LESSON 19

Beverage Buzz: Sack the Sugar

Background*

Sugary drinks such as soda, fruit punch, energy drinks, sweetened iced teas, and sports drinks are a major source of sugar in the American diet—and children consume a lot of them. Teenage girls and boys drink an average of 24 ounces (710 ml) of sugary drinks each day.

The steady climb in children's intake of sugary drinks is troubling for many reasons. Sugary drinks are considered a source of empty calories because they basically contain just sugar and water, and they do not provide vitamins, minerals, or other key nutrients. A growing body of research strongly suggests that consumption of sugary drinks is associated with unhealthy weight gain in children and adults. One study found that middle school students who increased their consumption of sugary drinks gained unhealthy weight; for each additional 12-ounce (355 ml) serving of sugary drink consumed per day, the odds of becoming obese increased by 60%. Reducing or avoiding empty calories from sugary drinks may help with weight control. Another study found that overweight teenagers who replaced their consumption of sugary drinks with calorie-free options such as water reduced their unhealthy weight. Other research connects the consumption of sugary drinks with an increased risk for type 2 diabetes.

***Choices include plain soy, almond, rice, or other unflavored and unsweetened nondairy drinks.*

Additionally, as children's soda consumption has increased, their milk consumption has decreased. That is a worrisome trend, given that adolescence is a time of rapid bone development. Teenagers who do not maximize bone development during these crucial years (by consuming enough calcium-rich foods and getting regular physical activity) may increase their risk of osteoporosis in late adulthood.

One part of the sugary drink problem is that, over the years, beverage packaging sizes have increased. In the 1950s, a typical bottle of soda held 6.5 ounces (195 ml). Today, the typical bottle holds 20 or 24 ounces (590 or 710 ml), and restaurants and convenience stores offer supersized drink cups that hold upwards of 64 ounces (1.9 L) of soda and other sugary drinks. Some experts believe that the supersizing trend, combined with creative marketing, has increased children's and adults' consumption of sugary drinks.

The goal of this lesson is to help children become more informed consumers by teaching them to assess their own beverage consumption and to consider the nutritional consequences of their choices. Children will discuss popular ads for sugary drinks and be encouraged to select healthier beverages such as water, limited amounts of 100% juice, and unflavored milk or calcium-fortified nondairy drinks for calcium.**

****During most types of physical activity, children can get adequate hydration and energy by drinking water and having a healthy snack of whole fruit (such as orange slices). Most sports drinks are designed for endurance athletes who compete for more than an hour at high intensity. Save sports drinks for when children are participating in high-intensity, long-duration sports competitions (longer than one hour) or for when they are vigorously active for a long time in the heat.*

A healthy eating plan does not include beverages with added sugar. Sugary drinks include soda, fruit punches, sweetened iced teas, energy drinks, and sports drinks.*** Children should also avoid consuming artificially sweetened beverages, because the long-term effects of artificial sweetener consumption are unknown and may encourage a taste for sweetness. The consumption of 100% fruit juice should be limited to no more than 4 to 6 ounces (120-170 ml) per day. Juice contains vitamins and minerals, but it naturally contains a large amount of fruit sugar (fructose), and it lacks the fiber found in fresh whole fruit. To make it easier to stay within the fruit juice limit, children can dilute a small amount of 100% fruit juice (2-3 oz, or 60-90 ml) with sparkling water. Water should be the main drink of choice, because it helps to quench our thirst and keeps us hydrated (for more on water, see lesson 20).

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*Based on Center for Science in the Public Interest. (2005). Liquid Candy: How Soft Drinks are Harming America's Health. Washington, DC: Center for Science in the Public Interest, and Kann, L. et al. (2013). Youth Risk Behavior Surveillance — United States. CDC. www.cdc.gov/mmwr/pdf/ss/ss6304.pdf

Estimated Teaching Time and Related Subject Areas

Estimated teaching time: 1 hour, 15 minutes
Related subject areas: math, health, language arts (vocabulary)

Objectives

- Measure the amount of sugar they consume from soda and other sugary drinks and evaluate the results.
- Recognize how the media entices people to consume sugary drinks.
- Learn about the body's response to sugar.
- Identify the health benefits of various beverages.
- Learn to replace soda and other sugary drinks with healthy drinks such as water.

Materials

- Sugar (2-5 lb, or 1-2 kg)
- Measuring teaspoons
- Plain paper cups or clear plastic cups
- Worksheet 19.1, Where's the Sugar?
- Worksheet 19.2, What's Up With This Ad?
- Worksheet 19.3, Beverage Buzz
- Worksheet 19.4, Your Top Three (optional)
- Student Resource 19.1, Beverage Facts
- Worksheet 19.3 Solutions
- Teacher Resource 19.1, Evaluating Media Advertising
- Overhead 19.1, Supersized Sugary Drinks

Procedure

Part I: Evaluation of Sugar Intake

1. Ask students to name the drink they had last night at supper. Create a histogram on the board (combine similar drinks such as juice cocktails, fruit punches, and lemonade). Calculate the percentage of students who consumed the various drinks. What percentage had milk? What percentage had water? What percentage had soda or other sugary drinks? Explain that children aged 6 to 11 derive far too many calories from soda, sugary drinks, and other types of sweets, contributing to almost 20% of their total energy intake.
2. Explain to the students that they will be analyzing their beverage intake from the past two days. Distribute Worksheet 19.1 (Where's the Sugar?) and instruct students to complete the table by recording the cans of soda, bottles of sports drink, and pouches of fruit punch they consumed over the previous two days. Then ask them to calculate the number of teaspoons of sugar consumed from soda, sports drinks, and fruit punches and to add these amounts to determine the total amount of sugar they consumed from sugary drinks over the past two days.

You may need to assist students in estimating the amount of soda and other sugary beverages they consumed if they consumed something other than the listed beverage sizes. This exercise is not meant to be an exact record but rather a rough estimate of the amount of sugar consumed from beverages.

Worksheet 19.1

Where's the Sugar?

Name _____

Part I: What Did You Drink?

Fill in the Beverage Count table (table 19.1) with the number of cans of soda, bottles of sports drink, and pouches of fruit punch you had yesterday and the day before yesterday.

You may need to estimate the amounts that you drank and round to a whole number. For instance, if you opened a 20-ounce (590 ml) bottle of soda but drank only half of it, you consumed approximately one 12-ounce (355 ml) can of soda.

TABLE 19.1 Beverage Count

	Soda—12 oz (355 ml) can (10 tsp of sugar)	Sports drink—16 oz (475 ml) bottle (7 tsp of sugar)	Fruit punch—7 oz (210 ml) pouch (7 tsp of sugar)
How many did you drink yesterday?			
How many did you drink the day before yesterday?			
Total drinks			

Calculate the total teaspoons of sugar you consumed from drinks over the past two days.

1. How many teaspoons of sugar did you consume from soda over the past two days? For example, if you drank 2 cans, then 2 cans × 10 teaspoons = 20 teaspoons of sugar.
2. How many teaspoons of sugar did you consume from sports drinks over the past two days? For example, if you drank 1 bottle, then 1 bottle × 7 teaspoons = 7 teaspoons of sugar.
3. How many teaspoons of sugar did you consume from fruit punch over the past two days? For example, if you drank 2 juice pouches, then 2 juice pouches × 7 teaspoons = 14 teaspoons of sugar.
4. Add it all up: How many teaspoons of sugar did you consume from soda, sports drinks, and fruit punches over the past two days?

   Teaspoons of sugar from soda: _____

   + teaspoons of sugar from sports drinks: _____

   + teaspoons of sugar from fruit punch: _____

   = total teaspoons of sugar: _____

Worksheet 19.2

What's Up With This Ad?

Name _____

As a group, select one beverage product for which you can recall a television, online, or print advertisement. Use the ad for that product to answer the following questions. If you need more space, write on the back of this worksheet. Remember, members of your group may have different opinions, and that is OK.

Names of group members: _____

Name of product: _____

What is going on in the advertisement? _____

1. Which company is sending the message?
2. What do you like about the ad? Think about how the ad catches you
   do you dislike about the ad?
3. Who is this ad for? Consider how you feel about the ad and how othe
   one older or younger or of a different gender) might feel about the a
4. What does this ad tell you about how people live? Can you relate
   lifestyles depicted in the message? Is anything left out?
5. What is the message trying to tell you or sell you?

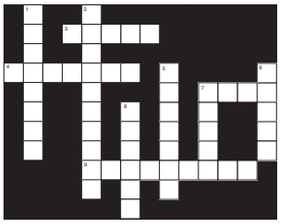
Worksheet 19.3

Beverage Buzz

Name _____

Complete the crossword puzzle using the words in the following list. For help with answering the clues, look at the nutrition facts labels on the Beverage Facts sheet that your teacher gives you.

Calcium	Fruit	Soda	Sucrose	Vitamin C
Corn syrup	Fruit punch	Sports	Sugar	Water



Down

1. A nutrient in orange juice (two words)
2. Sounds healthy but has a lot of sugar (two words)
5. Scientific name for table sugar
6. The best thirst quencher
7. 10 teaspoons of this are found in a 12-ounce (355 ml) soda
8. Sodium can be found in this type of drink

Across

3. Fructose is the natural sugar in this food
4. A mineral in milk
7. This carbonated sugary drink provides empty calories
9. Sounds like a vegetable but is really a sugar (two words)

Worksheet 19.4

Your Top Three

Name _____

Pretend that you just got back from gym class or recess, and you are thirsty. From the beverages in the following list, what do you want to drink?

- Water
- Gatorade
- Capri Sun Fruit Punch
- Can of Coca Cola
- Milk
- Chocolate milk
- Orange juice
- Lemonade

Pick your top three choices and list them in table 19.2. For each
Facts sheet to fill in the number of grams of sugar, the names of th
(if any), and the names of the added sugars (if any). Remember tha
for added sugar: corn syrup, dextrose, fructose, glucose, high-fruc
maltose, molasses, sucrose, and sugar.

TABLE 19.2 Your Top Three

What are your three favorite drinks?	Sugar (grams)	Vitamins and minerals
1.		
2.		
3.		

Which one do you think is the healthiest drink and why?

Student Resource 19.1

Beverage Facts

Nutrition Facts

Serving Size 6 fl oz (177 ml)

Amount Per Serving	% DV*
Calories 60	
Total Fat 0g	0%
Sodium 15mg	1%
Total Carbohydrate 17g	6%
Sugars (16g)	
Protein 0g	
Vitamin C 0%	

Not a significant source of calories from fat, saturated fat, trans fat, cholesterol, dietary fiber, vitamin A, calcium, or iron.

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Capri Sun Fruit Punch Ingredients

Water; high-fructose corn syrup; apple juice concentrate; citric acid; grape, pineapple, and cherry juice concentrates; natural flavor; vitamin E acetate

Nutrition Facts

Serving Size 6 fl oz (177 ml)

Amount Per Serving	% DV*		
Calories 83			
Total Fat 0g	0%		
Sodium 11mg	1%		
Potassium 338 mg	13%		
Total Carbohydrate 20g	15%		
Sugars (18g)			
Protein 2g			
Vitamin C 100%		B_6	4%
Thiamin 8%		Niacin	2%
Folate 12%		Calcium	2%
Magnesium 5%			

Not a significant source of calories from fat, saturated fat, trans fat, cholesterol, dietary fiber, vitamin A, calcium, or iron.

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

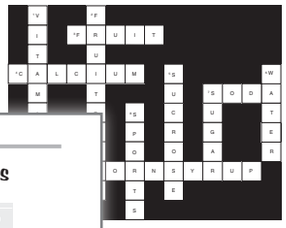
Orange Juice (Minute Maid) Ingredients

100% pure squeezed orange juice from concentrate (pure filtered water, premium concentrate orange juice)

Note: This drink may be sold in bottles that contain more than one serving. A 10-ounce (300 ml) bottle contains 30 grams of sugar.

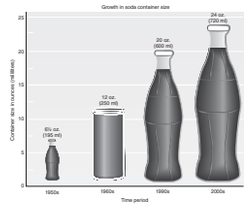
Worksheet 19.3 Solutions

Beverage Buzz



Overhead 19.1

Supersized Sugary Drinks



Teacher Resource 19.1

Evaluating Media Advertising

Media messages can be evaluated by considering five key questions and five core concepts.

Five Key Questions

1. Who created this message?
2. What creative techniques are used to attract my attention?
3. How might other people understand this message differently from the way I understand it?
4. What values, lifestyles, and points of view are represented in, or omitted from, this message?
5. Why is this message being sent?

Five Core Concepts

1. All media messages are constructed.
2. Media messages are constructed using a creative language with its own rules.
3. Different people experience the same media message differently.
4. Media messages have embedded values and points of view.
5. Most media messages are organized to gain a profit or power (or both).

3. Have the students evaluate their total intake of sugar. Distribute the cups and instruct them to measure out the teaspoons of sugar they consumed over the past two days. Have them pour their sugar into the cups to visualize the amount. Discuss their observations—were they surprised at the amount of sugar they consumed?
4. For a homework assignment, have students complete parts II and III of Worksheet 19.1 at home.
   a. In part II (How Much Sugar Is This?), students assess their sugar intake by converting teaspoons to cups, calculating their average intake of sugar, and projecting their intake of sugar over time. A child who consumes just one can of soda and one pouch of fruit punch per day (a total of 17 tsp, or 68 g, of sugar) may consume 119 teaspoons (476 g) of sugar over one week, which translates to nearly 4.5 pounds (about 2 kg) of sugar each month (using the simple calculation of four weeks in one month) and 54 pounds (24 kg) of sugar each year.
   b. In part III (What Can You Say About Your Drinks?), students write a paragraph that describes their current beverage intake and make recommendations for improvement.

Students who did not drink soda or other sugary drinks over the past two days may fill out the sheet based on what they drink on a typical day; if several students did not drink sugary drinks over the past two days or some students rarely drink sugary drinks because of household rules, it may be better to conduct this activity in groups.

Part II: Sugar and the Media

1. Display Overhead 19.1, Supersized Sugary Drinks, to show how soda and other sugary drink packaging has changed over time. Explain how the change in serving size has made it more likely for people to drink more soda when they eat out or when they buy a bottle from a vending machine or a convenience store.
2. Discuss other ways companies encourage the consumption of their products. Ask students to think about the advertisements they see on television, online, or in print. Can they recall any ads for healthy beverages? Have them name some of the advertisements for sugary drinks.
3. Divide the class into small groups, and give each group one copy of Worksheet 19.2 (What's Up With This Ad?). Instruct the groups to select one beverage advertisement and answer the questions that follow. Discuss the group responses as a class (see Teacher Resource 19.1 for ideas).

Part III: Identification of Sugar

1. Distribute Worksheet 19.3 (Beverage Buzz) and Student Resource 19.1 (Beverage Facts) to help students identify alternate words for sugar and sources of healthy nutrients. Students may work on the crossword puzzle individually or in groups. Display the solutions and discuss the answers with the class.
2. Invite students to create a list of healthy drink options, and discuss the best choices according to their health benefits. Following are examples:
   - Plain or sparkling water (alleviates thirst and promotes hydration)
   - Unflavored milk (provides calcium for strong bones and teeth)
   - 100% fruit juice (offers vitamins and minerals; note that consumption of 100% fruit juice should be limited to no more than 4-6 oz, or 120-170 ml, per day)

Part IV: Application and Extension of Information

1. Ask students to describe why we might want or need sugar (e.g., it tastes good; it gives us energy). In what foods and beverages do we find sugar? We find sugar naturally in fruits and vegetables, but these foods are healthy because they provide fiber and

In addition to containing large amounts of sugar, energy drinks often contain caffeine, herbs, and other additives that may not be healthy for children.

many vitamins and minerals. Unflavored milk and some dairy foods also contain sugar. All other foods and drinks have sugar added to them.

2. Remind students that soda and other sugary drinks contain high amounts of sugar and usually nothing else that is good for us—they basically contain just sugar and water. And the energy boost from sugary drinks does not last.
3. Have the class stand up and do the wave (raising and lowering the arms as you might do at a sporting event). Explain that this is what happens in our bodies when we drink a whole can of soda or other sugary drink all at once (or eat sugary foods such as a pack of jelly beans). There is a quick rise in blood sugar, giving us energy, but our bodies work quickly to pull that sugar out of the blood and into storage (in our muscles). That is why the quick boost of energy we feel after drinking a sugary drink does not last.
4. Read the following scenario to the class.

   Michael is playing chess as part of the chess club at school. During a break, the chess club coach gives Michael and other club members fruit punch to drink. Michael starts playing chess again, and at first he is feeling great, but he starts to feel sluggish before the end of the afternoon and has a hard time concentrating on his final match.

   a. Ask the students to discuss (in small groups or as a class) what happened to Michael. How could he and his coach have prevented the late-afternoon slump?
   b. Possible solution: The coach can provide water to quench the players' thirst and fruit such as orange wedges, apples, or unsweetened dried fruit to provide energy (without causing the quick rise and fall in blood sugar that occurs with a sugary fruit punch).

Extension Activities

1. Have students create posters, individually or as a group, discouraging the consumption of soda and other sugary drinks and post them near the cafeteria.
2. Have students work in groups to create television or online commercials that send the message that sugary drinks are not healthy choices or that promote consumption of a healthy beverage such as water. Each group can determine the audience for its commercial (e.g., children or parents) and then perform it as a skit for the class.
3. Have students evaluate their top beverage choices using optional Worksheet 19.4 (Your Top Three). Instruct them to pretend that they just got back from recess or gym class and to choose their top three drink choices from the list provided. They can use Student Resource 19.1 (Beverage Facts) to determine the grams of sugar in each drink, whether the drink contains vitamins or minerals, and whether the drink contains added sugars. Then they can determine which one is the healthiest choice.