



TRACKS Extension Lesson

Energy Balance

Hidden Fat

Grades 9-12

I. Nutrition Education Objectives:

Goal 1: Students will comprehend concepts consistent with USDA guidance related to eating and physical activity for good health.

Objective: As a result of Pennsylvania's SNAP-Ed plan, student will know, understand, analyze and apply concepts, as developmentally appropriate, that are consistent with USDA guidance about the benefits of:

1. Limiting foods high in fat, sodium and added sugar.

II. Educational Standards:

- A. 2.5 Mathematical Problem Solving and Communication
- B. 10.1 Concepts of Health
- C. 10.2 Healthful Living
- D. 11.3 Food Science and Nutrition

III. Outcomes:

- A. Students will identify foods that contain hidden fat.
- B. Students will read Nutrition Facts labels to determine the fat content of foods.

IV. Materials:

- A. Chalkboard
- B. Supplies: Food wrappers including nutrition labels of various foods (e.g. canned fruits and vegetables, soups, candy bar, desserts, baked goods). Students can be asked to bring in at least one thing from home, small container (opaque), cotton ball or light object
- C. Handouts: "Can You Find It?", "Read It Before You Eat IT"

V. Background Information:

- A. Fat is an important part of our diets.
 1. Fat helps in the absorption and transport of fat-soluble vitamins such as vitamins A, D, E, and K.
 2. Fat is the primary way energy is stored in the body.
 3. It makes foods taste good.
 4. Some fats (which come from plant sources) are essential for healthy skin and hair.
- B. The problem is that most Americans consume too much of the wrong type of fat. Every year over half a million people die in this country from heart disease; heart disease is the leading cause of early death and disability in the United States. Many studies have shown a strong relationship between heart disease and high intake of saturated and *trans* fats. The good news is that if we decrease the dietary fat, we can reduce our risk of heart

disease.

C. Different types of fat:

1. **Saturated Fat** (for example, butter or lard) tends to be a solid at room temperature and comes primarily from animal sources (meat and dairy); high intake of saturated fats increases the risk for heart disease. Foods high in saturated fat tend to raise blood cholesterol.
2. **Unsaturated Fat** (fat that is usually liquid at room temperature), such as canola oil, olive oil, safflower oil and vegetable oil decreases the risk for heart disease. Plant foods, for the most part, tend to have a higher proportion of unsaturated fat.
3. **Cholesterol** - The body makes the cholesterol it requires. Cholesterol also is obtained from food. Dietary cholesterol comes from animal sources such as egg yolks, meat (especially organ meats such as liver), poultry, fish, and higher-fat dairy products. Many of these foods are also high in saturated fats. Choosing foods with less cholesterol and with less *trans* and saturated fats will help lower your blood cholesterol levels. The Nutrition Facts Label lists the Daily Value for cholesterol as 300 mg. You can keep your cholesterol intake at this level or lower by eating more grain products, vegetables, and fruits, and by limiting intake of foods that contain cholesterol.
4. **Trans Fat** is produced during the hydrogenation of vegetable oils. Hydrogenation hardens oils to make them spreadable (e.g., margarine) and improves shelf life. Through hydrogenation, unsaturated or liquid fat can be converted to *trans* fat or more solid forms. Margarine, for example, is made by hydrogenating liquid oil, such as soybean oil, until it becomes more saturated and remains solid at room temperature. There is growing evidence that hydrogenated fat (a major source of *trans* fat) found in high amounts in stick margarine may also increase the risk of heart disease. *Trans* fat raises the body's LDL level (commonly known as the "bad" cholesterol) and lowers the HDL levels (the "good" cholesterol). In a typical American diet, *trans* fat is found mostly in foods that contain hydrogenated or partially hydrogenated vegetable oils, particularly in baked goods such as cookies and crackers. If hydrogenated or partially hydrogenated oil is used, it will be listed in the ingredient list on the food package. Some *trans* fat is also found in animal fat.

D. A diet low in saturated and *trans* fat may reduce your risk for heart disease and could also help you maintain a healthy body weight. The Dietary Guidelines recommend lowering intake of saturated fat to less than 10% of total calories. To further reduce the risk of cardiovascular disease, some should lower the intake of saturated fat to 7% of total calories.

E. Individuals should choose low fat options using MyPlate. Within each of the food groups, there are lower-fat options.

1. Low-fat (1%) or nonfat milk, yogurt, and cheeses are now available in supermarkets.
2. Fish, poultry without skin, and dried beans provide protein without a lot of saturated fat.
3. Foods with solid fats and added sugars (SoFAS) should be consumed in small quantities and relatively infrequently. A lot of foods we call "junk" foods fit into

the category of SoFAS. They also can be high in salt and low in other essential nutrients.

- F. How is % Daily Value for fat calculated? Although all food labels provide % Daily Value for nutrients, the following describes how the % Daily Value for one specific nutrient (fat) is calculated.
1. For a particular food, divide the number of grams of fat per serving by 65. Sixty-five (65) is used because it is recommended that a person eating a 2,000-calorie daily diet consume no more than 65 grams of fat each day.
 2. For example: A serving of tuna salad has 14 grams of fat; $14 \div 65 = 0.22$; $0.22 \times 100 = 22\%$. Therefore a serving of tuna salad contains 22% Daily Value for fat for a person who eats 2,000 calories a day.
- G. Reading food labels is an effective way to compare the fat and nutrient content of various snack foods. The place to find out whether a food is relatively high or low in a nutrient is the % Daily Value column on the Nutrition Facts label on food packages. The % Daily Value for total fat and saturated fat are important.
1. If, for individual foods, the % Daily Value is 5 or less for total fat or saturated fat, the food is considered low-fat (low in total fat or saturated fat). The more foods chosen that have a % Daily Value of 5 or less for total fat and saturated fat, the easier it is to eat a healthier daily diet. The overall daily goal should be to select foods that together do not exceed 100% of the Daily Value for total fat and saturated fat.

VI. Procedure:

A. *Introductory:*

1. Introduction to hidden fat:
 - a. Prior to class, place a cotton ball or another light object in a small, covered, opaque container.
 - b. Ask students to guess the contents (provide a few clues). Have them give reasons for their answers.
 - c. After several guesses have been given, say to students, "Some of the foods we eat are like this container. They contain hidden ingredients that cannot be seen. Today, we're going to look for hidden fat in foods."
2. Review of fat in the diet:
 - a. Discuss with students the reasons fat is an important part of their diets (see background information).
 - b. Stress the fact that there are different types of fats, and that a person should pay attention to the types (saturated, *trans*, or unsaturated) of fats eaten as well as the total amount of fat eaten.

B. *Developmental:*

1. What to look for on a label:
 - a. Distribute handout, "*Read It Before You Eat It*," and food packages and/or copies of food labels to students. If possible, be sure there is a wide variety of labels, including canned/frozen fruits and vegetables, desserts, and frozen dinners.

- b. Explain to students that food labels contain information that can help a person make smart decisions about whether a particular food fits into a healthful and balanced diet he/she is trying to eat.
- c. Explain that one specific thing food labels address is the amount and type (saturated or unsaturated) of fat and cholesterol contained in a food. Food labels also present other information, such as the number of calories a food provides, certain vitamins and minerals a food contains, and a list of ingredients in the food (with the most abundant ingredient listed first).
- d. Have students identify the following from each of the food labels and ingredients list:
 - i. Food name
 - ii. Serving size
 - iii. Total fat per serving
 - iv. Saturated fat per serving
 - v. % Daily Value (%DV) of saturated fat
 - vi. % Daily Value (%DV) of total fat
 - vii. Explain that the “% Daily Value of fat” (% DV) number can help them figure out how servings of food contribute to their daily maximum allowance of fat. If they add together the percentages of daily value of fat and saturated fat of all the foods they eat in a day, it should total no more than 100%. Ask for volunteers to stand and state the % Daily Value of total fat found on their food labels. As each student stands, add the percentages until the total reaches 100%. Try different combinations of foods.

2. Hidden fat and food preparation:

- a. Write on the board the following words: bacon, steak, chicken, fish, and fries. Discuss foods that contain “visible” fats (which can be seen before, during, and after preparation). Examples: bacon, steak, and fries. Point out that some foods may not appear to have fats in them, but actually do have fats hidden inside. Identify that the following foods contain hidden fat: chicken with skin, lunch meats, candy bars, hot dogs, pies, cheese, cakes, doughnuts, Twinkies, puddings, ice creams, and cookies.
- b. Ask students the following question: “What are some foods that you know are prepared with fats/oils?” Sample responses: French fries, doughnuts, pies, meats, cakes, fried fish, or fried chicken.
- c. Have students describe the preparation process. As each type of fat (butter, oil, lard, or margarine) is mentioned, list it on the board.

d. Example:

What?	How Prepared?	Using What?
French Fries	Deep fried	Vegetable oil, lard, margarine
Cake	Baked	Butter, oil
Fish	Fried (sometimes)	Vegetable oil, lard
Chicken	Fried (sometimes)	Vegetable oil, lard

- e. Have students distinguish between fats that are solid at **room temperature** and fats that are liquid at **room temperature**. (Butter, lard, Crisco shortening, and partially hydrogenated vegetable oil are solid at room temperature; most vegetable oils—including olive oil—and squeeze margarine are liquid at room temperature.)
 - f. Explain to students that most of the time they should choose fats that are liquid at room temperature over fats that are solid at room temperature. Liquid fats are better for the body.
3. Can You Find It?
- a. Distribute handout, “*Can You Find It?*” Have students (in pairs or small groups) examine various food labels and ingredient lists (provided) and record the amount of fat and saturated fat in each food selection on the “*Can You Find It?*” worksheet. (Optional: Have students make bar graphs to compare the amount of fat in various foods.)
 - b. Have students identify the low-saturated fat foods that they should eat more of in place of foods that contain saturated fat. Use the activity found on handout, “*Can You Find It?*” as a basis for this discussion.
 - c. Stress that it’s OK to eat (no more than) one small serving each day of high-fat foods (also known as “sometimes” foods). Moderation is the message.

C. Concluding:

- 1. Have a few students summarize what was learned during this lesson and answer any questions the students have.
- 2. Optional Homework:
 - a. Have students look in their refrigerators and pantries at home and make a list of foods they find that contain less than 5% Daily Value for saturated fat per serving. A food with less than 5% Daily Value for saturated fat per serving is considered a “low-saturated fat” item by the Food Drug Administration.
 - b. Have students collect and make a collage of labels from foods with less than 5% Daily Value for saturated fat. Encourage them to be creative in designing their collage and to add a message about nutrition and low-saturated fat foods appropriate for other students in their class or school. Display the collages for others to view.



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA’s Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW’s toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Can You Find It?

Name _____ Date _____

Instructions: Select eight different food packages or labels and review the Nutrition Facts label. Fill in the information asked for below for each of the eight products. Remember to record the name of the product.

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____

Name of product _____
 Serving size _____
 Total fat per serving _____
 % Daily Value of fat _____
 % Daily Value of saturated fat _____



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.



READ IT *before you EAT IT!*

How many servings are you eating?



Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250 Calories from Fat 110

% Daily Value*

Total Fat 12g 18%

Saturated Fat 3g 15%

Cholesterol 30mg 10%

Sodium 470mg 20%

Total Carbohydrate 31g 10%

Dietary Fiber 0g 0%

Sugars 5g

Protein 5g

Vitamin A 4% • Vitamin C 2%

Calcium 20% • Iron 4%

* 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

Sat 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

What food would have this Nutrition Facts label? Answer below.*

Get What You Need!

Get LESS
5% or less is low
20% or more is high

Get ENOUGH
5% or less is low
20% or more is high



What's the Best Choice for You?

Use the **5%-20% Guide to Daily Values** to choose foods.

*Answer:
Box of macaroni and cheese.

How do your choices stack up? The photos show approximate serving sizes from the five major food groups of the Food Guide Pyramid. This combination of food choices shows the servings from the Pyramid for an older child, a teen girl, an active woman, and most men, for one day. Teen boys and active men may need more servings of food.

www.fns.usda.gov/tn
United States Department of Agriculture • Food and Nutrition Assistance • October 2002
©2002 by the United States Department of Agriculture



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.



TRACKS
Extension Lesson

Energy Balance

Keeping the Balance

Grades 9-12

I. Nutrition Education Objective:

Goal 1: Students will comprehend concepts consistent with USDA guidance related to eating and physical activity for good health.

Objective: As a result of Pennsylvania's SNAP-Ed plan, student will know, understand, analyze and apply concepts, as developmentally appropriate, that are consistent with USDA guidance about the benefits of:

1. Balancing calorie intake with calories expended
2. Being physically active every day as part of a healthy lifestyle

II. Pennsylvania Educational Standards:

- A. 2.5 Mathematical Problem Solving and Communication
- B. 10.1 Concepts of Health
- C. 10.2 Healthful Living
- D. 10.4 Physical Activity
- E. 11.3 Food Science and Nutrition

III. Outcomes:

- A. Students will discuss the relationship among energy intake, energy expenditure and body weight.
- B. Students will calculate the amount of calories burned during physical activity.

IV. Materials:

- A. Handouts: "Food and Nutrients", "Energy Balance", "Keeping the Balance", "Solutions to Keeping the Balance"
- B. Supplies: Clear drinking glass (plastic is fine), pitcher of water (add food coloring for visibility), low-sided baking dish

V. Background Information:

- A. A balanced diet is important because different foods contain different combinations of important nutrients. No single food can supply all the nutrients one needs to maintain good health. We should not exclude certain food groups or assume that one is better than another. For example, oranges provide vitamin C, but no vitamin B₁₂; cheese provides vitamin B₁₂, but no vitamin C.
- B. Carbohydrates, fats, and proteins in food supply energy, which is measured in calories.
 1. *Carbohydrate – provides four calories per gram*

2. *Protein – provides four calories per gram*
 3. *Fat – provides nine calories per gram (So, foods that are high in fat are also high in calories)*
- C. In order to stay at the same body weight, people must balance the amount of energy (calories) in food eaten with the amount of energy (calories) the body uses. Achieving this balance doesn't need to occur absolutely every day, but should be achieved generally, such as over a few days' time.
 - D. Physical activity is an important way to burn food energy. Most Americans spend much of their day doing activities that require little energy. In addition, many Americans of all ages now spend a lot of leisure time each day being inactive or sedentary (watching TV/videos or playing computer/video games). In order to burn excess energy/calories we need to spend less time doing sedentary activities (sitting) and spend more time being active (walking to the store or around the block and climbing stairs rather than using elevators). Less sedentary activity and more vigorous activity may help reduce body fat and disease risks.
 - E. The kinds and amounts of food people eat affect their ability to maintain weight. High-fat foods contain more calories per serving than other foods and may increase the likelihood of weight gain. However, even when people eat less high-fat food, they still can gain weight from eating too much of foods high in starch, sugar, or protein. Choose sensible portion sizes. Eat a variety of foods. Fruits, vegetables, pasta, rice, bread, and other whole-grain foods are filling but are lower in calories than foods rich in fats or oils.
 - F. The pattern of eating may also be important. Snacks provide a large percentage of daily calories for many Americans. Unless nutritious snacks are part of the daily meal plan, snacking may lead to weight gain.

V. Procedure

A. Introductory:

1. Demonstration of Energy Balance

- a. Place the drinking glass in the baking dish (to catch any overflow of water) and fill the glass to the very top with colored water. Explain that this full glass represents a person who is full of the nutrients and energy needed to remain healthy and active. This glass has just enough to fill it. Everybody is different though. We all need slightly different amounts of calories based on our age, gender, activity level, and metabolism. Therefore, if you picture yourself like the glass we all can hold/need different amounts of energy and nutrients.
- b. Ask the students what happens to the level of nutrients in the person's body throughout the day (Answer: the level goes down). Pour some of the water back into the pitcher to show a partly empty glass.
- c. Ask the students what the person needs to do to get back to the right level of nutrients (Answer: eat nutritious foods). Fill the glass up to the top again.
- d. Ask the students what happens when a person regularly eats

more than he/she needs for her/his daily energy requirements for growth and maintenance of body functions (answer: he/she will gain weight). Pour extra water into the already full glass, allowing it to overflow. Explain that the overflowing water represents extra energy that our bodies will need to store, usually in the form of extra fat.

- e. Explain to the class that in today's lesson they will take a closer look at how they can get nutrients their bodies need without getting too many calories beyond their requirements for growth and maintenance.

B. Developmental:

1. Food and Nutrients

- a. Ask the students this question: "What are nutrients and why are they important to a person?" The following definition may be helpful: "Nutrients are the parts of foods your body uses to grow, repair itself, and give you energy." See if anyone can name some of the six nutrients (water, carbohydrate, protein, fat, vitamins, minerals). You may need to provide clues to get the students in the right mindset.
- b. Using the handout, "*Food and Nutrients*" discuss the six types of nutrients, their functions, and the food sources where they may be found. Explain that it is important to eat a variety of foods in order to get all of the nutrients the body needs.
- c. Write the word "calorie" on the board. Explain that a calorie is a measure of how much energy a food gives you. Some foods, such as fruits and vegetables, are full of nutrients, and are also low in calories. Other foods, such as "junk foods," can have many calories and very few nutrients. We often refer to "junk food" as being full of "empty calories" because we don't get a lot of vitamins and minerals from it.
- d. Most adults need 1,500 to 2,200 calories a day, depending on how much they exercise. You are still growing, and that requires energy, so you probably need about 2,000-3,000 calories a day, depending on how physically active you are. Have the student name some other groups of people that may need more or less energy (MORE: athletes and LESS: older adults like grandparents)

2. Energy Balance

- a. Use the analogy of a see-saw or an old-fashioned balance scale (handout, "*Energy Balance*") explain that if the nutrients and calories taken into the body and the energy used by the body are not equal, the body can have problems.
 - i. "What can happen if the nutrients and energy used are greater than the nutrients and calories taken in?" (Answer: The body gets tired, can't grow or repair tissue, begins to break down lean body tissue and fat stores, loses weight.)
 - ii. "What could a person do to fix the imbalance?" (Answer: Eat

- more nutrients and calories.)
- iii. “What might happen if the amount of calories taken in is consistently greater than the amount of energy used?” (Answer: Excess energy will be stored as fat, and the body will put on weight.)
 - iv. “What could this person do to fix the imbalance?” (Answer: Eat fewer calories; exercise more.)
3. Keeping the Balance
- a. Have the students form pairs and distribute the “*Keeping the Balance*” worksheet. Explain that everything a person does, even sleeping, requires the body to use calories for energy. Some activities require a lot more units of energy than others. The chart shows approximately how many calories are required for a 100-pound person doing various activities. Instruct each student to use the chart and his or her own knowledge to answer the questions on the worksheet.

C. Concluding:

1. Once the students have completed the worksheet, discuss their answers. Encourage them to think about how they might use this information to improve their own energy balance.



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA’s Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW’s toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Food and Nutrients

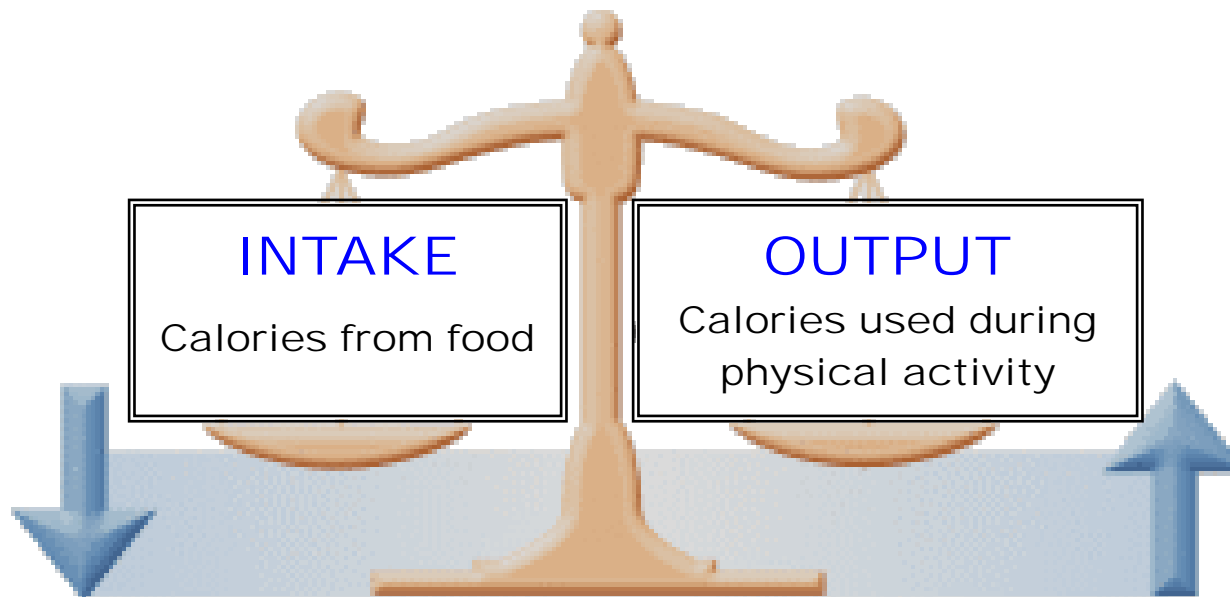
Nutrients and Functions	Food Sources
Water	
<ul style="list-style-type: none"> ▪ Cools your body when exercising ▪ Helps you digest food ▪ Helps transport nutrients in your body 	Water, drinks without caffeine, fruit, soup
Carbohydrates	
<ul style="list-style-type: none"> ▪ Provides energy ▪ Can be stored for energy later ▪ Gives foods sweetness and texture ▪ Provides vitamins, minerals, and fiber 	Whole grains, fruits, vegetables
Protein	
<ul style="list-style-type: none"> ▪ Builds and repairs muscle ▪ Helps your body grow ▪ Provides energy 	Meat, poultry, fish, beans, nuts, milk, milk products, eggs, tofu
Fat	
<ul style="list-style-type: none"> ▪ Provides energy ▪ Can be stored for energy later ▪ Makes you feel less hungry ▪ Makes food taste good ▪ Helps keep your skin smooth 	Vegetable oil, meats, nuts, milk products
Vitamins	
<ul style="list-style-type: none"> ▪ Helps you see at night ▪ Helps your body get energy from food ▪ Helps you heal cuts and bruises ▪ Helps fight infections and colds 	Vegetables, fruit, fish, whole grains, milk, milk products
Minerals	
<ul style="list-style-type: none"> ▪ Helps your blood carry oxygen and nutrients to your muscles and other parts of your body ▪ Helps build strong teeth and bones 	Whole grains, lean meat, milk, vegetables, fruit, cheese, beans



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Energy Balance

THE ENERGY BALANCE



THE ENERGY BALANCE

Keeping the Balance

Name _____

Please complete the following questions using the information provided.

Everything you do, even sleeping and growing requires your body to use calories.

Almost everything you eat or drink, except water, contains calories.



Activity	Calories used in 30 minutes		
	100 pound person	150 pound person	200 pound person
Bike riding	93	132	177
Running	183	276	375
Swimming	150	249	336
Resting/sitting	40	42	57
Walking	81	108	147

If you were 100 pounds, answer the following questions:

1. How many calories would you use watching television from 4:00 to 6:30 pm?
2. How many more calories would you use if you rode your bike for an hour compared to if you watched TV for an hour?
3. How many extra calories would you use over the course of a week if you substituted an hour of bike riding for an hour of TV watching each day?
4. How about for a month?
5. How many calories would you use if you ran laps around the school track for 10 minutes, then rode your bike home for 10 minutes?



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Solutions to Keeping the Balance

1. How many calories would you use watching television from 4:00 to 6:30 P.M.?

Answer:

Step 1: resting/sitting = 40 calories/30 minutes

Step 2: 4:00 P.M.-6:30 P.M. = 2.5 hours or five 30-minute periods

Step 3: 5 (30-minute periods) x 40 calories/30 minutes = **200 calories**

(If you used 150 pounds = **210 calories** & if you used 200 pounds = **285 calories**)

2. How many more calories would you use if you rode your bike for an hour compared to if you watched TV for an hour?

Answer:

Step 1: 186 calories – 80 calories = **106 calories**

(If you used 150 pounds = **180 calories** & if you used 200 pounds = **240 calories**)

3. How many extra calories would you use over the course of a week if you substituted an hour of bike riding for an hour of TV watching each day?

Answer:

Step 1: 106 calories/day x 7 days = **742 calories**

(If you used 150 pounds = **1260 calories** & if you used 200 pounds = **1680 calories**)

How about for a month (30 days)?

Answer:

Step 1: 106 calories/day x 30 days = **3,180 calories**

(If you used 150 pounds = **5400 calories** & if you used 200 pounds = **7200 calories**)

4. How many calories would you use if you ran laps around the school track for 10 minutes, then rode your bicycle home (10 minutes)?

Answer:

Step 1: (183 calories/half hour of running) ÷ (3 10-minute periods in a half hour) = 61 calories for each 10-minute period running

Step 2: (93 calories/half hour of bike riding) ÷ (3 10-minute periods in a half hour) = 31 calories for each 10-minute period of bike riding

Step 3: 61 calories for 10 minutes of running + 31 calories for 10 minutes of riding bike = **92 calories**

(If you used 150 pounds = **136 calories** & if you used 200 pounds = **184 calories**)



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.



TRACKS
Extension Lesson

Energy Balance

Make Your Calories Count

Grades 9-12

I. Nutrition Education Objective:

Goal 1: Students will comprehend concepts consistent with USDA guidance related to eating and physical activity for good health.

Objective: As a result of Pennsylvania's SNAP-Ed plan, student will know, understand, analyze and apply concepts, as developmentally appropriate, that are consistent with USDA guidance about the benefits of:

1. Balancing calorie intake with calories expended

II. Pennsylvania Educational Standards:

- A. 2.5 Mathematical Problem Solving and Communication
- B. 10.1 Concepts of Health
- C. 10.2 Healthful Living
- D. 10.4 Physical Activity
- E. 11.3 Food Science and Nutrition

III. Outcomes:

- A. Students will discuss the relationship among energy intake, energy expenditure and body weight
- B. Students will discuss how to use Nutrition Facts labels to choose nutrient-dense foods

IV. Materials:

- A. Handouts: "Sample Nutrition Facts Label", "Make Your Calories Count"

V. Procedure:

A. Introductory:

1. Healthy weight management requires a balance between a healthy diet and physical activity. Most of us want simpler ways to maintain a healthy weight and get the most nutrition out of what we eat. There are no magic answers, but there is one powerful tool we often overlook - the Nutrition Facts label on packaged foods.
2. We can use Nutrition Facts labels to help us make healthy choices by following these simple steps:
 - a. Size Up Your Serving and Calories
 - b. See What's In It For You
 - c. Judge If It's Right For You

B. Developmental:

1. Size Up Your Serving & Calories
 - a. When you select or compare foods, see what the label says about the serving size and calories. Ask yourself:
 - i. What is the serving size?
 - ii. How many servings are in the container?
 - iii. How many calories are in a single serving?
 - b. Serving Size
 - i. All product nutrition labels identify a serving size - a standardized amount, such as cups or pieces, followed by the metric amount, such as numbers of grams.
 - c. Servings per Container.
 - i. Many packages hold more than one serving. When you consume multiple servings, it is easy to eat or drink much more than you realize. This can affect your calorie intake (and over time, your weight) in a big way.
 - d. Calories per Serving
 - i. Always check the calories, even for products you think you know. You may be surprised.
 - ii. If you eat and drink more calories than you burn, you will gain weight. To achieve or maintain a healthy weight, be mindful of calories when comparing like products.
 - iii. How many calories are too high or low for a serving? This depends on your calorie goal for the day and how you balance your food choices during the day. In general, though, follow this guide to size up calories in a single serving.
 - iv. General Guide to Calories
 1. 40 calories - LOW
 2. 100 calories - MODERATE
 3. 400 calories - HIGH
2. See What's In It For You
 - a. Healthy weight management includes getting the most nutrition from the calories you eat. This means choosing foods that give you enough of the nutrients you need for good health and limiting those that may contribute to health problems.
 - b. Always Check the %DVs
 - i. The Percent Daily Value (%DV) helps you determine if a serving of food is high or low in a nutrient.
 - c. Quick Guide to %DV
 - i. 5%DV or less is LOW
 - ii. 20%DV or more is HIGH
 - d. Limit these nutrients: Total Fat, Saturated Fat, Tran Fat, Cholesterol, and Sodium
 - e. Get enough of these nutrients: Dietary Fiber, Vitamin A, Vitamin C, Calcium and Iron
 - f. Remember, it's more than just calories, it's also the nutrients that count
3. Judge If It's Right For You
 - a. Apply these nutrition label skills to manage your weight the healthy way. By

learning to control calories and nutrients, you will make wise food choices that will benefit your health.

- b. When you compare or select food products, pay attention to:
 - i. Serving size
 - ii. Number of servings in the container
 - iii. How many calories in a single serving
 - iv. %DVs - you need to limit some nutrients and get enough of others.
- c. To judge if a food is right for you, ask yourself:
 - i. Is this a smart choice based on calories per serving? Are they low, moderate, or high.
 - ii. Is this a smart choice based on the %DV of nutrients? Are the nutrients you want to limit low? Are the nutrients you want to get enough of high?
- d. Finally, ask - is this food a smart choice for me? The answer may differ based on whether you are trying to gain, lose or maintain your weight; how many calories you need each day based on age, gender and level of physical activity, special health or dietary concerns.

4. Activity: "Make Your Calories Count" worksheet

C. Concluding:

1. Review answers for "Make Your Calories Count" worksheet
2. Remind students to make their calories count by using Nutrition Facts labels to choose nutrient-dense foods and to balance calories in with physical activity.

Adapted from: FDA, Make Your Calories Count

<http://www.fda.gov/Food/LabelingNutrition/ConsumerInformation/ucml14022.htm>



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Sample Nutrition Facts Label

Sample label for
Macaroni & Cheese

① **Start Here** →

② **Check Calories**

③ **Limit these Nutrients**

④ **Get Enough of these Nutrients**

⑤ **Footnote**

Nutrition Facts	
Serving Size 1 cup (228g) Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

* 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
Sat 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

⑥ **Quick Guide to % DV**

• 5% or less is Low

• 20% or more is High



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Name: _____

Date: _____

Make Your Calories Count

Directions: Read the questions below and fill in the answers. Use the labels on the right to help answer the questions.

1. All product nutrition labels identify a serving size - a standardized amount, such as cups or pieces, followed by the metric amount, such as numbers of grams.

Suppose you are snacking on a 6 ounce bag of regular, salted potato chips. How much is one serving?



6-ounce Bag of Potato Chips

Nutrition Facts

Serving Size 1oz. (28g/About 20 chips)
Servings Per Container 6

Amount Per Serving

Calories 190 Calories from Fat 90

2. Many packages hold more than one serving. When you consume multiple servings, it is easy to eat or drink much more than you realize. This can affect your calorie intake (and over time, your weight) in a big way.

How many servings are in a 24-ounce bottle of cola?

If you drink the whole 24-ounce bottle of soda, how many calories would you consume?



24-ounce Bottle of Cola

Nutrition Facts

Serving Size 8 fl oz (240mL)
Servings Per Container 3

Amount Per Serving

Calories 100 Calories from Fat 0

3. When you compare or select food products, pay attention to the %DVs. Remember you need to limit some nutrients and get enough of others.

Quick Guide to % DV

5% DV or less is LOW

20% DV or more is HIGH



Home Style Chicken and Mushroom Chowder

Nutrition Facts

Serving Size 1 cup (240g)
Servings Per Container 2

Amount Per Serving

Calories 210 Calories from Fat 110

% Daily Value *

Total Fat 12g **18** %

Saturated Fat 4g **20** %

Trans Fat 0g

Cholesterol 10mg **3** %

Sodium 970mg **40** %

Total Carbohydrate 15g **5** %

Dietary Fiber 3g **12** %

Sugars 1g

Protein 10g

Vitamin A **0** %

Vitamin C **8** %

Calcium **2** %

Iron **8** %

What is the % DV for saturated fat in 1 cup of home style chicken and mushroom chowder soup? _____ %DV

Is this %DV for saturated fat high or low? _____

What is the % DV for sodium in 1 cup of soup? _____ %DV

Is this %DV for sodium high or low? _____

How many calories would you consume if you ate 2 cups of soup? _____

Use the labels below to answer questions 4-7

Low Fat Chocolate Milk

Fat Free Milk

Nutrition Facts		Nutrition Facts	
Serving Size 8 fl oz (240mL) Servings Per Container 8		Serving Size 8 fl oz (240mL) Servings Per Container 8	
Amount Per Serving		Amount Per Serving	
Calories 160	Calories from Fat 25	Calories 80	Calories from Fat 0
% Daily Value *		% Daily Value *	
Total Fat 2.5g	4 %	Total Fat 0g	0 %
Saturated Fat 1.5g	8 %	Saturated Fat 0g	0 %
Trans Fat 0g		Trans Fat 0g	
Cholesterol 5mg	2 %	Cholesterol <5mg	0 %
Sodium 150mg	6 %	Sodium 125mg	5 %
Total Carbohydrate 26g	9 %	Total Carbohydrate 12g	4 %
Dietary Fiber 1g	5 %	Dietary Fiber 0g	0 %
Sugars 26g		Sugars 12g	
Protein 8g		Protein 8g	
Vitamin A	10 %	Vitamin A	10 %
Vitamin C	4 %	Vitamin C	4 %
Calcium	30 %	Calcium	30 %
Iron	4 %	Iron	0 %



- How do the calories for one cup of fat free milk and low fat chocolate milk compare?
 - Low fat chocolate milk has less calories
 - Fat free milk has less calories
 - They have the same calories
- How does the %DV of saturated fat for 1 cup of each compare?
 - Low fat chocolate milk is lower in saturated fat
 - Fat free milk is lower in saturated fat
 - They are both low in saturated fat.
- How does the %DV of calcium for 1 cup of each compare?
 - Low fat chocolate milk is higher in calcium
 - Fat free milk is higher in calcium
 - They are both high in calcium.
- Which product is the smarter choice when thinking about calories, saturated fat, and calcium in a serving? Explain your answer. _____



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.

Make Your Calories Count

ANSWER KEY

1.

Suppose you are snacking on a 6 ounce bag of regular, salted potato chips. How much is one serving? **1 ounce, about 20 chips**

2.

How many servings are in a 24-ounce bottle of cola? **3**

If you drink the whole 24-ounce bottle of soda, how many calories would you consume? **300 calories**

3.

What is the % DV for saturated fat in 1 cup of home style chicken and mushroom chowder soup? **20%DV**

Is this %DV for saturated fat high or low? **HIGH**

What is the % DV for sodium in 1 cup of soup? **40 %DV**

Is this %DV for sodium high or low? **HIGH**

How many calories would you consume if you ate 2 cups of soup? **420 calories**

4. How do the calories for one cup of fat free milk and low fat chocolate milk compare?

A. Low fat chocolate milk has less calories

B. Fat free milk has less calories

C. They have the same calories

5. How does the %DV of saturated fat for 1 cup of each compare?

A. Low fat chocolate milk is lower in saturated fat

B. Fat free milk is lower in saturated fat

C. They are both low in saturated fat.

6. How does the %DV of calcium for 1 cup of each compare?

A. Low fat chocolate milk is higher in calcium

B. Fat free milk is higher in calcium

C. They are both high in calcium.

7. Which product is the smarter choice when thinking about calories, saturated fat, and calcium in a serving? **Fat free milk- it is lower in calories and saturated fat and has less calories**



Funded by the PA Department of Public Welfare (DPW) through the PA NUTRITION EDUCATION TRACKS, a part of USDA's Supplemental Nutrition Assistance Program (SNAP). To find out how SNAP can help you buy healthy foods, contact the DPW's toll-free Helpline at 800-692-7462 or 215-430-0556. This institution is an equal opportunity provider and employer.