows the requirements of the Federal Food, Drug and Cosmetic Act and its amendments. The purpose of the Nutrition Facts label is for consumers to know what is in their food and beverages and to help them make healthy choices. When new laws and regulations are passed, the FDA incorporates them into their labeling requirements.
- Students will apply this skill of identifying and accessing valid information to reading Nutrition Facts labels to select healthier beverage choices.

Activity

- Review label reading:
 - Use the Juice Drink Label Card to review the basic label components:
 1. Number of servings in the container
 2. Grams of sugar per serving
 3. Total grams of sugar in the container
 4. Names of added sugars in the Ingredient List
 - Highlight that the Nutrition Facts label helps:
 5. Identify the nutrient content in one serving
 6. Compare calories and nutrients between similar foods/beverages
 7. Guide healthy food/beverage choices
 - Highlight that the Ingredient List notes the ingredients in order by weight, with the largest amount first and the smallest amount last.
 - Note: Typically, the first three ingredients listed comprise the largest part of the food or beverage.

- Post a list of added sugars for reference during the activity.

- Added Sugars: Anhydrous dextrose, corn syrup, corn syrup solids, dextrose, fructose, high-fructose corn syrup (HFCS), honey, invert sugar, lactose, malt syrup, maltose, maple syrup, molasses, nectars (e.g., peach nectar, pear nectar), raw sugar, sucrose, and sugar.
- Note: Other names used for added sugars, but not recognized by the Food and Drug Administration (FDA) as an ingredient name include: cane juice, evaporated corn sweetener, crystal dextrose, glucose, liquid fructose, and sugar cane juice.

- Tell students that, for the upcoming activity, they will compare sugar amounts in different beverages and scan the Ingredient List for sugars.
- Guide students through the process of locating the amount of sugar on the Nutrition Facts label and interpreting the nutrient data by modeling the following steps, using the Juice Drink Label Card and the *How Much Sugar?* sample calculation worksheet.
 - Identify the following (using Juice Drink Label Card):
 1. Number of servings in the container (2.5 servings)
 2. Grams of sugar per serving (27 grams of sugar)
 3. Total grams of sugar in the container (67.5 grams of sugar in container)
 4. Names of added sugars in the Ingredient List (high-fructose corn syrup)
 - Explain as you fill out the *How Much Sugar?* sample calculation worksheet that the calculations are guided by the following conversions:
 - 4 grams of sugar = 1 tsp. of sugar
 - 1 tsp. of sugar may be represented as 1 sugar cube
 - After calculating the total amount of sugar in the beverage in teaspoons, then count out the number of sugar cubes and place them in the re-sealable bag to show students the amount of natural sugar in the container of the juice drink.
 - Provide students with a brief overview of the small group activity.
 - Divide students into small groups of two or three.
 - Ask each group to select two Drink Label Cards that represent a variety of beverages.
 - Ask students to predict (without studying the label in detail) which beverage will have the least amount of total sugar and which beverage will have the most amount of sugar.
 - Tip: You may also consider asking students to guess the ingredients in some of the drinks before looking at the Nutrition Facts label.
 - Ask each group to complete the *How Much Sugar?* worksheet.
 - Tip: Ask students to consider if the drinks selected contain mostly added sugars or mostly natural sugars.

Cool down

- Have each group choose the drink with the highest amount of sugar in their group and have groups stand with their drink label cards and bags of sugar in descending order from the highest to the lowest amount of sugar per drink. Then ask the following questions.
 - Were they surprised by the amount of sugar in certain drinks? Which drinks were the highest in sugar? Which drinks were the lowest in sugar? Which beverage(s) offer more nutrients? Less nutrients? Which beverages contained added sugars?
- For the healthier beverages (milk, water, 100% juice), what do these beverage choices offer that the others do not? (vitamins, minerals calcium, protein, low calories).
- How would students use the data they collected and skills they practiced to make a choice for better health?
- Remind students that accessing valid information such as the Nutrition Facts label and Ingredient List is their key to making healthier beverage choices.

Check for Learning

- Review the following questions with students:
 - What are some names of added sugars found in the beverages you drink? (high-fructose corn syrup, maltose, dextrose, etc.).
 - What helps you evaluate the amount of sugar in a beverage or food item?

Home Connection (Optional)

- Homework Option: Nutrition Facts Label Scavenger Hunt
 - Provide students with the blank *Nutrition Facts Label Scavenger Hunt* worksheet. Ask students to select two items from home, with at least one item being a beverage, then to complete the blank nutrition labels and answer the questions below each label for each item.
- Have students share the label reading and sugar activities with family members.
- Share the Key Messages for *Rethink Your Drink* with caregivers.

Extensions/Links

- Physical Education:
 - Teach High School Course 2 from the *Tools for Learning Fuel for Moving* instructional materials: http://www.cdph.ca.gov/programs/cpns/Documents/NetworkTools%20for%20Learning%20Fuel%20for%20MovingRev2_2010.pdf
- Math:
 - Use the Drink Label Cards from the small group activity. Ask students to determine the mean, median, and mode of grams of sugar per serving for each drink. Ask students to organize and to describe distributions using frequency tables and bar graphs.