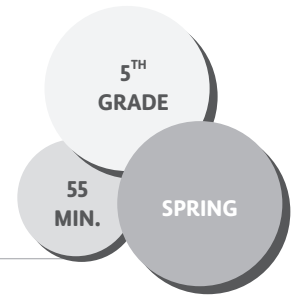


# Sugar Showdown

**THEME:** MAKING HEALTHY FOOD CHOICES



## ESSENTIAL QUESTIONS

*Why is important to consider the amount of sugar in what we eat?*

*How can we tell how much sugar is in a particular food?*

## LEARNING OBJECTIVES

- ✓ Students will be able to interpret a nutrition label to know how much sugar is in a product.
- ✓ Students will be able to explain the evolutionary reasons humans generally like sugar.
- ✓ Students will be able to prepare a healthy beverage.

## LESSON DESCRIPTION

In this lesson, students estimate and measure the sugar content of commercially sold beverages and consider the implications of excess sugar in our diets as well as why humans like sugar. Then they sample an herb-and-fruit-infused water and think of variations they'd like to create at home.

## MATERIALS

- Box of sugar cubes (or a bag of sugar)
- Paper towels
- Set of 5 nutrition labels for each group of 4–6 students
- Sugar Showdown Worksheet (p. 529) for each student
- Flavored Water Recipe Cards (p. 530) for each student
- Sugar Facts Worksheet (p. 531) for each pair of students

- Small cup for each student
- 2 ½ gallon glass jars (for doubling recipe; each recipe serves 15 small 4 oz. cups)
- Ingredients for infused water. The recipe below is just a suggestion. You can use cucumber, lime or other citrus, tropical fruits, basil, or other herbs to which you have access.
- Materials for cleanup

## PREPARATION

- ▶ Print nutrition labels from the internet for a variety of sugary drinks, such as sodas, iced teas, energy drinks, flavored milk, fruit juice, etc. Pick items with which you think your students might be familiar.
- ▶ Prepare images of your selected drinks to display to the class. If you have access to an overhead projector in the classroom, simply project them in a slideshow. Otherwise, print a set of images for each group of students.
- ▶ Photocopy Sugar Showdown Worksheet.
- ▶ Create 1–2 fruit-and-herb-infused waters for students to try. See the recipe below as an example.

### *Berry- and Mint-Infused Water Recipe*

- 1 cup berries, slightly crushed
- Handful mint leaves, muddled

Place mint leaves in ½ gallon jar and muddle (gently bruise with a wooden spoon). Add the crushed berries, and fill the jar with water. Allow the jar to sit in the fridge for four hours or up to overnight before serving.

## ACTION STEPS

**1. Guessing Sugar Content:** Display images of sugary drinks. Show students a sugar cube. Explain the following: *Each sugar cube is a teaspoon of sugar. With your groups, you'll have to guess how many sugar cubes, or teaspoons of sugar, are in each of these drinks.* Pass out cubes and the Sugar Showdown Worksheet to each group of students. Have students work together to stack sugar cubes in front of the images of each beverage to show how much sugar they estimate is in each. After some time, ask a few students to share some of their group's estimates, explaining their justifications. **(5 min.)**

**2. Measuring Sugar:** *Say, I'm going to give you the nutrition labels that show the amount of sugar. One catch is that they're written in grams, so you'll have to know that each sugar cube has 4 grams of sugar in it. If a label says 24 grams of sugar, how do I figure out how many cubes that is? (Divide by 4 to discover that 24 grams = 6 sugar cubes). The other catch is that some containers have more than one serving in them. If there are 6 sugar cubes in 1 serving, and the container has 2 servings, how would I figure out the total number of sugar cubes? (Multiply by the number of servings, so 6 cubes/serving x 2 servings = 12 sugar cubes in the container).* Pass out nutrition labels to students. Have students match the labels to each of their beverages, use their handout to calculate the actual amount of sugar cubes in each drink, and update their stack of sugar cubes. Encourage students to stack their cubes vertically or into pyramids to enhance the visual impact. While they're working, create a stack of twelve sugar cubes. Once they're finished,

explain that *the American Heart Association has an even smaller daily maximum recommendation of 24 grams, or 6 sugar cubes, for women and children and 36 grams, or 9 sugar cubes, for men.* Have students work in small groups to compare these recommendations with the sugar in their beverages. **(15 min.)**

**3. Deciding True or False:** Have students clean up. Then display or pass out the Sugar Facts Worksheet to pairs of students. Have them work in pairs to answer true or false for each statement. Allow students to discuss answers in small groups, and go over each statement as a class. You can have group representatives raise their hands to vote; call on some to give justifications. Then you can share some of the facts behind each statement. **(10 min.)**

**4. Tasting:** Explain to students that you've made a naturally flavored water for them that could be a substitute for these sugary drinks you've been looking at. Pass out small tasting cups of the infused water you've prepared. Ask students to describe the flavor. **(10 min.)**

**5. Making Recipes:** As a class, brainstorm other fruits and herbs that would taste good infused in water, and pass out the template to have each student create their own recipe to take home. **(10 min.)**

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

- *What surprised you about the activity we did today?*
- *Why do humans like sugar so much?*

- *What information would you share with friends or family?*
- *How can we share this information with the larger community?*
- *What impact do you think sharing this information could have on families in our town?*

## ADAPTATIONS

**Garden:** Make sun tea with students using herbs they've harvested from the garden. Allow the tea to sit in full sun for a couple hours; refrigerate the tea to serve to students the next day.

**Classroom Extension:** Share with students a list of all the other words sugar goes disguised as: high-fructose corn syrup, evaporated cane juice, corn sweetener, dextrose, or honey. Hand out a new set of nutrition labels. Have students find all the hidden sugars. This works well with canned soups and other foods that students might be surprised to see contain sugar. Explain that because food manufacturers are mandated to write the ingredients in order by weight, many companies use different names of sugar to spread out the total amount to not appear so high in the list. Show them an example.

## ACADEMIC CONNECTIONS

Math Common Core State Standards

### **CCSS.MATH.CONTENT.5.MD.A.1**

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

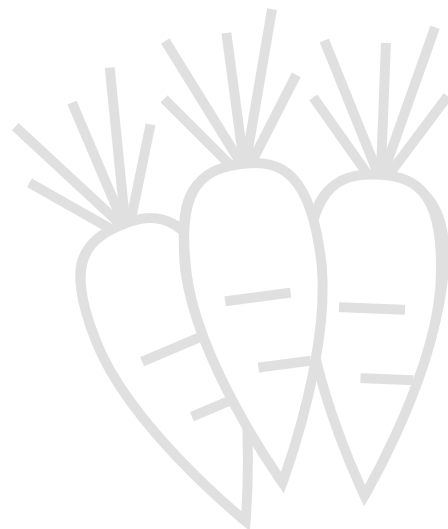
### **CCSS.MATH.CONTENT.5.MD.C.3**

Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

English Language Arts Common Core State Standards

### **CCSS.ELA-LITERACY.RI.5.7**

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Sugar Showdown Worksheet

**Directions:** Use this table to calculate the number of sugar cubes in each beverage.

DRINK NAME	Estimated Number of Sugar Cubes per Container	Actual Amount of Sugar per Serving (in Grams)	Actual Number of Sugar Cubes per Serving	Actual Number of Sugar Cubes per Container	How Close Was Your Original Estimate?
#1 _____	_____ cubes	_____ grams	_____ grams/4 = _____ sugar cubes	____cubes x _____ servings = _____ total sugar cubes	We were off by _____ cubes.
#2 _____					
#3 _____					
#4 _____					
#5 _____					

\_\_\_\_\_s Flavored Water Recipe

**INGREDIENTS**

1 cup \_\_\_\_\_ fruit

1 handful \_\_\_\_\_ herb

**DIRECTIONS**

**Crush herbs in your hands, and add to a ½ gallon jar or pitcher.  
Add fruit, and fill your container with water.**

\_\_\_\_\_s Flavored Water Recipe

**INGREDIENTS**

1 cup \_\_\_\_\_ fruit

1 handful \_\_\_\_\_ herb

**DIRECTIONS**

**Crush herbs in your hands, and add to a ½ gallon jar or pitcher.  
Add fruit, and fill your container with water.**

# Sugar Facts: True or False? (Educator Copy)

**The sugar that occurs naturally in fruit is the same as the sugar in sodas and other sweetened beverages.**

*False. The sugar in fruit and other naturally sweet foods is connected to fiber, vitamins, and other nutrients. This helps us digest it slowly and provides our body with nutrients we need. Added sugar in soda and other foods, however, provides sweetness but nothing else. This is why people often refer to it as “empty calories.” It is empty of anything we need other than calories.*

**We need to eat added sugar just like we need to eat fats and protein.**

*False. Although our bodies need sugar to function properly, our bodies can get sugar from eating plants (grains, starches, vegetables, and fruits) and other things in our diet. We don't need to eat any added sugar.*

**Sugar is a natural preservative, like salt, that makes food last longer.**

*True. This is one reason many commercial products add sugar to foods that don't necessarily need the sweetness, like canned vegetables, canned fruits, sauces, dressings, bread, or soups. This has made us all get used to everything tasting sweet.*

**Our bodies absorb table sugar almost instantly. For this reason, table sugar is better for us than fruit.**

*False. The first part of this statement is true, which is why eating something with a lot of sugar makes our blood sugar rise and then crash. Here's the good news: the sugar in fruit comes with fiber. Fiber helps slow down our bodies' absorption of sugar and helps us avoid a blood sugar spike and crash.*

**If we eat too much sugar at a meal, our bodies store it as fat.**

*True. When we eat more calories (energy) than our bodies need, we store them as fat. In times of food scarcity, it can be good to have fat stored for times when there is little food. In our current food environment where it is easy to eat a lot, even for a little money, this has become more of a problem.*

**We should eat at least six teaspoons of added sugar each day.**

*False. The American Heart Association suggests an upper limit of 24 grams, or 6 teaspoons, of added sugar for children per day. Unlike vitamins and minerals, which have recommendations for the minimum amount, with sugar the recommendation is for the maximum. This means that we don't need any added sugar, but if we choose to have some, we should limit it to 24 grams per day to stay healthy.*

**One 20-ounce soda is equal to the recommended daily maximum for added sugar for the whole day.**

*False. One 20-ounce soda has about 15–17 teaspoons of sugar. This is more than double the American Heart Association's maximum of 6 teaspoons . . . all in one beverage! This is also more sugar than is in a donut and about the same as in a slice of cake.*

**Humans crave sugar because of evolution.**

*True. Sugar is a basic, easy form of energy for the body. Sugar was beneficial to our hunter-gatherer ancestors because they could have long periods of intense physical activity and food scarcity; therefore, they needed to get energy whenever they could. In addition, “sugar” used to refer to the sweetness that comes from fructose which, in nature, is hardly ever found in toxins. Therefore, our bodies evolved to look for sweetness as a sign of safe, edible, energy-rich food.*



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Sugar Facts: True or False? Worksheet

**Directions:** Write True or False beneath each statement below.

The sugar that occurs naturally in fruit is the same as the sugar in sodas and other sweetened beverages.

We need to eat added sugar just like we need to eat fats and protein.

Sugar is a natural preservative, like salt, that makes food last longer.

Our bodies absorb table sugar almost instantly. For this reason, table sugar is better for us than fruit.

If we eat too much sugar at a meal, our bodies store it as fat.

We should eat at least 6 teaspoons of added sugar each day.

One 20-ounce soda is equal to the recommended daily maximum for added sugar for the whole day.

Humans crave sugar because of evolution.