

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Use food group facts to play a “Jeopardy”™ - type game.** Students can design and play a game similar to Sarah’s game-show format in the Lesson 2: *Food Group Experts* video. Divide a chalkboard or bulletin board into six columns. Label the top of each column with the names of the five food groups and extras. Have students use their booklet resources to make a list of question/answer food group facts. Divide the class into teams and use the facts to play “Nutrition Jeopardy,” in which you read the answer (e.g., “helps your body use the iron you get from other foods”) and students must state the question (e.g., “What is vitamin C?”).
- **Debate “food” vs. “vitamin supplements.”** Present the question, “Is it better to get the nutrients we need from food or from vitamin supplements?” Assign each side of the debate to various groups of students and have them prepare their response after some research and analysis. Then conduct a class debate.
- **Study the effect of not getting certain nutrients in your diet.** Have students research what happens to the body when certain nutrients are missing. For example, what happened when sailors were deprived of vitamin C from fresh fruit? What happens if someone does not get enough iron or calcium?

Science

- **Make a calcium model.** Have students re-create the calcium model, shown by student Andrew in the Lesson 2: *Food Group Experts* video. Fill five glass or clear plastic jars with varying amounts of flour to represent the amount of calcium contained in bones at various stages of life: 27 grams (infancy), 400 gm (age 10), 800 gm (age 15), 1200 gm (adult), 750 gm (adult with osteoporosis). Female students might wish to view an animated cartoon at the Centers for Disease Control’s **Powerful Bones, Powerful Girls** website: http://www.cdc.gov/powerfulbones/index_content.html
- **Strong or weak bones?** Students can conduct a simple experiment to see the effects of bones that lack enough calcium. First, completely submerge clean, dry (meatless) chicken bones

in vinegar. Let sit for about three days. Have students observe and compare the look and feel of clean, dry chicken bones that have not been soaked in vinegar (i.e., they are hard and don’t bend) with the bones soaked in vinegar (i.e., easily bendable and soft). Explain that vinegar is an acid that dissolves the calcium in the bones, so the vinegar-soaked bones are examples of what bones do without calcium: they lose their hardness and strength.

- **Do further nutrient research.** Have students research and report on the nutrients listed on the nutrient chart, page 78 of this guide. Ask them to find out the function and importance of each nutrient in the body. Investigate macronutrients—proteins, fats and carbohydrates—which are the nutrients that contain calories and that are needed by the body in large amounts. Research micronutrients—including vitamins and minerals—which are needed by the body in relatively smaller amounts compared to macronutrients.

Language Arts

- **Videotape food group presentations.** Assign “production groups” to videotape the presentations and then use the tape, perhaps edited, in an overall presentation of food groups. Consider sharing the tape with other classes and/or parents. Students with sharp technical skills might also transfer the video to a CD-ROM for students to easily take home to share with friends and family.
- **Publish on the Web.** If you have a class or school website, students may wish to publish written scripts and/or video clips of their food group presentations.
- **Read about “Banking on Strong Bones.”** Make copies of the article that appears on page 79 of this guide. After students read the article, ask them to keep a record of the food and drink they consume in one day *that contain calcium*. Share and analyze lists to determine if they need to increase their calcium. Optional: Refer students to an online calcium assessment tool, the Calcium Quiz, at www.mealsmatter.org in the Eating for Health section. To go to the website from the CD, click **Links & Credits**, then **Test Your Calcium Intake – Calcium Quiz**.

Social Science

- **Research how other countries organize dietary recommendations.** Are food classification systems the same all over the world? How are foods organized differently in other countries? (For example, the Canadian Food Guide is graphically depicted using a rainbow.)
- **Taste mystery foods.** Bring in foods to taste that may be unfamiliar to students (e.g., tofu, flan, bok choy, starfruit, grits). Have students try to figure out in which food group each belongs.
- **Research food customs of early American settlers and Native Americans.** Have students find out which foods early American settlers and Native Americans ate and how those foods were prepared. In what ways were they different? How do their diets compare with ours today?

Physical Education

- **Do weight-bearing exercise to build strong bones.** Reinforce the idea that in addition to getting enough calcium in one's diet, weight-bearing exercise helps build bone by helping the body to work against gravity—making feet and legs carry their own weight. Have students select and participate together in one or more weight-bearing exercises, such as power walking, climbing stairs, running, dancing, inline skating, volleyball or soccer.
- **Learn about what happens to bones during space travel.** Have students visit the NASA website at <http://www.nasa.gov> and type the word *bone* in the “Find It @ NASA” text box at the top of the page. Then click **Bones in Space** from the list of articles to learn about the effects of weightlessness on human bones. What kinds of exercises do astronauts do in space to try to counteract bone loss? Is it working?

Math

- **Learn about portion distortion.** Have students visit the National Institutes of Health “Portion Distortion” website at <http://hin.nhlbi.nih.gov/portion> to take the fun interactive quiz to see how well they know portion sizes! Divide students into pairs to write portion size word problems using information gleaned from

the quiz. Have teams trade and solve each other's word problems. (The site also offers such interactive tools as a BMI calculator and Menu Planner.) To go to the website from the CD, click **Links & Credits**, then **NHLBI Portion Distortion**.

- **Create graphs.** Challenge students to create their own set of bar graphs to depict the nutrients contained in various foods from their favorite food groups.

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Research food-borne illness.** Have students learn about illnesses that can be caused by foods that may be improperly processed, cooked or packaged. What are the illnesses? What causes them? How can they be prevented?
- **Research the 10 leading causes of chronic disease.** Have students discover what the 10 leading causes of chronic disease are in the United States and determine how many have to do with food and/or lack of physical activity.

Science

- **Study calories.** Teach students about the calorie as a measure of energy in foods. Explain that the energy (calories) contained in a given food comes from the three energy-containing nutrients—protein, carbohydrate, fat. Have students research nutrients to discover the number of calories in a gram of each.
- **Burn a peanut.** Put a shelled peanut into a loop of wire made from a bent paper clip and hold the paper clip in a pair of pliers. Place a pan of water under the peanut and put a test tube partially filled with water over the peanut. Light the peanut. (Be sure to have a fire extinguisher nearby.) Allow the peanut to burn and the water in the test tube to boil. Tell students that the energy in the peanut was converted into heat to boil the water, and explain that when we eat a peanut, our bodies convert the energy stored in the peanut into the energy our bodies need to keep running.
- **Study the process by which foods are preserved.** We can't always eat fresh foods, so foods are canned, frozen or otherwise preserved. Have students research how foods are preserved and why they don't spoil once they are preserved. Extend the study even further by canning fruit or making jam or jelly preserves.

Language Arts

- **Interview a Child Nutrition Program Director.** Have students conduct an interview of the person in charge of food services at your school to see how dietary guidelines are considered and decisions are made about the foods served.
- **Design restaurant menus.** Divide the class into groups and have them imagine they are going to open a restaurant. Have them create a menu that includes foods from all the food groups that would be appealing to teenagers. They may wish to use the menus in their booklets (pages 8-9) as one resource.
- **Learn a new language.** Have students look at the menus in their student booklets (pages 8-9) to find lunch items listed in a foreign language, including Chinese, Spanish and Italian. Divide the class into three groups, with each group responsible for learning some new words or phrases about food, meal times or physical activity from the language they research, and then teaching the class.

Social Science

- **Interview family members about favorite foods in childhood.** Have students interview parents, grandparents or other older family members about their favorite foods or meals when they were growing up. Have students also find out where the person was living during childhood. Collect all of the responses and have students classify the foods into food groups. Have students then arrange the foods according to geographical regions to see if there is any relation between certain areas and favorite foods. Show all the responses on the world map. Students can discover whether or not there is any relation between the time period when the person was growing up and their food choices.
- **Learn about and prepare ethnic meals.** Have students learn more about the cultures and foods represented in the fictional restaurant menus (student booklet pages 8-9) including China, Mexico and Italy. Students can find traditional recipes in cookbooks from home,

in the library or on the Internet. They can also get copies of menus from various restaurants that offer ethnic foods and use those menus to choose meals to prepare and sample. If desired, publish a booklet (in print or on the school's website) of favorite international recipes.

Physical Education

- **Keep a “calories burned” log.** Using a standard list of “calories burned per length of activity,” have students keep track of how many calories they burn during various physical activities or during an entire day.

Math

- **Calculate body mass index (BMI).** To
$$\frac{\text{Weight in pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703$$

determine whether they are at appropriate weights for their heights, students can calculate their BMI using this formula and then check their BMI in the BMI Table. (Explain that the BMI Table is a general guideline, but if they are very muscular and fit, a BMI may falsely classify them as overweight.)

BMI Table

- Underweight: <18.5
 - Normal: 18.5 - 24.9
 - Overweight: 25.0 - 29.9
 - Obese: >30.0
- **Compute averages.** Using the information from students' mock lunch orders, have students figure the average number of healthy portions for the class in each food group. They can also calculate the average number of calories eaten in their lunch meals.

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Prepare a healthy breakfast for others.** Have students work together to brainstorm ideas for breakfasts that can be prepared with or without cooking facilities (or a hot plate). Students can visit the **Meals Matter** website for recipe ideas: <http://www.mealsmatter.org>. Organize a field trip to a local elementary school or senior center and have the class prepare a healthy, tasty breakfast for others. To go to the website from the CD, click **Links & Credits**, then **Meals Matter**.
- **Evaluate popular breakfast foods.** Have students read and discuss nutrition labels and advertisements on the packaging of cereals, toaster pastries, frozen waffles, etc. Are these foods filled with nutrients? High in sugar or fat? What does it mean when one sees “fortified with vitamins” on the packaging?

Science

- **Test for sugar in breakfast foods.** To test for simple sugars (i.e., sucrose or dextrose), drop a small food sample (favorite cereal, bread, pastry, fruit, etc.) into a test tube or other container. Fill about half full with water and add about 10 drops of Benedict’s solution (available at drugstores or school science supply outlets). Heat the test tube over a Bunsen burner using tongs (or use a double boiler). Benedict’s solution is a blue substance but when it touches sugar, it turns color from orange to a deep red, depending on the concentration of sugar in the food. **[SAFETY NOTE: Adult supervision is necessary during the experiment. Remind students that they are not to taste any of the food samples after the Benedict’s solution has touched them.]**
- **Learn about blood sugar and insulin.** In the Lesson 4: *What’s for Breakfast* video, the Expert discusses how sugary foods cause a rapid spike in energy, followed by a rapid decline in energy. Have students research how and why certain foods trigger blood sugar and insulin level surges in our bodies and what effect these changing levels have. Reinforce that sugary foods and many starchy foods (made from white flour) are rapidly digested and broken down to sugar by the body, which raises blood sugar levels quickly and triggers a surge in insulin (a hormone that enables the body to metabolize and use sugars). Alternatively, proteins, fats,

most fruits and vegetables and whole grains (high in fiber) take longer to digest, so they raise blood sugar more gradually and don’t cause such sudden insulin surges in the body.

Language Arts

- **Write a song for a new breakfast cereal.** Students can work individually, in pairs, or small groups to write a song or rap for a fictional breakfast cereal. Cereals can be healthy or not so healthy, but the song or rap should include that information.
- **Write breakfast books.** Have students work in small groups to write and illustrate children’s picture books to explain the importance of a healthy breakfast. They might wish to include simple recipes that younger children can prepare on their own. Take the books to a local nursery school, elementary school or after-school program to read to younger students.
- **Write a biography.** Ask students to select a favorite student in the video and write a short biography of that student. They might wish to include what they know up to this point about the student’s family life, his or her special qualities or personality quirks, eating and exercise habits and special interests.

Social Science

- **Research breakfasts in other countries/ cultures.** What breakfast staples do teens enjoy eating for breakfast in countries around the globe? (In Japan, for example, a breakfast of rice, miso soup, fish and green tea is quite common. In Russia, buckwheat cereal, called kasha, is often served with a soft curd cheese or sour cream.) What is “breakfast” called in other languages? Students can organize their research in a Venn diagram (interlocking circles) to compare and contrast various countries’ breakfast favorites.
- **Research the origins of popular American breakfast foods.** From what countries do our most popular breakfast foods originate? Have students conduct research in texts, recipe books and on the Internet. Examples: many baked goods, including waffles and doughnuts originated in Dutch and French cultures. Bagels originated in Poland. Students can illustrate favorite breakfast foods and then pin them onto a world map by their countries of origin.

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Plan fast-food meals.** Using the menus in their student booklets (pages 8-9) have students see how their choices can help them add food-group foods and trade extras. Have them decide on simple additions or trades that can help them get the nutrients they need (e.g., cheese on burgers, salad with a chicken sandwich, frozen yogurt for dessert).
- **Determine food group snacks.** Students often equate “snacks” with extra foods. To break the connection, have students brainstorm various food-group snacks that could help them improve their daily food choices. Start with examples from the video: Sarah chose string cheese as a snack instead of her typical candy choices; Drew made himself a fruit smoothie after school.

Science

- **Demonstrate fat in foods.** Have students examine, feel and taste foods to determine the difference between the amount of fat in foods in various food groups. For example, compare a baked potato, french fries and potato chips.
- **Learn that all fats are not the same.** Have students compare the amount of trans fats, saturated fats, polyunsaturated and monounsaturated fats on various Nutrition Facts labels and then conduct research to determine the similarities and differences among the three types of fats. Learn which fats are good for our bodies and which to avoid. Students can begin their research at the U.S. Food and Drug Administration’s website: <http://www.cfsan.fda.gov/~dms/transfat.html#unhide>
USDA website: <http://www.mypyramid.gov>
To go to the website from the CD, click **Links & Credits**, then **USDA’s MyPyramid**.

Language Arts

- **Compare and contrast the terms “junk food” and “fast food.”** These two terms are often used as synonyms, but are they? Have students write essays comparing and contrasting these two terms.

- **Create mock Nutrition Facts labels.** Students can work in teams to brainstorm a new product (e.g., breakfast cereal, flavored yogurt or milk) and then design a Nutrition Facts label for it, listing the ingredients and nutrients in it. Have the class vote on their favorite new creation and discuss why they would purchase and eat it.

Social Science

- **Determine influences on food choices.** Ask students to think about the influences on their food choices (e.g., taste, hunger, advertising, boredom, friends, etc.). Have students create and conduct a survey to determine the primary influences on teens’ food choices. Analyze the survey results.

Physical Education

- **Analyze how much activity equals a pound of fat.** Using the equation “one pound of body fat = 3500 calories,” along with a standard reference of calories burned for various activities, have students determine how long they would have to do various activities to burn a pound of body fat.

Math

- **Use Nutrition Facts labels to calculate percentage of nutrients.** Inform students that 1 gram of protein equals 4 calories, 1 gram of carbohydrate equals 4 calories, and 1 gram of fat equals 9 calories. Provide nutrition labels and have students calculate what percent of each food is protein, carbohydrate and fat.
- **Use Nutrition Facts labels to create word problems.** Have students bring into class empty packaging that contains a Nutrition Facts label. Use the label data to create word problems to challenge their peers.

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Study relationships between activity and health.** Have students research the various relationships that exist between health and exercise. How does exercise help our bodies?

Science

- **Define and demonstrate aerobic vs. anaerobic activity.** Have students learn the definition of aerobic and anaerobic; then have them do various activities to demonstrate when they are “aerobic” and when they are “anaerobic.” Ask students to compare the effects on their bodies.
- **Make and use a stethoscope.** Cut off the open end of a balloon and place the remaining, rounded bulb of the balloon over one end of an empty paper towel tube. Stretch the balloon piece as tightly as possible over the end of the tube and secure it in place with a rubber band. Have student pairs use their stethoscopes to listen to one another’s heartbeats, first at rest and then after various exercises. (See **Physical Education** for more.)

Language Arts

- **Read “Keep Moving, Keep Fit ... Nutrition and Sports.”** Make copies of the article that appears on pages 80-81 of this guide. Have students (either individually, in pairs or in groups) read the article and lead a class discussion.
- **Shape up with poetry.** Have students write poems (rhyming or free verse) about a favorite sport of other physical activity and then turn them into “shape poems,” sometimes called “concrete poems,” in which the words of the poem take on the shape of its subject. So, if the subject of the poem is tennis, then the poem’s lines could be written down and across the page so that the poem appears to take on the shape of a tennis racket.

Social Science

- **Create a nutrition-themed school/community service project.** Ask the class to brainstorm and vote on a school or community service project, like the students did in the video, with a focus on nutrition. Ideas include creating a school garden, helping prepare hot lunches at a senior center or nursery school, collecting canned goods to donate to a community food bank or emergency shelter or coordinating a system to allow restaurants with leftover food to donate the excess to community food banks or homeless shelters. Students should work together to plan, publicize and carry out their project. Invite parent volunteers to get involved for additional adult supervision if needed.
- **Research popular games and sports around the world.** Have students find out which games and sports are popular in other parts of the world. How do these activities compare to our sports? Who participates in these activities? Are people in other countries more or less active than we are? Students can learn and play some of these international games.
- **Research “exercise” in America’s past.** Today aerobic classes, yoga, hockey and weight training are all popular ways to “keep fit.” Have students conduct research to discover how Americans “kept fit” in the past. What about Native Americans? Why were our ancestors’ lifestyles more active than they are today?

Physical Education

- **Set up a heart-rate lab.** Using student-made stethoscopes (see **Science**) or just fingers, have students perform various activities at specified levels of intensity for specified amounts of time and then measure their heart rates. Activities can include jogging in place, doing a series of sit-ups, jumping rope, etc. Partners can use stopwatches to measure and record maximum heart rates, or beats per minute. An accepted formula for determining an individual’s exercising heart rate is: $(220 \text{ minus age}) \times 70\%$. Students can record and compare their heart rates when the intensity or time of the activity increases or decreases. [**SAFETY NOTE:** Students with any physical or medical limitations should consult with a physician or school nurse before doing this activity.]

EXPANDED OPPORTUNITIES/MAKING CONNECTIONS

Health

- **Investigate popular “fad diets.”** Throughout the program’s videos, students have seen Megan thinking a lot about her body and her weight. Her roadblock in Lesson 7 is determining whether or not to try yet another fad diet. Have students gather information on popular diets and analyze each to determine whether or not it is healthy. Based on what they have learned about food choices, have students establish criteria by which to judge the claims made by each diet.

Language Arts

- **Read “When Food Becomes More Than Something to Eat.”** Make copies of the article that appears on page 82 of this guide. Have students (individually, in pairs or in groups) read the article and lead a class discussion.
- **Analyze words used to advertise foods.** Have students make a list of words commonly used to advertise foods (e.g., “natural,” “light” or “lite,” “reduced fat”). Ask students what their understandings are of these words and if they actually apply to the foods being advertised. Students should also pay attention to extraordinary product claims (e.g., “everyone thinks it’s delicious”) and statistical information (e.g., “four out of five prefer”). How do these words and phrases influence our choice of foods?
- **Create ads to overcome obstacles.** Using the five obstacles of students in the video, have students create fictional ads or public service announcements (print, radio, TV) to persuade people how they can “get around” or “break through” those obstacles. Encourage students to use common poetic devices to grab attention, including rhymes, metaphors, similes, alliteration and repetition.

Physical Education

- **Create a list of roadblocks to increasing physical activity.** Middle school students often complain that they can’t increase their physical activity. Have them brainstorm a list of reasons why and then brainstorm a list of detours around those roadblocks. Examples of typical roadblocks: *I don’t like to exercise. I don’t have the time because I have too much homework. It’s too expensive to join a gym. I’m not good at sports.*

Social Science

- **Discuss appeals of advertising.** Bring in food ads and packages and have students discuss how they attempt to influence buyers. What are the most effective and least effective appeals advertisers can use on teenagers?
- **Create a “obstacles” bulletin board.** Start a bulletin board on which students can post 3 x 5 cards indicating obstacles they encounter to improving their food and activity choices. Allow students to write comments on the cards suggesting alternative solutions.