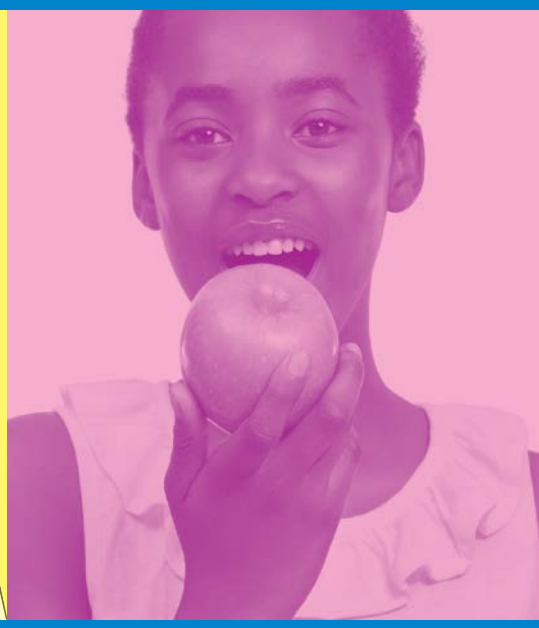
# SCIENCE AND OUR FOOD SUPPLY

## Using the **Nutrition Facts Label** to Make Healthy Food Choices

Teacher's Guide for Middle Level Classrooms

**1st Edition**

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

FDA

# SCIENCE AND OUR FOOD SUPPLY

## Using the **Nutrition Facts Label** to Make Healthy Food Choices

## Dear Teacher,

You may be familiar with *Science and Our Food Supply*, the award-winning supplemental curriculum developed by the U.S. Food and Drug Administration (FDA) and the National Science Teachers Association (NSTA). It uses food as the springboard to engage students in inquiry-based science and exploration, fostering awareness and proper behaviors related to food safety.

Now, FDA has developed a new component to the program: ***Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices,*** 1st edition. Designed to be used separately or in conjunction with the original program, *Science and Our Food Supply: Using the Nutrition Facts Label* springs from current public awareness of the importance of instilling positive nutrition behaviors in youth for general lifelong health.

We are pleased to present you with this nutrition-based curriculum introducing students to the fundamentals of healthy food choices, using the **Nutrition Facts Label** as the starting point. With engaging hands-on activities, students will become more aware of calories, serving size, and the nutrients they should get "more of" and "less of." Designed for use by middle level teachers, the emphasis is on an inquiry approach that is customizable to science, health, and/or family and consumer science classes, aligning with current education standards in these curriculum areas. It also supports educators seeking Science, Technology, Engineering, and Mathematics (STEM) or Common-Core Curriculum activities for their classrooms.

### The *Science and Our Food Supply* Team

**FDA** – an agency of the U.S. government responsible for developing policy and regulations for nutrition labeling and food standards. FDA is also authorized by Congress to inspect, test, and set safety standards for all food, except meat, poultry, and processed eggs.

**Curriculum Development Advisors** – nutrition educators and teachers representing family and consumer science, health, biology, and related subject areas.

We are confident that your students will find ***Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices*** to be an inspirational kickoff to learning about the science behind the nutrition choices they make every day, and set them on the path to healthy food and beverage decisions for a lifetime of good health!

# TABLE OF CONTENTS



FDA offers a "Professional Development Program in Food Science," designed to better prepare teachers in the use of *Science and Our Food Supply* to maximize the learning opportunities for their students. If you are interested in this program or other workshops and support opportunities, please visit the program's website at www.teachfoodscience.org.

The web links provided in ***Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices*** were current at the time of publication. In the event that they change and/or are no longer available, we suggest that you visit the "home page" of the named organization. From there, search for topical information.


WELCOME TO

# SCIENCE AND OUR FOOD SUPPLY

## Using the **Nutrition Facts Label** to Make Healthy Food Choices

You and your students are about to experience a program that incorporates nutrition as an important part of your existing curriculum.

When it comes to making science, consumer sciences, and health relevant for your students, what better way than to apply it to something that's part of their everyday lives? Food gives you an ideal springboard for introducing the science that is at the heart of nutrition and exploring the impact that daily food and beverage choices can have on overall health.

***Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices*** includes timely food science information to help you explore the impact of food choices on health.

You'll find in-depth information and activities covering these important topics:

- Calories and serving size: what they are and why they matter/ the buzz behind a nutrient-dense daily diet
- An inside look at sugars
- Sodium and its impact on health
- Meal planning: adding up what's on your plate

# WHY USING THE NUTRITION FACTS LABEL MATTERS

Good nutrition in childhood and adolescence sets the stage for better health. Nutrition plays a vital role throughout the lifespan. Today, too many children are consuming diets with too many calories and not enough nutrients, and are not getting enough physical activity.

### FDA and the Nutrition Facts Label

*Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices* incorporates key elements of FDA's **Read the Label program**, a public education campaign designed to help tweens (children ages 9–13) understand nutrient information on food and beverage packages, and then use that information to make healthy dietary choices. The Centers for Disease Control and Prevention (CDC) stresses that schools play a particularly critical role by providing opportunities for students to learn about and practice healthy eating and physical activity behaviors. Making the Nutrition Facts Label an integral part of daily behaviors today and in the future can "move the needle" in equipping youth for a lifetime of making healthy food choices.

**Middle school** is an ideal time to incorporate nutrition concepts as a part of your curriculum, using nutrition as a springboard to important science, family and consumer science, and health-related topics. Young people at this age are in a transition phase, becoming more responsible for themselves and making many of their own food choices. Helping them to **establish good habits** as they are learning to make these decisions can have a tremendous long-term impact!

The **Nutrition Facts Label** is an accessible tool with nutrient information to help make healthy food choices once you know how to use it properly. It can serve as a key contributor to healthy decision-making — and the earlier one starts using it, the better! Good nutrition not only aids in general well-being, but also can help prevent or manage chronic diseases later in life.

# HIGHLIGHTS OF YOUR TEACHER'S GUIDE

## What's Inside . . .

**Background Information** begins each module/activity with an introduction to key concepts and health context for that module.

**Activities** use the Nutrition Facts Label and get students engaged with hands-on exploration.

**Student Worksheets** are reproducible handouts for students to record their nutrient data.

**Resources** list online references and materials supporting each activity. In addition to these resources, check out **www.fda.gov/teachsciencewithfood** for more online resources.

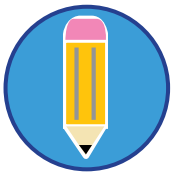
## Connections to Curriculum Standards and the Common Core

During the production of this curriculum, developers and education reviewers recognized the need to connect this program to curriculum standards and the Common Core, which provide the guidance for many state and local education frameworks regarding the content that should be taught at particular levels, and what students at each level should be able to do and to understand. See pages 37–38.

You should carefully examine local and state frameworks and curriculum guides to determine the best method of integrating *Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices* into the program(s) of your school. Appropriate placement within the scope and sequence context of a school's curriculum will optimize the interdisciplinary connections and enhance the ability of a student to learn key concepts related to healthy eating.

## Watch for the following icons . . .

**Background Info**
*Indicates nutrition background information*

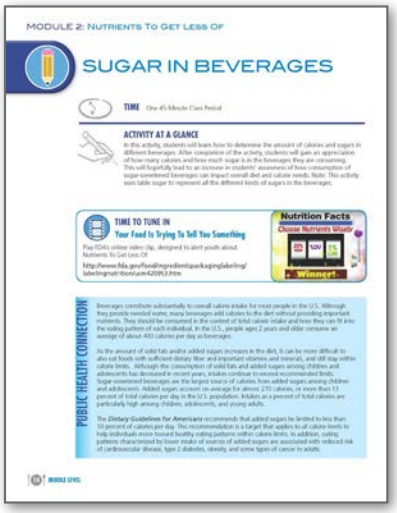


**Activity**
*Indicates an activity*

**Video**
*Show or review a video clip*

# OVERVIEW OF ACTIVITIES

The activities are written in this easy-to-understand format.


MODULE 2: NUTRIENTS TO GET LESS OF

SUGAR IN BEVERAGES

TIME

ACTIVITY AT A GLANCE

TIME TO TUNE IN

Your Food Is Trying To Tell You Something

Nutrition Facts

Choose Nutrients Wisely

Winner!

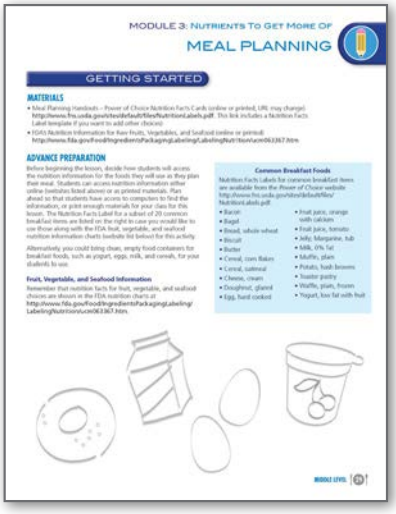
PUBLIC HEALTH CONNECTION

**TIME:** The approximate amount of time needed to perform the activity.

**ACTIVITY AT A GLANCE:** Briefly summarizes the activity.

**TIME TO TUNE IN:** Shows the URL for an optional, online video (for youth) related to that module.

**PUBLIC HEALTH CONNECTION:** Relates background information to public health impact.


MODULE 3: NUTRIENTS TO GET MORE OF

MEAL PLANNING

GETTING STARTED

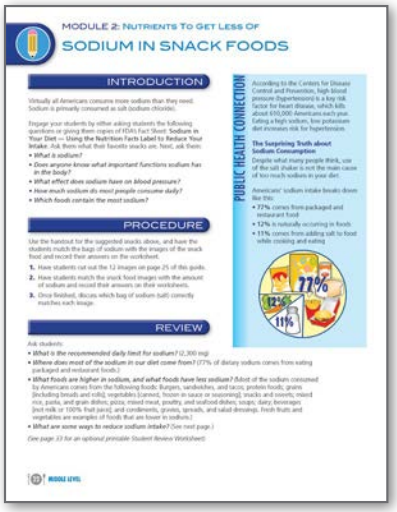
MATERIALS

ADVANCE PREPARATION

Common Breakfast Foods

**MATERIALS:** Includes the items needed to perform the activity.

**ADVANCE PREPARATION:** Indicates what you need to do before conducting the activity.


MODULE 2: NUTRIENTS TO GET LESS OF

SODIUM IN SNACK FOODS

INTRODUCTION

PROCEDURE

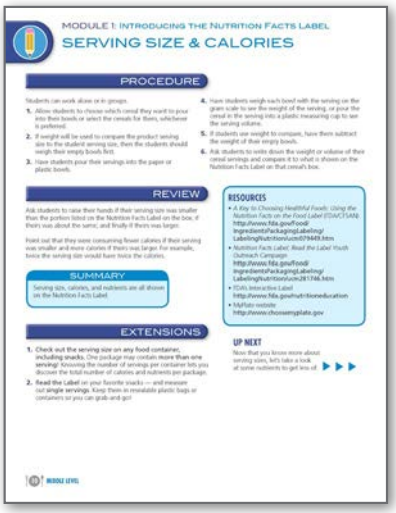
REVIEW

PUBLIC HEALTH CONNECTION

**INTRODUCTION:** Provides fun, innovative suggestions for introducing the activity. Where provided, suggested teacher dialogue is indicated by ***boldface italics***.

**PROCEDURE:** Gives the step-by-step process for the activity. Where provided, suggested teacher dialogue is indicated by ***boldface italics***. (Answers to questions are listed in parentheses.)

**REVIEW:** Uses interesting questions to guide students through a review of what they learned in the activity.


MODULE 1: INTRODUCING THE NUTRITION FACTS LABEL

SERVING SIZE & CALORIES

PROCEDURE

REVIEW

SUMMARY

RESOURCES

EXTENSIONS

UP NEXT

**SUMMARY:** Summarizes key concepts learned in the activity.

**EXTENSIONS:** Suggests activities to help students learn more about the topic.

**RESOURCES:** Provides references to online resources for the activity or for further study.

**UP NEXT:** Gives a preview of the next activity.

# MODULE 1 INTRODUCING THE NUTRITION FACTS LABEL

**This module introduces what nutrients are and how they are shown on the Nutrition Facts Label.**

## BACKGROUND INFORMATION

This section introduces Nutrients, Calories, and the concept of Nutrient-Dense Foods. It also highlights the information that is found on the Nutrition Facts Label.

## ACTIVITY

Serving Size and Calories introduces the concept of comparing Serving Size on the Nutrition Facts Label to actual servings that are being consumed.

Time to Tune In
The online video clip introduces the information found on the **Nutrition Facts Label**.

http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm426680.htm

At a minimum, the Nutrition Facts Label must list:

- total fat
- saturated fat
- *trans* fat
- cholesterol
- sodium
- total carbohydrate
- dietary fiber
- sugars
- protein
- vitamin A
- vitamin C
- calcium
- iron

The Nutrition Facts Label may also list:

- monounsaturated fat
- polyunsaturated fat
- soluble fiber
- insoluble fiber
- sugar alcohol
- other carbohydrate
- vitamins (such as biotin, folate, niacin, riboflavin, pantothenic acid, thiamin, vitamin B6, vitamin B12, vitamin D, vitamin E, and vitamin K)
- minerals (such as chromium, copper, iodine, magnesium, manganese, molybdenum, phosphorus, potassium, selenium, and zinc)

# BACKGROUND INFORMATION

## What is a Nutrient?

- A nutrient is a substance in food that contributes to growth and health. Nutrients provide energy, cell-building and structural materials, and agents that regulate body chemistry.
- Nutrients include proteins, fats, carbohydrates, vitamins, minerals, and water. Examples of nutrients that are important for growing bodies are protein and calcium.

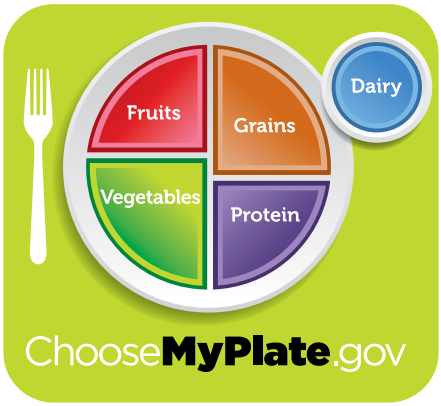
## What are Calories?

- Calories give your body energy to survive and thrive. Calories refer to the "energy" supplied from all food sources (fat, carbohydrate, and protein).
- 1,400 to 2,000 calories a day is used for general nutrition advice for children ages 9 to 13 years, but calorie needs vary. In fact, your calorie needs may be higher or lower and will depend on your age, gender, height, weight, and physical activity level.
- Calories with little or no beneficial nutrients are sometimes referred to as "empty calories." Most empty calories come from added solid fats, added sugars, and refined starches.

## Nutrient-Dense Foods

To get the nutrients you need within the right amount of calories, it's best to choose "Nutrient-Dense" foods.


- Unlike foods with "empty calories," nutrient-dense foods and beverages contain vitamins, minerals, dietary fiber, and other naturally occurring substances that may have positive health effects, while contributing relatively few calories.
- Nutrient-dense foods and beverages are lean or low in solid fats, and exclude added solid fats, sugars, refined starches, and sodium. Ideally, they are also in forms that retain naturally occurring components, such as dietary fiber.
- Fruits, vegetables, whole grains, seafood, eggs, beans and peas, unsalted nuts and seeds, fat-free and low-fat milk and milk products, and lean meats and poultry (when prepared without solid fats or added sugars) are **nutrient-dense foods**.




Visit **http://www.choosemyplate.gov** to determine your personal daily calorie needs.

# BACKGROUND INFORMATION

## Nutrition Primer: What's on the Label?

### Serving Size

**Serving Size** is based on the amount of food that is customarily eaten at one time. All of the nutrition information listed on a food's Nutrition Facts Label is based on one serving of that food.

The serving size is shown as a common household measure that is appropriate to the food (such as cup, tablespoon, piece, slice, or jar), followed by the metric amount in grams (g).

When you compare calories and nutrients between different foods, don't forget to check the serving size in order to make an accurate comparison.

### Servings Per Container

**Servings Per Container** shows the total number of servings in the entire food package or container. Often, one package of food may contain more than one serving!

The information listed on the Nutrition Facts Label is based on **one** serving. So, if a package contains **two servings** and you eat the entire package, you have consumed **twice** the amount of *calories* and *nutrients* listed on the label.

### Calories

**Calories** refers to the total number of calories or "energy" supplied from all sources (fat, carbohydrate, and protein) in one serving of the food.

### Calories from Fat

These are not additional calories; rather, they are the calories in each serving that come from fat.

Remember that fat-free doesn't mean calorie-free. Lower fat items may have as many calories as full-fat versions due to their sugar content.

### Nutrients

The Nutrition Facts Label can help you learn about the nutrient content of many foods in your diet. It also enables you to compare foods to make healthy choices.

### Percent Daily Value (%DV)

The **Percent Daily Value (%DV)** tells you how much of a nutrient is in one serving of that food. The %DVs are based on the Daily Values which are the amounts of key nutrients generally recommended per day for people 4 years of age and older.

You can use the %DV to compare food products and to choose products that are higher in nutrients you want to get more of (like dietary fiber and calcium) and lower in nutrients you want to get less of (like saturated fat and sodium). The %DV column doesn't add up vertically to 100%; instead, the % Daily Value represents the percentage of the Daily Value for each nutrient in one serving of the food. As a general rule:

- **5% DV** or less of a nutrient per serving is **low**.
- **20% DV** or more of a nutrient per serving is **high**.

**Nutrients to get less of** (get less than 100% DV each day):

- saturated fat
- *trans* fat
- cholesterol
- sodium
- sugars

(Note: *trans* fat and sugars have no %DV, so use the grams to compare)

**Nutrients to get more of** (get 100% DV on most days):

- dietary fiber
- vitamin A
- vitamin C
- vitamin D
- calcium
- potassium
- iron

(The * is a reminder that the %DVs are based on a 2,000-calorie diet. You may need more or less, but the %DV is still a helpful gauge.)

### Ingredient List

The Ingredient List shows each ingredient in a food by its common or usual name in descending order by weight. The Ingredient List is usually located near the name of the food's manufacturer and often below the Nutrition Facts Label.

**Turn the page for a Nutrition Facts Label handout!**

# WHAT DOES THE NUTRITION FACTS LABEL SHOW?

## Nutrition Facts

Serving Size 1 package (272g)
Servings Per Container 1

**Amount Per Serving**

**Calories** 300 Calories from Fat 45

| | % Daily Value* |
|---|---|
| **Total Fat** 5g | **8%** |
| Saturated Fat 1.5g | **8%** |
| *Trans* Fat 0g | |
| **Cholesterol** 30mg | **10%** |
| **Sodium** 430mg | **18%** |
| **Total Carbohydrate** 55g | **18%** |
| Dietary Fiber 6g | **24%** |
| Sugars 23g | |
| **Protein** 14g | |
| Vitamin A | 80% |
| Vitamin C | 35% |
| Calcium | 6% |
| Iron | 15% |

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

| | Calories: | 2,000 | 2,500 |
|---|---|---|---|
| Total Fat | Less than | 65g | 80g |
| Saturated Fat | Less than | 20g | 25g |
| Cholesterol | Less than | 300mg | 300mg |
| Sodium | Less than | 2,400mg | 2,400mg |
| Total Carbohydrate | | 300g | 375g |
| Dietary Fiber | | 25g | 30g |

### Serving Size

Serving size is based on the amount of food that is customarily eaten at one time. All of the nutrition information on the label is based on one serving of that food.

Check to see if the serving size is the same when comparing calories and nutrients in different foods.

### Servings Per Container

Servings Per Container shows the total number of servings in the entire food package or container. Often, one package of food may contain more than one serving!

The information listed on the Nutrition Facts Label is based on **one** serving. So, if a package contains **two servings** and you eat the entire package, you have consumed **twice** the amount of *calories* and *nutrients* listed on the label.

### Calories

Balance the number of calories you consume with the number of calories your body uses to achieve or maintain a healthy weight.

The amount of calories in each serving is listed on the left side.

When comparing foods, remember:
- 100 calories per serving is MODERATE
- 400 calories per serving is HIGH

### Calories from Fat

These are not additional calories; rather, they are the calories in each serving that come from fat.

Remember that fat-free doesn't mean calorie-free. Lower fat items may have as many calories as full-fat versions due to their sugar content.

### Nutrients To Get Less Of

Saturated fat, *trans* fat, cholesterol, sodium, and sugars are nutrients to get less of.

Aim for less than 100% DV of these nutrients each day (Note: *trans* fat and sugars have no %DV, so use grams to compare).

### Nutrients To Get More Of

Americans often don't get enough dietary fiber, vitamin A, vitamin C, calcium, and iron in their diets.

Aim for 100% DV of these nutrients on most days.

### Percent Daily Value (%DV)

The Percent Daily Value (% Daily Value) tells you how much of a nutrient is in one serving of a food. The %DVs are based on the Daily Values which are the amounts of key nutrients generally recommended per day for people 4 years of age and older.

When comparing nutrients in foods, remember:
- 5% Daily Value or less of a nutrient per serving is low
- 20% Daily Value or more of a nutrient per serving is high.

### Footnote with Daily Values

The %DVs are based on a 2,000-calorie diet. However, your Daily Values may be higher or lower depending on your calorie needs, which vary according to age, gender, height, weight, and physical activity level. Check your calorie needs at **http:/www.choosemyplate.gov**.

Learn more at: **http://www.fda.gov/nutritioneducation**

# SERVING SIZE & CALORIES

**TIME** One 45-Minute Class Period

## ACTIVITY AT A GLANCE

In this activity, students will measure out what they think is a serving size of breakfast cereal and compare it to the amount listed on the Nutrition Facts Label to determine how their serving compares to what is on the Label, and to compare the corresponding number of calories. After completion of the activity, students will better understand what is meant by "serving size" on the food label and gain an appreciation of how many calories each contains.

### TIME TO TUNE IN

**Nutrition Facts Label Online Video Clip**

Show the *Read the Label Youth Outreach Campaign* short video to introduce the Nutrition Facts Label

http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm426680.htm


## GETTING STARTED

### MATERIALS

*For the class*

- Breakfast cereal in boxes/containers
- Paper or plastic bowls to hold cereal
- Gram scales and/or plastic measuring cups to measure and compare mass and/or volume

### ADVANCE PREPARATION

Collect breakfast cereal in containers/boxes for the activity. There is a wide variety of choices on the market. Feel free to use as many or as few for this activity as you would like.

## INTRODUCTION

Engage the students by asking them to raise their hands if they typically eat breakfast cereal. Ask them how many servings they think they consume at one meal. Tell the students that the class is going to see how their serving sizes compare to what's on the Nutrition Facts Label.

# SERVING SIZE & CALORIES

## PROCEDURE

Students can work alone or in groups.

1. Allow students to choose which cereal they want to pour into their bowls or select the cereals for them, whichever is preferred.
2. If weight will be used to compare the product serving size to the student serving size, then the students should weigh their empty bowls first.
3. Have students pour their servings into the paper or plastic bowls.
4. Have students weigh each bowl with the serving on the gram scale to see the weight of the serving, or pour the cereal in the serving into a plastic measuring cup to see the serving volume.
5. If students use weight to compare, have them subtract the weight of their empty bowls.
6. Ask students to write down the weight or volume of their cereal servings and compare it to what is shown on the Nutrition Facts Label on that cereal's box.

## REVIEW

Ask students to raise their hands if their serving size was smaller than the portion listed on the Nutrition Facts Label on the box; if theirs was about the same; and finally if theirs was larger.

Point out that they were consuming fewer calories if their serving was smaller and more calories if theirs was larger. For example, twice the serving size would have twice the calories.

### SUMMARY

Serving size, calories, and nutrients are all shown on the Nutrition Facts Label.

## EXTENSIONS

1. **Check out the serving size on any food container, including snacks.** One package may contain **more than one serving**! Knowing the number of servings per container lets you discover the total number of calories and nutrients per package.
2. **Read the Label** on your favorite snacks — and measure out **single servings**. Keep them in resealable plastic bags or containers so you can grab-and-go!

### RESOURCES

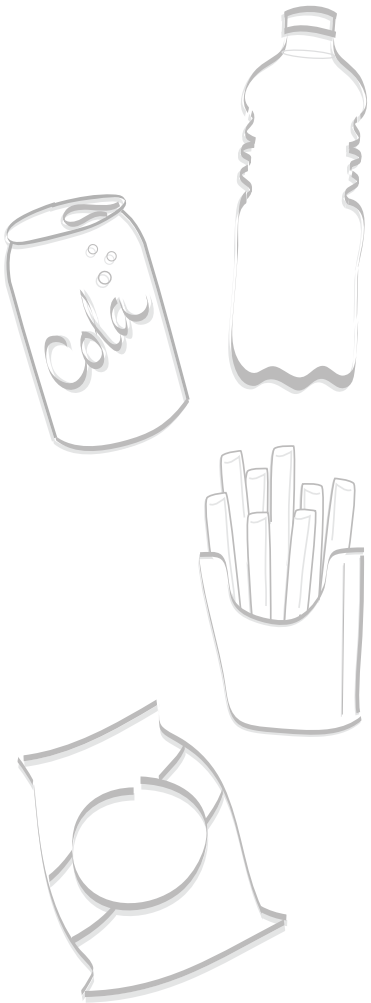
- *A Key to Choosing Healthful Foods: Using the Nutrition Facts on the Food Label* (FDA/CFSAN)
  **http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm079449.htm**
- *Nutrition Facts Label: Read the Label Youth Outreach Campaign*
  **http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm281746.htm**
- FDA's Interactive Label
  **http://www.fda.gov/nutritioneducation**
- MyPlate website
  **http://www.choosemyplate.gov**

### UP NEXT

Now that you know more about serving sizes, let's take a look at some nutrients to get less of. ▶ ▶ ▶

# MODULE 2 NUTRIENTS TO GET LESS OF

**This module introduces nutrients to get less of, some foods and beverages that may contain nutrients to limit, and how to use the Nutrition Facts Label to identify them.**




## BACKGROUND INFORMATION: PART 1

**Understanding Carbohydrates** introduces these nutrients with a special focus on Sugars.

## ACTIVITY

Sugar in Beverages challenges students to examine the sugar content in a variety of familiar drinks.

Time to Tune In
FDA online video clip (for youth) about **Nutrients To Get Less Of**

http://www.fda.gov/food/ingredientspackaging labeling/labelingnutrition/ucm420953.htm

## BACKGROUND INFORMATION: PART 2

**All About Sodium** discusses what sodium is, where it is found, and how to reduce its intake.

## ACTIVITY

Sodium in Snack Foods uses some favorite snack foods as a springboard to examine sodium content.

**Remember the list of Nutrients to Get Less Of.**

Get less than 100% DV of these each day:

- Saturated Fat
- Cholesterol
- Sodium

**Note:** Sugars and *Trans* Fat are nutrients to limit, but they have no %DV. So, use grams to compare the amount of sugars and *trans* fat in foods.

Nutrients to get less of are not intended to be reduced in isolation, but as a part of a healthy eating pattern with a variety of foods and beverages within calorie needs.

# BACKGROUND INFORMATION

## PART 1

## Understanding Carbohydrates

**Carbohydrates** include sugars, starches, and fibers. The recommended daily value for all carbohydrates is 300 grams (based on a 2,000 calorie daily diet). Although most people consume enough carbohydrates, many people consume too much added sugar and refined starches and not enough fiber.

### About Sugars

Sugars are the smallest and simplest type of carbohydrate. They are easily digested and absorbed by the body. There are two types of sugars, and most foods contain some of each kind.

Single sugars (**monosaccharides**) are small enough to be absorbed directly into the bloodstream. They include:

- Fructose
- Glucose
- Galactose

Sugars that contain two molecules of sugar linked together (**disaccharides**) are broken down in your body into single sugars. They include:

- Sucrose (table sugar) = glucose + fructose
- Lactose (milk sugar) = glucose + galactose
- Maltose (malt sugar) = glucose + glucose

### About Starches

Starches are made up of many glucose units linked together into long chains. Starches are found naturally in foods such as vegetables (e.g., potatoes, carrots), grains (e.g., brown rice, oats, wheat, barley, corn), and beans and peas (e.g., kidney beans, garbanzo beans, lentils, split peas). Refined starches (e.g., corn starch) can be added to foods during processing or cooking as thickeners and stabilizers.

### About Fiber

Fiber, or dietary fiber, is a type of carbohydrate found in plant foods and is made up of many sugar molecules linked together. But unlike other carbohydrates (such as starch), dietary fiber is bound together in such a way that it cannot be readily digested in the small intestine. Dietary fiber is found in bran, whole grain foods (such as whole grain breads, cereals, pasta, and brown rice), fruits, vegetables, beans and peas, and nuts and seeds.

**TIPS** Ingredients are listed in descending order by weight – the closer they are to the beginning of the list, the more of that ingredient is in the food.

# BACKGROUND INFORMATION

## Sugars: A Closer Look

### Where are they found?

Sugars are found naturally in many nutritious foods and beverages. They are also added to foods and beverages during processing and preparation, or are consumed separately.

Naturally occurring sugars are found in a variety of foods, including:

- Fruits (fresh, frozen, dried or canned in 100% fruit juices)
- 100% fruit juices
- Dairy products
- Vegetables

Added sugars are often found in foods with little nutritional benefit, including:

- Baked goods, such as cakes, cookies, pies, doughnuts, sweet rolls, and pastries
- Candy
- Dairy desserts, such as ice cream, other frozen desserts, and puddings
- Sugar-sweetened beverages, such as soft drinks, fruit drinks, sweetened coffee and tea, energy drinks, alcoholic beverages, and flavored
- Sugars, jams, syrups, and sweet toppings

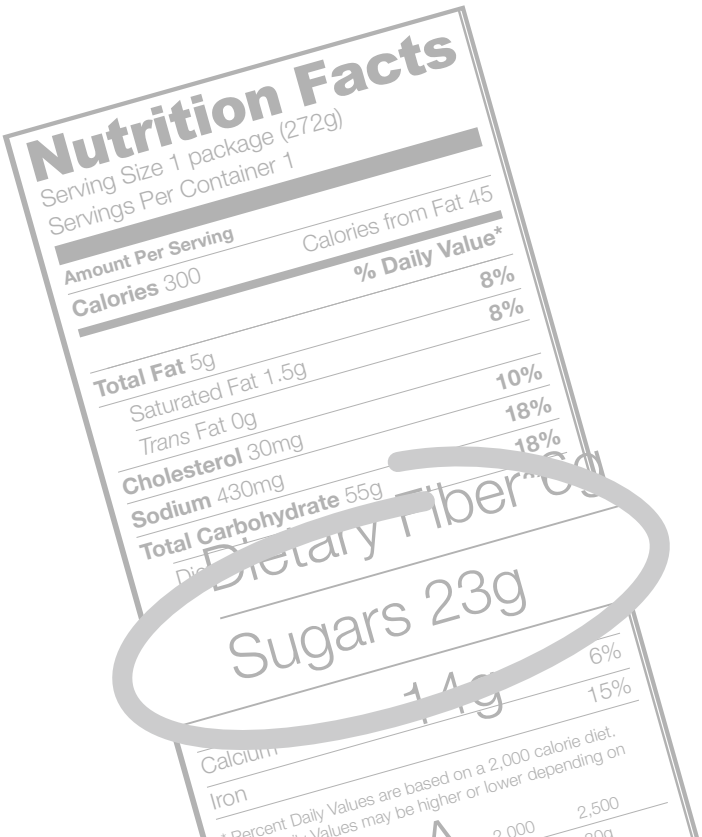
### What Sugars Do

Sugars provide calories and supply energy for the body. Each gram of sugar provides 4 calories. Your body breaks down sugars into glucose. Glucose in the blood (often referred to as blood sugar) is the primary energy source for your cells, tissues, and organs. Your body can use this glucose immediately, or it can store small amounts in your liver and muscles to use when needed later.

Sugars (both naturally occurring and those added to foods and beverages) increase the risk of cavities (also known as "dental caries"). In addition, consuming high levels of added sugar from products such as packaged foods and beverages can contribute to excess calories with little nutritional benefit.

### Identifying Added Sugars

The amount of sugars listed on the Nutrition Facts Label includes those that occur naturally in the food or beverage as well as any added sugars. Added sugars are used to sweeten, preserve, or improve the functional attributes of food, such as such as viscosity, texture, body, color, and browning capability. Added sugars are included on the ingredient list on food and beverage packages. Some examples are: brown sugar, corn sweetener, corn syrup, dextrose, fructose sweetener, fruit juice concentrates, glucose, high fructose corn syrup, honey, invert sugar, lactose, maltose, malt syrup, maple syrup, molasses, pancake syrup, raw sugar, sucrose, trehalose, and turbinado sugar.




# SUGAR IN BEVERAGES

**TIME** One 45-Minute Class Period

## ACTIVITY AT A GLANCE

In this activity, students will learn how to determine the amount of calories and sugars in different beverages. After completion of the activity, students will gain an appreciation of how many calories and how much sugar is in the beverages they are consuming. This will hopefully lead to an increase in students' awareness of how consumption of sugar-sweetened beverages can impact overall diet and calorie needs. Note: This activity uses table sugar to represent all the different kinds of sugars in the beverages.

## TIME TO TUNE IN

### Your Food Is Trying To Tell You Something

Play FDA's online video clip, designed to alert youth about Nutrients To Get Less Of.

http://www.fda.gov/food/ingredientspackaginglabeling/labelingnutrition/ucm420953.htm


## PUBLIC HEALTH CONNECTION

Beverages contribute substantially to overall calorie intake for most people in the U.S. Although they provide needed water, many beverages add calories to the diet without providing important nutrients. They should be consumed in the context of total calorie intake and how they can fit into the eating pattern of each individual. In the U.S., people ages 2 years and older consume an average of about 400 calories per day as beverages.

As the amount of solid fats and/or added sugars increases in the diet, it can be more difficult to also eat foods with sufficient dietary fiber and important vitamins and minerals, and still stay within calorie limits. Although the consumption of solid fats and added sugars among children and adolescents has decreased in recent years, intakes continue to exceed recommended limits. Sugar-sweetened beverages are the largest source of calories from added sugars among children and adolescents. Added sugars account on average for almost 270 calories, or more than 13 percent of total calories per day in the U.S. population. Intakes as a percent of total calories are particularly high among children, adolescents, and young adults.

The *Dietary Guidelines for Americans* recommends that added sugars be limited to less than 10 percent of calories per day. This recommendation is a target that applies to all calorie levels to help individuals move toward healthy eating patterns within calorie limits. In addition, eating patterns characterized by lower intake of sources of added sugars are associated with reduced risk of cardiovascular disease, type 2 diabetes, obesity, and some types of cancer in adults.

# SUGAR IN BEVERAGES

## GETTING STARTED

### MATERIALS

*For the class*

- Beverages or beverage containers (see list below). You can also use images or photos of individual beverages with their Nutrition Facts Labels.
- Resealable plastic bags containing sugar
- Handouts (one for each student)

**TIP** Depending on the size of the class, you can do this activity as a demonstration, as a whole group, or split the class into groups and give each group their own set of materials.

### ADVANCE PREPARATION

Gather beverages or beverage containers for the activity. There is a wide variety of sugar-sweetened beverages on the market. Feel free to use as many or as few for this activity as you would like, **but always include one sample of water and one sample of diet soda, each with 0 grams of sugar**.

Some suggested beverages to include are:

- Bottle of water
- Can of regular soda
- 20 fl. oz. bottle of regular soda
- Oversized container of soda
- 20 fl. oz. bottle of diet soda
- Coffee drink (frothed and iced, with added sugar and cream). (Note: These beverages can be purchased in bottles at most grocery and convenience stores)
- Various juices (mixed vegetable juices, green juices, citrus juices) (hint: grape juice has one of the highest sugar contents of all juices)
- Energy drink
- Lemonade or iced tea drink
- Sports drink
- Chocolate-sweetened milk beverage
- Yogurt smoothie
- Milkshake

Create resealable plastic bags with corresponding amounts of sugar. For each beverage, measure sugar into a bag to represent the exact amount of sugar in the **entire beverage container** according to the Nutrition Facts Label. (Note: The container may contain more than one serving.)

To determine the number of teaspoons of sugar in each beverage:

1. Find the amount of sugars on the Nutrition Facts Label. Determine the number of servings in 1 container of the product. Multiply the number of grams of sugars times the number of servings in each container to get the total amount of sugars per container.
2. There are 4.2 grams of sugar in 1 teaspoon. Divide the grams of sugar calculated in step 1 above label by 4.2 to determine the number of teaspoons of sugar in the beverage container.
3. If you have a gram scale, you can weigh out precisely the number of grams of sugar (same as the grams of carbohydrates for most products), and place the sugar in separate resealable plastic bags. If you do not have a scale that is capable of measuring gram weights, use the answer you received from the calculation in #2 to measure out the number of teaspoons of sugar in each beverage with a household teaspoon measure and place in separate resealable plastic bags.
4. Label each bag of sugar with a letter that corresponds with a numbered beverage container. Label each beverage container with a number that corresponds to each lettered bag of sugar.
5. Create a handout that students can use to match the lettered bags of sugar with the corresponding numbered beverage containers, or use the handout provided on page 18 of this guide. Make one copy for each student.

# SUGAR IN BEVERAGES

## INTRODUCTION

Engage the students by asking them to name their favorite drink. Record the list on the board. Go back through the list and ask students if they consider each beverage to be high in sugar. Add student responses to the list on the board.

Continue the discussion by asking students:

- *How much energy (calories) do carbohydrates supply?*
- *What are the different kinds of carbohydrates?*
- *Which carbohydrates are more nutrient-dense?*
- *What do you think is the recommended daily value for all carbohydrates?*
- *How much sugar would you expect to find in a can of soda, an energy drink, etc.?*
- *How many grams of sugar do you think are in this bag?* (Hold up one bag.)

## DID YOU KNOW?

**Insider Facts for Discussion**

- Beverages such as lemonade and sports drinks usually have less sugar when compared to the same quantity of regular soda.
- Larger amounts of the same sweetened beverage have more calories, so if you want to consume a particular sweetened beverage, consider selecting a smaller container.
- Even though juices contain some nutrients, they also contain a lot of sugar. Juices (even 100% juices) consumed in large amounts can contribute just as many calories to your diet as other sweetened beverages.
- Sweetened beverages like soda typically contain little or no nutrients.

## PROCEDURE

Arrange the beverages and the bags of sugar so that students can circulate around them.

1. Have the students look at each beverage container and use their handouts to record which bag of sugar they believe goes with each beverage container.
2. Once finished, discuss which bag of sugar correctly matches each container.
3. Ask for volunteers to read the amount of sugar on the Nutrition Facts Label on each of the beverages. Have the class calculate the number of teaspoons of sugar in each of the products.

# SUGAR IN BEVERAGES

## REVIEW

Ask students:

- *How much energy (calories) do carbohydrates supply?* (4 calories per gram)
- *What are the different kinds of carbohydrates?* (starches, sugars, and fiber)
- *Which carbohydrates are more nutrient-dense?* (starches and fiber)
- *What is the daily value for all carbohydrates based on a 2,000-calorie diet?* (300 grams. However, for a 2,500-calorie diet, the daily value for all carbohydrates is 375 grams. This is shown in the footnote table on the bottom of the Nutrition Facts Label.)
- *How does the sugar in beverages affect your body and overall health?* (Consuming more calories than one burns leads to weight gain.)
- Remind students: Sodium, saturated fat, and added sugars are not intended to be reduced in isolation, but as a part of a healthy dietary pattern that is balanced, as appropriate, in calories.

Continue the discussion by asking:

- *Which drinks have the most sugar? Which have the least sugar?*
- *Were you surprised by any of the findings?*
- *What changes could you make in your choices of beverages?*
- *Why is it important to read the labels of the foods and beverages you consume?*
- *What are some ways to reduce sugar intake?*
  - Choose foods that are more nutrient-dense. Nutrient-dense foods include fruits, vegetables, dairy products, lean meats and poultry, seafood, eggs, unsalted nuts and seeds, and whole grains.
  - Look for added sugars on the ingredient list on a food package. Limit foods that are high in added sugar, and if you do eat them, consume smaller portions. These foods, such as grain-based and dairy desserts and sweet snacks, tend to be higher in calories and low in valuable nutrients.
  - Choose whole fruit (fresh, frozen, dried, or canned in 100% fruit juice) as snacks, salads, or desserts.
  - Try unsweetened or no-sugar added versions of fruit sauces (e.g., applesauce) and yogurt.
  - Instead of sugars, syrups, and other sweet toppings, use fruit to top foods such as cereal and pancakes.
  - Whenever possible, choose water, fat-free (skim) milk or low-fat (1%) milk, 100% fruit juice, or unsweetened tea or coffee instead of sugar-sweetened beverages.
  - Limit the amount of sugar you add to foods when cooking, baking, or at the table.

*(See page 33 for an optional printable Student Review Worksheet)*

## EXTENSIONS

1. Keep a **beverage diary.**
2. Have students create **posters** to advertise healthy beverage choices.
3. Review **advertisements and packaging** for beverages; identify marketing strategies and their influences on our choices.
4. **Measure sugar** in beverages not included in the activity. For example: Beverages that kids are curious about, regional or cultural favorites (such as "sweet tea"), or the beverages that are most popular among students.
5. Incorporate math into the activity for exploration of additional nutrients (beyond just sugar)
   - Identify other nutrients in the beverages and calculate the percent of daily recommended intake of these nutrients.
   - Foster the discussion: Many students have something to drink in place of other snacks, and even a meal in some cases. Ask your students if they drink anything that is more nutrient-dense than options with "empty" calories. As an exercise, students could compare and contrast desired nutrients, such as protein, calcium, and vitamins, in beverages with varying nutrient density.

## SUMMARY

Choosing beverages carefully is just as important as choosing foods wisely. Many beverages contain added sugars. Use the Nutrition Facts Label to help you determine how much sugar a beverage contains and to help you make better beverage choices.

## UP NEXT

Now that you know about beverages that contain surprisingly large amounts of sugar, let's take a look at everyday snacks and the amount of sodium they really contain.

# STUDENT WORKSHEET

## HOW MUCH SUGAR IS IN YOUR DRINK?

Name _____ Date _____ Class/Hour _____

Do your best to match the letter on each bag of sugar with the number on each beverage with the same amount of sugar. Keep in mind that two of the beverages contain the same amount of sugar.

| Beverage | Sugar |
|---|---|
| 1. _____ ☐ | A _____ grams |
| 2. _____ ☐ | B _____ grams |
| 3. _____ ☐ | C _____ grams |
| 4. _____ ☐ | D _____ grams |
| 5. _____ ☐ | E _____ grams |
| 6. _____ ☐ | F _____ grams |
| 7. _____ ☐ | G _____ grams |
| 8. _____ ☐ | H _____ grams |
| 9. _____ ☐ | I _____ grams |
| 10. _____ ☐ | J _____ grams |
| 11. _____ ☐ | K _____ grams |
| 12. _____ ☐ | L _____ grams |

# BACKGROUND INFORMATION

## PART 2

## All About Sodium

Sodium is an essential nutrient and is needed by the human body in relatively small amounts (provided that substantial sweating does not occur). Sodium maintains a balance of body fluids, keeps muscles and nerves running smoothly, and helps certain organs work properly.

As a food ingredient, sodium has multiple uses, such as for curing meat, baking, thickening, retaining moisture, enhancing flavor (including the flavor of other ingredients, like making sweets taste sweeter), and as a preservative.

**Salt and Sodium Defined**

The words "salt" and "sodium" are often used interchangeably, but they do not mean the same thing. Salt (also known by its chemical name *sodium chloride*) is a crystal-like compound that is abundant in nature and is used to flavor and preserve food. Sodium is a mineral and one of the chemical elements found in salt.

*Most people in the U.S. eat too much salt. Salt contains sodium and too much sodium can raise blood pressure – which can have serious health consequences if not treated.*

- The daily recommended upper limit for sodium is below 2,300 mg per day.
- The average daily intake of sodium for Americans 2 years and older is about 3,440 mg.
- The amount of sodium the body needs each day is 1,500 mg.

The **Nutrition Facts Label** on food and beverage packages is a useful tool for making healthy dietary choices and monitoring how much sodium is in a food. Many restaurant websites also have nutrient information for their menu items.

FDA requires nutrition information about a food that has a nutrient claim, such as "low sodium." In addition, as of December 1, 2016, FDA will require certain nutrition information, including information on sodium, on standard menu items in many restaurants and similar retail food establishments.

Most of the sodium consumed by Americans comes from the following foods:

- Burgers, sandwiches, and tacos
- Protein foods
- Grains (including breads and rolls)
- Vegetables (canned, frozen in sauce or seasoning)
- Snacks and sweets
- Mixed rice, pasta, and grain dishes
- Pizza
- Mixed meat, poultry, and seafood dishes
- Soups
- Dairy
- Beverages (not milk or 100% fruit juice)
- Condiments, gravies, spreads, and salad dressings

**DID YOU KNOW?**

**Salt**

Salt is the main source of sodium for most people, but some common food additives – like monosodium glutamate (MSG), sodium bicarbonate (baking soda), sodium nitrite, and sodium benzoate – also contain sodium and contribute (in lesser amounts) to the total amount of "sodium" listed on the Nutrition Facts Label.

Surprisingly, some foods that don't taste salty can still be high in sodium, so don't use taste as a guide. For example, while some foods that are high in sodium taste salty – like pickles and soy sauce – there are also many foods, like cereals and pastries, that contain sodium but don't taste salty. In addition, some foods that you may eat several times a day, such as breads, can add up to a lot of sodium even though an individual serving may not be high in sodium.

Sodium chloride or table salt is approximately 40% sodium. Understand just how much sodium is in salt so you can take measures to control your intake.


1 teaspoon salt = 2,300 mg sodium

# BACKGROUND INFORMATION

## Check the Label!

High levels of sodium may seem "hidden" in packaged food, particularly when a food doesn't "taste" salty – but sodium is not hidden on the **Nutrition Facts Label**!

- The Nutrition Facts Label lists the Percent Daily Value **(%DV)** of sodium in **one serving** of a food.
- The %DV is based on 100% of the Daily Value for sodium, which is less than **2,400 milligrams (mg) per day**.*
- Often, one package of food may contain more than one serving. So, if a package contains two servings and you eat the entire package, you have consumed twice the amount of sodium listed on the label (in other words, you've consumed double the %DV).

Use the Percent Daily Value (%DV) to compare sodium. The %DV tells you whether a food contributes a little or a lot to your total daily diet.

- 5% DV or less of sodium per serving is low
- 20% DV or more of sodium per serving is high

*The %DV for sodium on the current Nutrition Facts Label is based on the daily value of 2,400 mg. However, FDA has proposed to revise the DV to 2,300 mg to align with the new dietary recommendations for sodium. FDA is currently working on a regulation to update the Nutrition Facts Label including the DVs for various nutrients such as sodium.

## Check the Package for Nutrient Claims

You can also check the food package to quickly identify foods that may contain less sodium. For example, look for foods with claims such as:

| | |
|---|---|
| Salt/Sodium-Free | Less than 5 mg of sodium per serving |
| Very Low Sodium | 35 mg of sodium or less per serving |
| Low Sodium | 140 mg of sodium or less per serving |
| Reduced Sodium | At least 25 percent less sodium than the regular product |
| Light in Sodium or Lightly Salted | At least 50 percent less sodium than the regular product |
| No-Salt-Added or Unsalted | No salt is added during processing – but beware, these products may not be salt/sodium-free unless stated |

**DID YOU KNOW?**

**POTASSIUM HELPS!**

Research shows that eating foods high in potassium can lower blood pressure by reducing the adverse effects of sodium on blood pressure. Examples of foods rich in potassium include:

- bananas
- beet greens
- juices (carrot, pomegranate, prune, orange, and tomato)
- non-fat and low-fat yogurt
- potatoes
- spinach
- sweet potatoes
- tomatoes and tomato products
- white beans

# SODIUM IN SNACK FOODS

**TIME** One 45-Minute Class Period

## ACTIVITY AT A GLANCE

In this activity, students will look at the amount of sodium in snack foods and learn about the recommended amount of sodium they should consume on a daily basis.

## GETTING STARTED

### MATERIALS

*For the class*

- Snack foods or food images (see list below)
- Resealable plastic bags with table salt
- Activity images and student worksheet on page 25 of this guide (one for each student)
- Copies of FDA's Fact Sheet: Sodium in Your Diet

**TIP** Check out *Nutrition in Action* on page 23 for Sodium and Percent Daily Value tips. It makes a great handout!

### OVERVIEW

Small bags of salt, prepared in advance, are used to represent the amount of sodium in the food. Students will look at each bag of salt and on their handout, write which bag of salt goes with which of the snack foods. You can do this activity as a whole class activity or split the class into small groups.

There is a wide variety of snack foods on the market. For this activity, you should use those foods that your students most likely eat. Some suggested snacks (shown on the handout) are:

- medium banana (7 to 7.9 inches long; approximately 118 grams)
- 12 ounce can of diet soda
- 3 ounce bag of sunflower seeds
- 1.5 ounce bag of regular potato chips
- 1 ounce bag of baked potato chips
- 1 large order of fast food fries (approximately 5.6 ounces)
- 1 ounce of pretzels (thin, classic)
- 1 smoked beef stick – approximately 1 ounce
- 1 8-ounce can of vegetable juice

### ADVANCE PREPARATION

1. You will need small, resealable plastic bags and table salt to create bags with the amount of sodium in each snack food. For this activity, bags measuring 2 inches x 2 inches could be used. (These can be found at craft stores.)

   To determine the amount of salt for each resealable bag:

   - Find the amount of sodium in one serving on the snack's Nutrition Facts Label, or from a website such as **http://ndb.nal.usda.gov/ndb/search**
   - Use a milligram scale to weigh out the amount for each bag, and write the amount on each bag.

2. Make student copies of FDA's Fact Sheet: **Sodium in Your Diet — Using the Nutrition Facts Label to Reduce Your Intake**, which can be downloaded from the following website: **http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm315393.htm**.

# SODIUM IN SNACK FOODS

## INTRODUCTION

Virtually all Americans consume more sodium than they need. Sodium is primarily consumed as salt (sodium chloride).

Engage your students by either asking students the following questions or giving them copies of FDA's Fact Sheet: **Sodium in Your Diet — Using the Nutrition Facts Label to Reduce Your Intake**. Ask them what their favorite snacks are. Next, ask them:

- *What is sodium?*
- *Does anyone know what important functions sodium has in the body?*
- *What effect does sodium have on blood pressure?*
- *How much sodium do most people consume daily?*
- *Which foods contain the most sodium?*

## PROCEDURE

Use the handout for the suggested snacks above, and have the students match the bags of sodium with the images of the snack food and record their answers on the worksheet.

1. Have students cut out the 12 images on page 25 of this guide.
2. Have students match the snack food images with the amount of sodium and record their answers on their worksheets.
3. Once finished, discuss which bag of sodium (salt) correctly matches each image.

## PUBLIC HEALTH CONNECTION

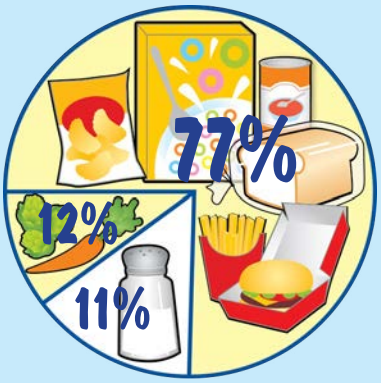
According to the Centers for Disease Control and Prevention, high blood pressure (hypertension) is a key risk factor for heart disease, which kills about 610,000 Americans each year. Eating a high sodium, low potassium diet increases risk for hypertension.

### The Surprising Truth about Sodium Consumption

Despite what many people think, use of the salt shaker is not the main cause of too much sodium in your diet.

Americans' sodium intake breaks down like this:

- **77%** comes from packaged and restaurant food
- **12%** is naturally occurring in foods
- **11%** comes from adding salt to food while cooking and eating




## REVIEW

Ask students:

- ***What is the recommended daily limit for sodium?*** (2,300 mg)
- ***Where does most of the sodium in our diet come from?*** (77% of dietary sodium comes from eating packaged and restaurant foods.)
- ***What foods are higher in sodium, and what foods have less sodium? (***Most of the sodium consumed by Americans comes from the following foods: Burgers, sandwiches, and tacos; protein foods; grains [including breads and rolls]; vegetables [canned, frozen in sauce or seasoning]; snacks and sweets; mixed rice, pasta, and grain dishes; pizza; mixed meat, poultry, and seafood dishes; soups; dairy; beverages [not milk or 100% fruit juice]; and condiments, gravies, spreads, and salad dressings. Fresh fruits and vegetables are examples of foods that are lower in sodium.)
- ***What are some ways to reduce sodium intake?*** (See next page.)

*(See page 33 for an optional printable Student Review Worksheet)*

# NUTRITION IN ACTION

## Start the Shake-Down: Easy Tips for Cutting Sodium

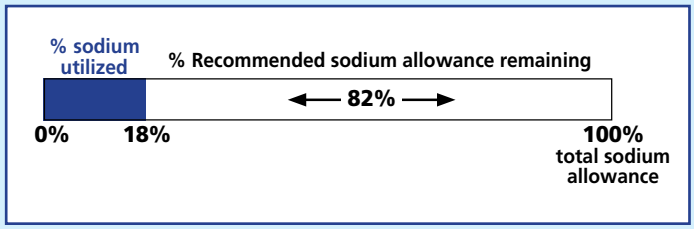
Learning about sodium in foods and exploring new ways to prepare foods will help you achieve your sodium goal. And, if you follow these tips for reducing the amount of sodium you are consuming, your "taste" for sodium will gradually decrease over time – so eventually, you may not even miss it!

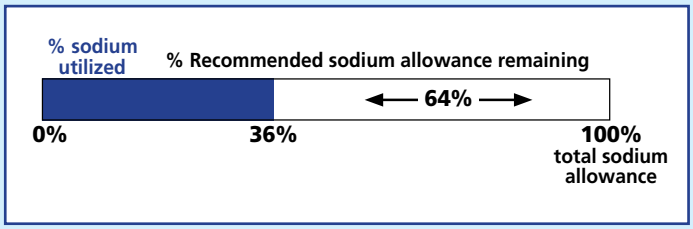
1. Read the Nutrition Facts Label to see how much sodium is in the foods you are considering. Most people should consume less than 100% of the Daily Value (or less than 2,400 mg) of sodium each day. Check the label for lower sodium choices and compare sodium in different brands of foods — like frozen meals, packaged soups, breads, dressings/sauces, and snack foods — and choose those with lower sodium.
2. Prepare your own food when you can. Limit the amount of salt you add to foods when cooking, baking, or at the table, and limit packaged sauces, mixes, and "instant" products, including flavored rice, instant noodles, and ready-made pasta.
3. Add flavor without adding sodium. Use no-salt seasoning blends and herbs and spices instead of salt to add flavor to your foods. Try rosemary, oregano, basil, curry powder, cayenne pepper, ginger, fresh garlic or garlic powder (not garlic salt), black or red pepper, vinegar or lemon juice, and no-salt seasoning blends.
4. Get fresh when you can. Buy fresh or frozen meat and poultry, rather than canned, smoked, or processed meat and poultry such as luncheon meats and sausages. Also, check the package on fresh meat and poultry to see if salt water or saline has been added.
5. Watch your veggies. Buy fresh, frozen (no sauce or seasoning), or low sodium or no-salt-added canned vegetables.
6. Give sodium the "rinse." Rinse sodium-containing canned foods, such as tuna, vegetables, and beans before eating. This removes some of the sodium.
7. "Unsalt" your snacks. Choose nuts, seeds, and snack products (such as chips and pretzels) that are marked "low sodium" or "no salt added" – or have carrot or celery sticks instead.
8. Consider your condiments. Sodium condiments can add up. Choose light or reduced sodium condiments, add oil and vinegar to salads rather than bottled dressings, and use only a small amount of seasoning from flavoring packets instead of the entire packet.
9. Make lower-sodium choices at restaurants. Ask for your meal to be prepared without salt and request that sauces and salad dressings be served "on the side," then use less of them. You can also reduce your portion size – less food means less sodium! For example, split an entrée with a dinner companion or ask the server to put half of your meal in a take out container before it comes to your table.

### Remember a Quick Guide to %DV:

- **5% DV or less per serving is low** for all nutrients, including those you want to limit (for example, saturated fat, cholesterol, and sodium), as well as those that you want to consume in greater amounts (e.g., fiber and calcium).
- **20% DV or more per serving is high** for all nutrients.

**Balancing daily needs example:** If the label shows that the sodium in one serving is 18% DV, is that amount contributing a lot or a little to your recommended daily amount for sodium of 100% DV? What if you ate the whole package (i.e., two servings)? You would then double that amount, eating 36% of your recommended daily amount for sodium. That means you still should aim to get less than 64% of your recommended sodium (100%-36%=64%) from all of the other foods you eat that day, snacks and drinks included.



# SODIUM IN SNACK FOODS

## EXTENSIONS

1. You might want your students to look at the amount of salt in their snack foods. Some chemistry background and math calculations will be needed to determine the amount of salt in the food. Your students can refer to the Periodic Table of Elements to learn that the atomic mass of sodium (Na) is 23 and of chlorine (Cl) is 35.5. The molecular mass of sodium chloride (NaCl), therefore, is 58.5. Of this total mass, 0.40 or 40% is sodium (23 divided by 58.5).

   To calculate the amount of salt in a food, divide the mg of sodium by 0.40. For example, if the food contains 55 mg of sodium, then 55mg divided by 0.40 equals 138 mg of salt. This activity requires resealable plastic bags that measure 3 inches x 3 inches (these can be found in craft stores).

2. As an alternative activity, or in coordination with the sodium activity, you could have the students look at the saturated fat (grams) and the number of calories in each of the snack foods. The students could then use these three sets of data to determine the most nutrient-dense foods (healthy snacks).

   One way the students could do this would be to rank the foods from lowest to highest in the amount of sodium; then with the number of calories; and finally, with the saturated fat. For example, students can look at one sample of vegetable juice with 70 calories, no fat, and 677 mg of sodium (28% DV). This would not be a good choice. If they were to consider a banana (with 105 calories, 1 mg of sodium, and 0 grams of saturated fat), then this would be a better choice. Use the data table on page 25 of this guide, or create your own.

## SUMMARY

Sodium is an essential nutrient, but Americans often consume too much sodium. Be mindful of salt intake to preserve a healthy heart and optimal health.

- Add foods with potassium to improve health.
- Read the Nutrition Fact Labels to determine the amount of sodium in the foods you eat.
- At the grocery store, try to find different foods with less sodium.

## RESOURCES

- Nutrition Facts: *Sodium in Your Diet — Using the Nutrition Facts Label to Reduce Your Intake (FDA/CFSAN):* http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm315393.htm

## UP NEXT

So now that you know more about nutrients to get less of, let's plan a meal – paying attention to the nutrients to get more of.

**Student Worksheet *Sodium in Snack Foods* Answer Key:**

**E** – Banana
**D** – Diet soda
**G** – Baked potato chips
**H** – Sunflower seeds
**F** – Regular potato chips
**K** – Large fries
**A** – Smoked beef stick
**C** – Pretzels
**B** – Vegetable juice
**L** – Amount of sodium your body needs
**I** – Recommended amount of sodium per day
**J** – Average American intake of sodium

1. What is sodium? ***(Sodium is a mineral and one of the chemical elements found in table salt.)***
2. How much sodium does the body need in order to function each day? ***(1,500 milligrams)***
3. What is the recommended daily limit for sodium? ***(2,300 milligrams)***
4. What is the average daily intake of sodium by Americans over 2 years old? ***(about 3,440 mg)***
5. How does a diet high in sodium contribute to heart disease? ***(It contributes to hypertension.)***
6. How can you reduce sodium in your diet? ***(See Easy Tips on page 23 of this guide.)***

| Snack Food | Calories | Sodium (Na) | Salt (NaCl) | Saturated Fat |
|---|---|---|---|---|
| Sunflower Seeds *(3-ounce bag)* | 260 | 190 mg (8% DV) | 475 mg | 2.5 g (13% DV) |
| Regular Potato Chips *(1.5-ounce bag)* | 220 | 270 mg (11% DV) | 675 mg | 1.5 g (8% DV) |
| Baked Potato Chips *(1-ounce bag)* | 120 | 135 mg (9% DV) | 338 mg | 0 g (0% DV) |
| Large Fries *(5.6 onces)* | 510 | 290 mg (12% DV) | 725 mg | 3.5 g (17% DV) |
| Pretzels (1 ounce of thin, classic) | 110 | 490 mg (19% DV) | 1225 mg | 0 g (0% DV) |

# STUDENT WORKSHEET

## SODIUM IN SNACK FOODS

Name _____ Date _____ Class/Hour _____

Do your best to match the milligrams of sodium on each bag to the picture of the snack food. Fill in the table below.

### Milligrams of Sodium

- 1 mg ☐
- 40 mg ☐
- 135 mg ☐
- 190 mg ☐
- 270 mg ☐
- 290 mg ☐
- 490 mg ☐
- 480 mg ☐
- 677 mg ☐
- 1,500 mg ☐
- Less than 2,300 mg ☐
- About 3,440 mg ☐

### Snack Food

**A**


Smoked Beef Stick
*(1 stick)*

**B**


Vegetable Juice
*(8 ounces)*

**C**


Pretzels
*(1 ounce)*

**D**


Diet Soda
*(8 ounces)*

**E**

Medium Banana
*(7 - 7.9 inches)*

**F**


Regular Potato Chips
*(1.5 ounces)*

**G**


Baked Potato Chips
*(1 ounce)*

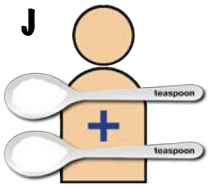
**H**


Sunflower Seeds
*(3 ounces)*

**I**

Recommended Amount Per Day

**J**

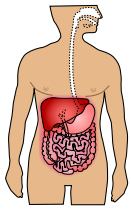



Average American intake of Sodium

**K**

Large Fries
*(5.6 ounces)*

**L**



Amount of Sodium Your Body Needs

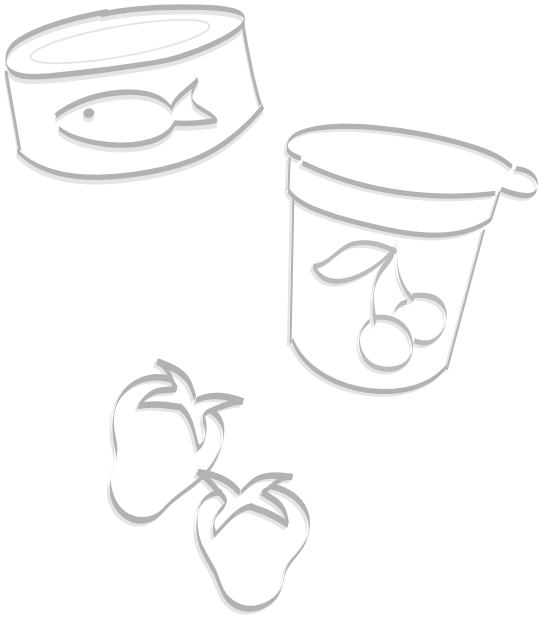
1. What is sodium? _____
2. How much sodium does the body need in order to function each day? _____
3. What is the recommended daily limit for sodium? _____
4. What is the average daily intake of sodium by Americans over 2 years old? _____
5. How does a diet high in sodium contribute to heart disease? _____
   _____
6. How can you reduce sodium in your diet? _____
   _____

### Optional Extension Activity

| Snack Food | Calories | Sodium (Na) | Salt (NaCl) | Saturated Fat |
|---|---|---|---|---|
| Sunflower Seeds (3-ounce bag) | | | | |
| Regular Potato Chips (1.5-ounce bag) | | | | |
| Baked Potato Chips (1-ounce bag) | | | | |
| Large Fries (5.6 ounces) | | | | |
| Pretzels (1 ounce of thin, classic) | | | | |

# MODULE 3 NUTRIENTS TO GET MORE OF

**This module introduces nutrients to get more of, some foods and beverages that are more nutrient-dense (good to consume), and gives students a chance to plan a meal using Nutrition Facts Labels.**



## BACKGROUND INFORMATION

This section offers helpful information for choosing nutrient-rich foods and beverages as part of a healthy overall daily diet plan.

## ACTIVITY

Meal Planning engages students in putting the Nutrition Facts Label to use by reading the label to plan a healthy breakfast.

Time to Tune In

Replay FDA's online video clip, *Your Food Is Trying To Tell You Something*.

http://www.fda.gov/food/ingredientspackaginglabeling/labelingnutrition/ucm420953.htm

**Remember the list of Nutrients to Get More Of**

Get 100% DV of these on most days:

- Calcium
- Dietary Fiber
- Iron
- Vitamins A, C, and D
- Potassium

Use the **Nutrition Facts Label** as your tool to consume a healthful, **nutrient-dense** diet. The Nutrition Facts Label tells you the Percent Daily Value (%DV) for dietary fiber, vitamin A, vitamin C, calcium, and iron. On the current Nutrition Facts Label, including potassium and Vitamin D is voluntary unless a claim is made or it is added to food.

# BACKGROUND INFORMATION

A healthy eating pattern is not a rigid prescription, but rather a range of options that can include cultural, ethnic, traditional, and personal preferences, taking into account food cost and availability. There is flexibility in making choices to create a healthy eating pattern that meets nutrient needs and stays within calorie limits.

A healthy eating pattern focuses on nutrient-dense foods. Nutrient-dense foods and beverages contain vitamins, minerals, dietary fiber, and other naturally occurring substances that may have positive health effects, while contributing relatively few calories.

### Strategy for a Nutrient-Dense Diet

To achieve a nutrient-dense diet, eat a variety of foods and beverages within calorie needs, including:

- fruits and vegetables
- whole grains
- fat-free or low-fat dairy products
- lean meats and poultry
- eggs
- seafood
- beans and peas
- soy products
- unsalted nuts and seeds

## Good Sources of Nutrients To Get More Of

### Calcium
- Canned seafood with bones (such as salmon and sardines)
- Dairy products
- Fortified cereals and juices
- Fortified soy and almond beverages
- Green vegetables (such as spinach, kale, broccoli, turnip greens)
- Tofu (made with calcium sulfate)

### Iron
- Beans and peas
- Meat
- Poultry
- Prunes and prune juice
- Raisins
- Seafood
- Spinach
- Whole grain and enriched cereals and breads

### Vitamin A
- Cantaloupe
- Carrots
- Eggs
- Fortified cereals
- Green leafy vegetables (such as spinach and broccoli)
- Milk and milk products
- Pumpkin
- Red peppers
- Sweet potatoes

### Vitamin D
- Eggs
- Fish (e.g., herring, mackerel, salmon, trout, and tuna)
- Fish liver oil
- Fortified cereals
- Fortified dairy products
- Fortified margarine
- Fortified orange juice
- Fortified soy beverages

### Dietary Fiber
- Beans and peas (such as navy beans, split peas, lentils, pinto beans, and black beans)
- Bran
- Fruits and vegetables
- Nuts
- Whole grains

### Potassium
- Bananas
- Beet greens
- Juice (carrot, pomegranate, prune, orange, and tomato)
- Oranges and orange juice
- Potatoes and sweet potatoes
- Prunes and prune juice
- Spinach
- Tomatoes and tomato products
- White beans
- Yogurt (plain)

### Vitamin C
- Broccoli
- Brussels sprouts
- Cantaloupe
- Citrus fruits and juices (such as oranges and grapefruit)
- Kiwifruit
- Peppers
- Strawberries
- Tomatoes and tomato juice

# MEAL PLANNING

**TIME** One 45-Minute Class Period

## ACTIVITY AT A GLANCE

In this activity, students will plan a healthy meal – breakfast – using the Percent Daily Value. Students will use the Nutrition Facts Label to evaluate and compare foods as they plan their meals.

## TIME TO TUNE IN

### Nutrition Facts Label Video Clip

For reinforcement, replay FDA's online video clip, *Your Food Is Trying To Tell You Something*.

http://www.fda.gov/food/ingredientspackaginglabeling/labelingnutrition/ucm420953.htm


## PUBLIC HEALTH CONNECTION

- **Calcium** is important for blood clotting, bone and teeth formation, constriction and relaxation of blood vessels, hormone secretion, muscle contraction, and nervous system function.
- **Iron** is important for energy production, growth and development, immune function, red blood cell formation, reproduction, and wound healing.
- **Potassium** can lower blood pressure by reducing the adverse effects of sodium on blood pressure. It also may lower the risk of bone loss and kidney stones.
- **Dietary fiber** helps prevent constipation and can reduce your risk of developing cardiovascular disease, type 2 diabetes, and obesity.
- **Vitamin A** is important for growth and development, immune function, reproduction, red blood cell formation, skin and bone formation, and vision.
- **Vitamin C** is important as an antioxidant and for collagen and connective tissue formation, immune function, and wound healing.
- **Vitamin D** is important for bone health.

# MEAL PLANNING

## GETTING STARTED

### MATERIALS

- Meal Planning Handouts – Power of Choice Nutrition Facts Cards (online or printed, URL may change) **http://www.fns.usda.gov/sites/default/files/NutritionLabels.pdf**. This link includes a Nutrition Facts Label template if you want to add other choices)
- FDA's Nutrition Information for Raw Fruits, Vegetables, and Seafood (online or printed) **http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm063367.htm**

### ADVANCE PREPARATION

Before beginning the lesson, decide how students will access the nutrition information for the foods they will use as they plan their meal. Students can access nutrition information either online (websites listed above) or as printed materials. Plan ahead so that students have access to computers to find the information, or print enough materials for your class for this lesson. The Nutrition Facts Label for a subset of 20 common breakfast items are listed on the right in case you would like to use those along with the FDA fruit, vegetable, and seafood nutrition information charts (website below) for this activity.

Alternatively, you could bring clean, empty food containers for breakfast foods, such as yogurt, eggs, milk, and cereals, for your students to use.

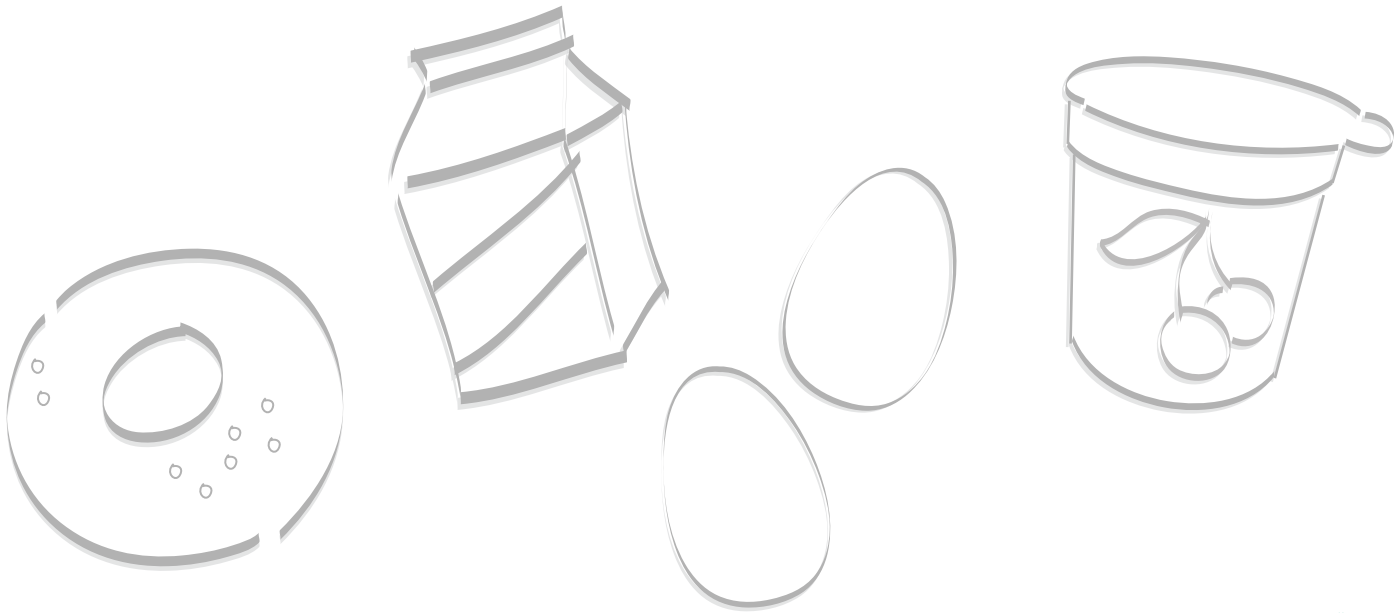
#### Fruit, Vegetable, and Seafood Information

Remember that nutrition facts for fruit, vegetable, and seafood choices are shown in the FDA nutrition charts at **http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm063367.htm**.

#### Common Breakfast Foods

Nutrition Facts Labels for common breakfast items are available from the *Power of Choice* website http://www.fns.usda.gov/sites/default/files/NutritionLabels.pdf.

- Bacon
- Bagel
- Bread, whole wheat
- Biscuit
- Butter
- Cereal, corn flakes
- Cereal, oatmeal
- Cheese, cream
- Doughnut, glazed
- Egg, hard cooked
- Fruit juice, orange with calcium
- Fruit juice, tomato
- Jelly; Margarine, tub
- Milk, 0% fat
- Muffin, plain
- Potato, hash browns
- Toaster pastry
- Waffle, plain, frozen
- Yogurt, low fat with fruit



# MEAL PLANNING

## INTRODUCTION

This meal planning exercise will let you try to "cook up" a healthy breakfast. Engage students by asking:

- *What is your favorite breakfast?*
- *What do you like about it?*
- *What nutrients do you think are in your breakfast?*
- *What do you think you need to get more of to help get your day started?*
- *Are there any important nutrients you might be missing?*

Note: If many students skip breakfast, the class could discuss some possible breakfast options that are fast, convenient, healthy, and tasty.

## PROCEDURE

1. Each group should use the resources available to construct one breakfast meal. The meal should be part of a 2,000-calorie daily plan, so they could aim for about 500–600 calories. (Remember that your students typically need 1,400 to 2,000 calories a day. However, youth who are large, muscular, athletic, and/or active will need substantially more calories than this, especially the males.)

   Remind students that if they plan to consume multiple **servings** of any of the items, they need to multiply the **calories** and **nutrients** in their tallies, too.
2. In addition to recording the number of servings and calories, have students record nutrient data in percentages (i.e., the %DV of each nutrient that the food contributes). Remember to include any beverages and condiments.
3. Have each of the student groups share its breakfast meal with the whole class. Make sure the groups tell which foods they chose and why they chose those particular foods. Remind the groups that this breakfast meal is only one part of a 2,000-calorie day.
4. For each group's meal, the students should answer the following questions:
   a. What is your cumulative %DV consumed for: Calcium, Dietary fiber, Iron, Vitamin A, and Vitamin C?
   b. Which nutrients do you need to get more of?
   c. What is the total number of calories in your group's meal?
   d. Did you use the ingredient list?

## REVIEW

- ***Where on the Nutrition Facts Label can you find serving size and servings per container? Why are these important to know?*** (Serving size and servings per container are found toward the top of the Nutrition Facts Label. It's important to know how many servings are in a container since sometimes one container has multiple servings.)
- ***How can you find how much energy you can get from a food? Why is it important to know the amount of energy you get from a food?*** (The calories per serving tell you how much energy you can get from food. Consuming the right amount of calories in a day helps you to survive and thrive, as well as maintain a desirable body weight.)
- ***How do you use %DV to determine which nutrients in the food are low and which are high? What are nutrient-dense foods?*** (5% DV or less of a nutrient per serving is low, and 20% DV or more of a nutrient per serving is high. Nutrient-dense foods and beverages contain vitamins, minerals, dietary fiber, and other naturally occurring substances that may have positive health effects, while contributing relatively few calories.)
- ***Which of the breakfast foods reported was the most nutrient-dense food? Which was the least nutrient-dense? What values did you use to determine this?*** (Encourage the students to be as specific as possible.)

*(See page 34 for an optional printable Student Review Worksheet)*

# MEAL PLANNING

## DID YOU KNOW?

### Insider Facts for Discussion

- **Comparisons:** The %DV makes it easy for you to make comparisons. You can compare one product or brand to a similar product. Just make sure the serving sizes are similar, especially the weight (e.g., grams, milligrams, ounces) of each product's serving size. It's easy to see which foods are higher or lower in nutrients because the serving sizes are generally consistent for similar types of foods, except in a few cases like breakfast cereals (which vary in density).
- **Nutrient Content Claims:** Use the %DV to help you quickly distinguish one claim from another, such as "reduced fat" vs. "light" or "nonfat." Just compare the %DVs in each food product to see which one is higher or lower in a particular nutrient – there is no need to memorize definitions. This works when comparing all nutrient content claims (e.g., less, light, low, free, more, high, etc.) for nutrients you either want to get more of or less of.
- **Dietary Trade-Offs:** You can use the %DV to help you make dietary trade-offs with other foods throughout the day. You don't have to give up a favorite food to eat a healthy diet. When a food you like is high in saturated fat, balance it at other times of the day with foods that are low in saturated fat. Also, pay attention to how much you eat so that the approximate amount of saturated fat and total fat for the day stays below 100% DV.

## EXTENSIONS

1. **Choose Nutrients Wisely.** Pick foods that are higher in "nutrients to get more of," and lower in "nutrients to get less of." When comparing Percent Daily Value (%DV), remember: 5% DV or less per serving is low; 20% DV or more per serving is high!
2. **Add Your Choices to the Family Shopping List.** Read the Label on foods and beverages in the pantry and refrigerator. Then, add items to the shopping list that are higher in nutrients to get more of and lower in nutrients to get less of.
3. **Show Your "Smarts" In the Cafeteria.** Look for the Nutrition Facts Label on food packages like **milk and milk products**, **snacks** and **other foods**, and go for the ones that are high in nutrients to get more of and low in nutrients to get less of.

## SUMMARY

A healthy eating pattern focuses on nutrient-dense foods. Most people need to get more of the following nutrients: Calcium, Dietary Fiber, Iron, Vitamin A, Vitamin C, Vitamin D, and Potassium.

The %DV on the Nutrition Facts Label is a great tool for seeing how much of each of these nutrients are in a single serving of a food or beverage option. Eat more foods that are good sources of the nutrients you need to get more of.

## RESOURCES

- FDA's Interactive Label:
  **http://www.fda.gov/nutritioneducation**
- MyPlate website:
  **http://www.choosemyplate.gov**

# STUDENT WORKSHEET
## MEAL PLANNING – BREAKFAST

Name _____ Date _____ Class/Hour _____

**Directions:** Use available Nutrition Facts Label resources to create a healthy breakfast. Be sure to factor in the **number of servings** you plan to consume. Describe the breakfast below and record the nutrition facts.

| **Food Name** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Calories/Serving | | | | | | | | |
| Serving Size | | | | | | | | |
| # of Servings Consumed | | | | | | | | |
| **Totals: (nutrient value x number of servings)** | | | | | | | | |
| Total calories | | | | | | | | |
| Total fat | | | | | | | | |
| Saturated fat (%DV) | | | | | | | | |
| *Trans* fat* | | | | | | | | |
| Cholesterol (%DV) | | | | | | | | |
| Sodium (%DV) | | | | | | | | |
| Total Carbohydrate (%DV) | | | | | | | | |
| Dietary Fiber (%DV) | | | | | | | | |
| Sugars* | | | | | | | | |
| Total Protein* | | | | | | | | |
| Vitamin A (%DV) | | | | | | | | |
| Vitamin C (%DV) | | | | | | | | |
| Vitamin D (%DV) | | | | | | | | |
| Calcium (%DV) | | | | | | | | |
| Potassium | | | | | | | | |
| Iron (%DV) | | | | | | | | |

*While the Nutrition Facts Label does not list a %DV for *trans* fat, sugars, or total protein, you can record the grams of sugars and total protein and the milligrams or grams of *trans* fat for these.

What is your cumulative breakfast %DV for each of the following:

Calcium _____

Iron _____

Vitamin A _____

Vitamin C _____

What is your cumulative breakfast %DV for each of the following:

Saturated fat _____

Cholesterol _____

Sodium _____

# STUDENT REVIEW WORKSHEET
# SUGAR IN BEVERAGES

Name _____ Date _____ Class/Hour _____

How much energy (calories) do carbohydrates supply? _____

_____

What are the different kinds of carbohydrates? _____

_____

Which carbohydrates are more nutrient-dense? _____

_____

What is the daily value for all carbohydrates based on a 2,000-calorie diet? _____

_____

How does the sugar in beverages affect your body and overall health? _____

_____

What are some ways to reduce sugar intake? _____

_____

_____

_____

# STUDENT REVIEW WORKSHEET
# SODIUM IN SNACK FOODS

Name _____ Date _____ Class/Hour _____

What is the recommended daily limit for sodium? _____

Where does most of the sodium in our diet come from? _____

_____

What foods are higher in sodium, and what foods have less sodium? _____

_____

_____

What are some ways to reduce sodium intake?_____

_____

_____

# STUDENT REVIEW WORKSHEET
# MEAL PLANNING

Name _____ Date _____ Class/Hour _____

Where on the Nutrition Facts Label can you find serving size and servings per container? _____

_____

Why are these important to know? _____

_____

_____

How can you find how much energy you can get from a food? _____

_____

Why is it important to know the amount of energy you get from a food? _____

_____

_____

How do you use %DV to determine which nutrients in the food are low and which are high? _____

_____

_____

What are nutrient-dense foods? _____

_____

Which of the breakfast foods reported was the most nutrient-dense food? _____

_____

Which was the least nutrient-dense? _____

What values did you use to determine this? _____

_____

# GLOSSARY

**Calories** refer to the "energy" supplied from all food sources (fat, carbohydrate, protein, and alcohol).

**Cholesterol** is a waxy, fat-like substance produced primarily by the liver in both humans and animals. It is found in all cells of the body. Cholesterol in food is referred to as "dietary cholesterol" and is found only in animal products.

**Dietary fiber**, or fiber, is sometimes referred to as "roughage." It is a type of carbohydrate found in plant foods and is made up of many sugar molecules linked together. But unlike other carbohydrates (such as starch), dietary fiber is bound together in such a way that it cannot be readily digested in the small intestine.

The **Ingredient List** shows each ingredient in a food by its common or usual name in descending order by weight.

**Minerals** are inorganic substances that are not made by living things. Minerals are naturally found in soil and water and are absorbed by plants, which are then eaten by people and other animals. Examples of minerals are iron, calcium, and potassium. People obtain minerals from both the plant and animal products they eat.

**Nutrients** are substances in food that contribute to growth and health. Nutrients provide energy, cell-building and structural materials, and agents that regulate body chemistry.

**Saturated fat** is found in higher proportions in animal products and is typically solid at room temperature. The exceptions are seafood (which is low in saturated fat) and certain tropical plant oils, such as coconut oil, palm oil, and palm kernel oil (which are high in saturated fat).

**Serving Size** is based on the amount of food that is customarily eaten at one time. All of the nutrition information listed on a food's Nutrition Facts Label is based on one serving of that food.

***Trans* fat** is an unsaturated fat, but it is structurally different than unsaturated fat that occurs naturally in plant foods. *Trans* fat has detrimental health effects and is not essential in the diet.

**Vitamins** are organic substances made by plants and animals, which are then eaten by humans. There are 13 vitamins: vitamins A, C, D, E, K, and the B vitamins (thiamin, riboflavin, niacin, pantothenic acid, biotin, vitamin B6, vitamin B12, and folate). You can get all your vitamins from the foods you eat, but your body also makes vitamins D and K.

**Whole grains** include the entire grain seed (usually called the "kernel"), which consists of the bran, germ, and endosperm — nothing has been added or taken away by processing. Whole grains are consumed either as a single food (such as wild rice or popcorn) or as an ingredient in food, such as in cereals, breads, or crackers.

# RESOURCES

(references, classroom materials, partner websites, etc.)

## Online Resources for Teachers

**FDA's Nutrition Facts Label Programs & Materials**
http://www.fda.gov/nutritioneducation

**NSTA e-Learning Center**
http://www.learningcenter.nsta.org
In-depth nutrition tutorials (Science Objects) for teachers.

**Nutrition Voyage: Conducting a School Survey**
http://www.fns.usda.gov/sites/default/files/nutvoyage7_trek2.pdf
Students examine the food and beverage choices of their school community.

**Healthier Middle Schools: Every student can help.**
http://www.fns.usda.gov/sites/default/files/hmshandout_student.pdf
Student handout showcasing ways to help make their school healthier.

**Food Tracker:**
https://www.supertracker.usda.gov/foodtracker.aspx
An online tracker that helps you monitor your daily caloric intake, record your physical activity, and set targets for eating foods from all food groups.

**Talking About *Trans* Fat – What You Need to Know**
http://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm079609.htm

**Carbonated Soft Drinks: What You Should Know**
http://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm232528.htm

**Medicines in My Home: Caffeine and Your Body (FDA/CDER)**
http://www.fda.gov/downloads/drugs/resourcesforyou/consumers/buyingusingmedicinesafely/understandingover-the-countermedicines/ucm200805.pdf

## Additional Reading


The Dietary Guidelines for Americans
http://www.health.gov/dietaryguidelines

U.S. Department of Agriculture and U.S. Department of Health and Human Services. *"Dietary Guidelines for Americans, 2010"*, 7th Ed., Washington, DC: U.S. Government Printing Office.
http://health.gov/dietaryguidelines/2010/

Office of the Surgeon General. *The Surgeon General's Vision for a Healthy and Fit Nation* Rockville, MD, U.S. Department of Health and Human Services; 2010.

## Education Standards by Activity

| | Serving Size and Calories | Sugar in Beverages | Sodium in Snack Foods | Meal Planning |
|---|---|---|---|---|
| NGSS – Life Science: Matter and Energy in Organisms and Ecosystems | ✔ | ✔ | ✔ | ✔ |
| NGSS – Life Science: Growth, Development, and Reproduction of Organisms | ✔ | ✔ | ✔ | ✔ |
| NGSS – Physical Science: Structure and Properties of Matter | | | ✔ | |
| NSFCSE: Food Science, Dietetics, and Nutrition | ✔ | ✔ | ✔ | ✔ |
| NSFCSE: Nutrition and Wellness | ✔ | ✔ | ✔ | |
| National Health Education Standards (1) | ✔ | ✔ | ✔ | ✔ |
| National Health Education Standards (2) | | ✔ | | |
| National Health Education Standards (3) | ✔ | ✔ | ✔ | ✔ |
| National Health Education Standards (4) | | | | ✔ |
| National Health Education Standards (5) | | | | ✔ |
| National Health Education Standards (6) | | | | ✔ |
| National Health Education Standards (7) | | | | ✔ |
| Common Core, Math | ✔ | ✔ | ✔ | ✔ |
| Common Core, ELA/Literacy | ✔ | ✔ | ✔ | ✔ |

See next page for full standards: NGSS, NSFCSE, National Health Education Standards, and Common Core Math and ELA/Literacy. ▶

### NGSS – Next Generation Science Standards

Matter and Energy in Organisms and Ecosystems:

- MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.
- MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Growth, Development, and Reproduction of Organisms:

- MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Structure and Properties of Matter:

- MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.

### NSFCSE – National Standards for Family and Consumer Science Education

Food Science, Dietetics, and Nutrition:

- 9.3.1 Analyze nutrient requirements across the life span addressing the diversity of people, culture, and religions.
- 9.3.2 Analyze nutritional data.
- 9.3.6 Critique the selection of foods to promote a healthy lifestyle.
- 9.4.1 Analyze nutritional needs of individuals.

Nutrition and Wellness:

- 14.2.1 Analyze the effect of nutrients on health, appearance, and peak performance.
- 14.2.2 Analyze the relationship of nutrition and wellness to individual and family health throughout the life span.
- 14.2.4 Analyze sources of food and nutrition information, including food labels, related to health and wellness.
- 14.3.1 Apply various dietary guidelines in planning to meet nutrition and wellness needs.

### National Health Education Standards (CDC/American Cancer Society)

(1) Comprehend concepts related to health promotion and disease prevention to enhance health.
(2) Analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.
(3) Demonstrate the ability to access valid information and products and services to enhance health.
(4) Demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
(5) Demonstrate the ability to use decision-making skills to enhance health.
(6) Demonstrate the ability to use goal-setting skills to enhance health.
(7) Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risk.

### Common Core, Math

- 6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another.
- 5.OA.A Operations & Algebraic Thinking: Write and interpret numerical expressions.
- 5.MD.A.1 Measurement & Data: Convert like measurement units within a given measurement system.
- 5.MD.B.2 Represent and interpret data.
- 5.MD.C.3 Geometric measurement: Understand concepts of volume.

### Common Core, ELA/Literacy

- RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.

## Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices was brought to you by ...

**Food and Drug Administration**
**Center for Food Safety and Applied Nutrition**
***College Park, MD***


Marjorie Davidson, Ph.D.
*Education Specialist*
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