



## Drinking Sugar

### Lesson

#### Goals

Students will see how much sugar is in their soda and explore healthier alternatives.

#### Objectives

Students will calculate and measure the amount of sugar in different sized sodas and prepare a healthy, no sugar-added snack.

#### Standards

*Science: Life Science*

GR.5-S.2-GLE.2

*Comprehensive Health: Physical & Personal Wellness*

GR.1-S.2-GLE.1

GR.2-S.2-GLE.1

GR.5-S.2-GLE.1

GR.6-S.2-GLE.4

**Total Time** – 40-65 minutes

#### Materials

- Different sizes of regularly consumed sodas (12 oz, 20 oz, 1 liter, etc) and other sugary drinks, enough different drinks for each group of three or four students to have one
- White sugar cubes
- Glue
- Recipe ingredients and copies
- Journals
- Tarnished pennies (optional)
- Glass (optional)

#### Method

**Introduction** (5 minutes)

1. Ask the class: *Who had something to drink today? What did you drink?* (Explain to the class the importance of beverages in our diets.) *About 70% of your total body weight is water and most, if not all of your bodily functions depend on it. When choosing beverages you should try to make them count as healthful contributions to your diet. Your best beverage choices are water, low-fat milk or 100% juice, instead of soda, sugary fruit drinks or sports drinks.*
2. *For today's lesson we will answer the question: How much sugar is in a can of soda?*

**Activity** (25 minutes)

1. Ask the class: *How can we figure out how much sugar is in a can of soda?*
  - a. Let them take a few guesses and then tell them: *One method is to boil soda in a pot*

#### Did you know?

The National Health and Nutrition Examination Survey found that people who drink 3 or more sugary sodas daily have 62% more dental decay, fillings and tooth loss. From 1985 to 1997 school soft drink purchases increased by 1,200% while milk purchases decreased by 30%.

*until all the water is gone. What we would have left is the sugar and you can weigh it. (You can do this, if you have the time and resources—it is fun.) An even easier way is to read the label.*

2. *When we look at the label we see that the amount of sugar is measured in grams. Grams are often hard for us to imagine visually, so we are going to convert them into teaspoons. **One teaspoon is about four grams of sugar, which is one cube of sugar.***
3. Divide the class into groups of three or four students. Give each group of students a soda and a pile of sugar cubes. Have each group figure out how many teaspoons (cubes) of sugar are in their soda. Each group should paste the sugar cubes onto a blank sheet of paper.
4. Once all of the groups of have finished, have them each share what their soda was and show their glued sugar cubes to the rest of the class.
5. Ask the class: *Would you eat this much sugar? What is a better alternative when we are thirsty?* (Water, fresh fruit smoothies or juice made with 100% juice and no added sugar.)
6. Discuss the list of ways to reduce the affects of soda. You may want to copy the list that is attached or put it up on the board for the class to copy down.

#### **Optional Extension of the Lesson (25 minutes)**

7. The final part of the lesson will look at the amount of acid in common drinks. When discussing this part of the activity, put the table that is attached up on the overhead so the whole class can see.
8. *The amount of sugar in a soda is can adversely affect your health for various reasons. One of the main reasons is the amount of calories that are being consumed that do not have any other nutritional value. These are called empty calories and can lead to obesity, diabetes, etc. The other reason sugar is unhealthy is because it is bad for your teeth. Soda also contains acid, which combined with sugar will cause your enamel to dissolve.*
9. Explain the table and then do the following experiment. Put a tarnished penny in a cup of regular Coke and let sit overnight. Have the class record the differences in their journals the next day.

#### **Snack & Conclusion (10 minutes)**

1. Have the class write in their journals about their reactions to seeing how much sugar is in soda.
2. See attached recipe for a healthy, no sugar added snack or prepare a fruit smoothie for an alternative healthy drink.

#### **Assessment Tools**

- Participation
- Journals

#### **Suggested Products**

- Common sodas: Coke Classic, Mt. Dew, Pepsi, Sprite, Barq's Root Beer, Dr. Pepper

- Other common sugary drinks: Arizona Ice Tea, Snapple, Vitamin Water, Sunny-D
- Healthy alternatives: Water! Juice with no added sugar (made from 100% juice), fresh fruit smoothies

### **Possible Modifications and Extensions**

- Project [www.sugarstacks.com](http://www.sugarstacks.com) on the board to show the amounts of sugars in various sugar added items such as snacks, desserts, cookies, etc.
- Use sugar cubes to measure the amount of sugar in other items such as cereals, cookies, desserts, etc.
- To help younger kids with the division, write on the board the amount of sugar in grams and then the amount of sugar in teaspoons.
- If there is a particular soda (such as a 2 liter bottle) that is popular, make a game of who can figure out the amount of teaspoons in the entire bottle first. Whichever group finishes first gets to use that bottle for their show and tell.

### **Tropical Trail Mix: Sweet and Healthy!**

This trail mix is really easy to make and is always a great hit with kids. Make sure that the dried fruit does not have added sugar.

- Banana chips
- Shredded coconut
- Raisins
- Dried pineapple and mango (or other dried fruit) – no sugar added
- Sunflower seeds

Preparation (5 minutes): Measure one or two tablespoons of each ingredient and place in a cup or bowl. Mix all ingredients together and enjoy.

### **Sources**

- [www.dentalgentlecare.com/diet\\_soda.htm](http://www.dentalgentlecare.com/diet_soda.htm)
- [www.sugarstacks.com/beverages.htm](http://www.sugarstacks.com/beverages.htm)

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## To Reduce the Effects of Sugar

- Limit soda to one can per day
- Soda should be consumed with a meal
- Drink sodas through a straw to reduce direct contact with your teeth
- Rinse your mouth with water after drinking a soda
- Choose cans over re-sealable bottles

## Acid Levels in Common Drinks

Product	Acid (low=bad)
Pure Water	7.00 (neutral)
Barq's Root Beer	4.61
Diet 7-Up	3.67
Sprite	3.42
Diet Dr. Pepper	3.41
Diet Coke	3.39
Mountain Dew	3.22
Gatorade	2.95
Dr. Pepper	2.92
Coke Classic	2.63
Pepsi	2.49
Battery Acid	1.00

The threshold pH for enamel dissolution is 5.5

Drink Name	Servings in Container	Sugar per Serving (grams)	Sugar per Serving (teaspoons)	Sugar in Whole Container (teaspoons)

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