



## **You Are What You Eat** (The 6 main nutrients found in foods)

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Grade Level: 9-10

Time Allotment: Two 45-minute class periods



Overview: The food we eat not only fills our stomach to give us that sense of fullness, but also provides us with the 6 basic nutrients needed to survive. Each of the six, carbohydrates, proteins, fats, vitamins, minerals, and water, have a unique function in the growth and functioning of our body.

Subject Matter: Health

Learning Objectives:

Students will be able to:

- Define carbohydrates, proteins, fats, vitamins, minerals and water
- Identify quality food sources of carbohydrates, proteins, fats, vitamins, and minerals
- Describe the role of water in maintaining good health

Standards:

From the Montana State Standards for Health Enhancement:

(Available on-line at [www.opi.state.mt.us](http://www.opi.state.mt.us))

Standard 1: Have a basic knowledge and understanding of concepts that promote comprehensive health.

Standard 5: Demonstrate the ability to use critical thinking and decision making to enhance health.

Standard 6: Demonstrate interpersonal communication skills to enhance health.

Media Components:

VIDEO

*What Are Nutrients?* Educational Video Network, Inc. Huntsville, TX.

## WEB SITES

*Nutrients Homepage: An Introduction to Nutrients.* Dreamweaver Nutrition.  
<http://www.teachnet.ie/gmcweeney/> This site has great information concerning the six main nutrients. Information ranges from major food sources to the Recommended Daily Allowances for each nutrient.

### Materials:

*Nutrient Sources and Facts* transparency

5x7 index cards

Tape

Blue pen

Red pen

For each student:

*Nutrients* sheet (see attached)

*6 Reasons to Eat* sheet (see attached)

For class:

*Each student will be making his or her own sandwich so amounts will vary according to class size.*

Bread (whole wheat and white)

Assorted lunch meats (ham, chicken, bologna, turkey, etc.)

Assorted cheeses (American, Swiss, cheddar, Munster, etc.)

Peanut butter

Assorted jellies (grape, strawberry, raspberry, etc.)

Lettuce

Tomato

Onion

Pickle

Mayonnaise

Mustard

Paper plates

Plastic cups

Assorted drinks (milk, water, juice, etc.)

Butter knife

Cutting knife

### Prep for Teachers:

- Prior to teaching this lesson, bookmark the site used in the lesson on each computer in the computer lab.
- Prep the video so that it is at the beginning segment.
- Prepare the hands-on elements of the lesson by:
  - Making a transparency of the *Nutrient Sources and Facts* worksheet
  - Copying the two worksheets attached to this lesson
  - Gather all materials
  - Fill out the 5x 7 index cards for the Introductory Activity as follows:

Prepare index cards by using a red pen to write one of the six basic nutrients on separate index cards (*carbohydrate, protein, fats, vitamins, minerals, water.*) Use the blue pen to write examples of each of the six basic nutrients on the 5x7 index cards, examples are listed below:

**Proteins**

meat  
chicken  
tuna  
dried beans  
steak  
eggs  
nuts

**Carbohydrates**

wheat bread  
rice  
pasta  
macaroni noodles  
cereal  
oatmeal

**Fats**

ice cream  
whole milk  
french fries  
butter  
corn oil

**Vitamins**

Vitamin A  
Thiamine  
Riboflavin  
Niacin  
Folic Acid  
Ascorbic Acid

**Minerals**

calcium  
chlorine  
iodine  
iron  
magnesium  
phosphorus

**Water**

drinking water  
bottled water  
fruit juice  
soups  
fruits  
celery

When using media provide students with a FOCUS FOR MEDIA INTERACTION, a specific task to complete and/or information to identify during or after viewing of video segments, Web sites, or other multimedia elements.

**Introductory Activity:**

Step 1: Explain to the students that they are going to be learning about the 6 main nutrients and what foods provide good sources of these nutrients. Define nutrients for the students: *Nutrients are chemical substances found in foods that provide fuel for energy, materials needed for building and maintenance of body tissues, and/or supply substances that function in the regulation of body processes.* Name the six main nutrients for the students (*proteins, carbohydrates, fats, vitamins, minerals, and water.*)

Step 2: Use the *Nutrient Sources and Facts* transparency to discuss important information about each nutrient.

Step 3: Tell students that they are now going to play “The Nutrient game”. The directions are as follows:

- Have each student stand in a line at the front of the room, or a large open area. Tape to each student’s back one of the prepared index cards which either lists a main nutrient or an example of the nutrient.
- Tell students that they are not to look at their **own** cards. Instead they are to guess what is written on their cards by asking other students questions about the

- card. Students may only ask one question per classmate, and the questions can only be “yes” or “no” questions. (*Am I a carbohydrate? Am I a bottle of water?*)
- Once a student has guessed correctly what he or she is, have him or her take the card off of his or her back and tape it to his or her front side.
  - Now have students group themselves together according to the main nutrient and examples of each. Some students may have a hard time finding the correct group because it belongs to more than one. Help them to choose the most appropriate group.

#### Learning Activity:

Step 1: Ask students several questions pertaining to the *Nutrients* worksheet. *What functions do nutrients play in our bodies?; What food groups provide most of our vitamins and minerals?; What role do vitamins play in our bodies?; How long can an average human survive without water? (Answers may vary.)* DO NOT give any right or wrong answers; only tell students that they should be able to answer those questions and more after watching the video.

Step 2: Provide your students with a FOCUS FOR MEDIA INTERACTION; hand out to each student the *Nutrients* worksheet and ask the class to answer each question as they watch the video. Students will use a completed worksheet as a study guide for the remainder of the unit.

Step 3: Insert the video, *What Are Nutrients?* into the VCR. PLAY the entire video for the students (12 min.). STOP the tape when the video picture has gone black.

Step 4: Lead a short discussion with students about what they have learned from the video. *Are there any questions that were unclear or you missed during the video?; Of the three functions that nutrients play, which surprises you the most?; Which nutrient do you believe is the most important?; Are you doing your best to get the required nutrients daily?(Answers will vary.)*

Step 4: Have students individually log onto *Nutrients Homepage: An Introduction To Nutrients* at <http://www.teachnet.ie/gmcweeney/>. Provide your students with a FOCUS FOR MEDIA INTERACTION, asking them to complete the *6 Reasons To Eat* worksheet using the web site. (*Have students hand in this worksheet for assessment.*)

#### Culminating Activity:

Step 1: Prior to students coming to class, set up a large table with sandwich items upon it in no fashion.

Step 2: After students have come in to see the display of food, and taste buds have become aroused, ask for some volunteers to name the type of nutrients found in each of the items on the table. **(Quality sources of food for each nutrient are listed below:)**  
**Proteins:** *peanut butter, meat, milk, cheese*  
**Carbohydrates:** *bread, milk, peanut butter*

*Fats: milk, cheese, mayo*

*Minerals: milk, bread, lettuce, cheese*

*Vitamins: tomato, milk, cheese, lettuce*

Step 3: Allow students to enjoy a healthy, nutrient filled, sandwich and drink. When they are finished take a five to ten minute walk around the school to burn off some of those excess calories!!

Cross-Curricular Extensions:

SOCIAL STUDIES

Look at food availability and production in third world countries in contrast to the United States.

CONSUMER SCIENCE

Have students gather recipes for vegetarian sandwiches and meals. Prepare some of the foods, and have a food-eating session.

MEDIA

Examine how advertising affects what society eats.

Community Connections:

- Ask a nutritionist to visit the classroom and discuss how nutrition differs for teen needs vs. adult needs.
- Ask a doctor to your classroom to discuss eating disorders.
- Invite an adult athlete to class to discuss how his or her eating habits fit into the training regime.

# Nutrient Sources and Facts

Nutrient	Sources	Facts
<b>Proteins</b>	* Meat. Chicken, tuna, eggs, dried beans, nuts	*Made of amino acids *Essential for the growth, development, and repair of all body tissues *Form parts of muscle, bone, blood, cell membrane
<b>Carbohydrates</b>	*Bread, wheat, rice, pasta, macaroni, noodles, cereal, oatmeal	*Provide energy *Simple carbohydrates, such as fruit, enter the bloodstream rapidly for quick energy *Complex carbohydrates, such as rice, provide long-lasting energy
<b>Fats</b>	*Ice cream, milk, cheese, butter, yogurt, meat, egg yolks, corn oil	*A source of energy *Essential for making certain vitamins available *Stored as fat tissue which surrounds and protects organs *Saturated fats, such as those in meat or dairy products, raise cholesterol levels *Unsaturated fats are found in plant products
<b>Vitamins</b>		**Facilitate chemical reactions
	*Carrots, sweet potatoes	*Vitamin A- night vision, bone formation
	*Nuts, cereal, peas, beans	*Thiamine- appetite
	*Whole milk, cottage cheese, eggs	*Riboflavin- metabolism, energy production, eyes, skin
	*Cereals, fish, peanuts	*Niacin- normal digestion, appetite, nervous system
	*Whole grain breads, broccoli	*Folic Acid-blood formation, enzyme function
<b>Minerals</b>		*Assists in the regulation of chemical reactions
	*Milk, cheese, cottage cheese	*Calcium-strong bones and teeth, heartbeat
	*Table salt	*Chlorine-aids in digestion, keeps body limber
	Table salt, seafood	*Iodine-energy, mental alertness, growth, manufacture thyroid
	*Oatmeal, red meat, liver	*Iron-forms red blood cells, growth, prevents fatigue
	*Dark green veggies, apples	*Magnesium-fights depression, insomnia, nervousness
	*Whole grains, fish, poultry	*Phosphorus-healthy gums and teeth, growth and repair of cells
<b>Water</b>	*Drinking water, bottled water, juices, soups, veggies	*Makes up blood *Help the process of digestion *Helps remove body wastes *Helps regulate body temperatures



# Nutrients

## Answer Sheet

8. What functions do nutrients play in our bodies?  
*A. Build and maintain body tissues B. Regulate body processes C. Fuel for body energy*
9. To ensure that we are receiving all the appropriate nutrients in our diet, we should follow what guide? *Food Guide Pyramid.*
10. What food group provides **most** of our carbohydrates? *Grains (breads and cereals.)*
11. What food groups provide **most** of our vitamins and minerals? *Veggies and Fruits.*
12. Which food group provides us with the **most** protein? *Meat.*
13. What is our body's main energy source? *Carbohydrates.* Which type provides "quick" energy? *Simple Carbs.* Which type provides "long term" energy? *Complex Carbs.*
14. Why is fat needed in our bodies?  
*A. Storage of fat soluble vitamins B. Cushioning of vital organs C. Maintaining hormonal balance*
8. What role do vitamins play in our bodies? *They help convert food into energy and body tissue.*
9. List the specific functions for each:  
Vitamin A: *healthy skin & vision*  
Vitamin B1: *turn carbs. to energy & give us an appetite*  
Vitamin B2: *tissue repair & healthy skin*  
Vitamin B6: *healthy teeth & gums*  
Vitamin C: *tissue metabolism & wound healing*  
Vitamin K: *normal blood clotting*
11. What is the most common mineral? *Calcium.*
11. How long can an average human survive without water? *1 week.*

# 6 Reasons to Eat

## Vitamins

1. Which vitamins are fat soluble?  
Which vitamins are water soluble?
2. What function does vitamin K serve?  
Name three (3) good sources of vitamin K.
3. Which vitamin is involved in releasing energy from foods and essential for healthy skin?
4. The word vitamin comes from vita, the Latin word for what?
5. A severe deficiency of this vitamin causes anemia, particularly during pregnancy.

## Proteins

1. How many essential amino acids are needed by an adult?  
How many are needed by children?
2. Name two (2) functions of proteins.
3. If you weighed 240 kg, how many grams of protein would be recommended?
4. Name two diseases caused by protein deficiencies in underdeveloped countries.

## Fats

1. Why do fats give us so much energy?
2. What type of fats are you consuming by eating peas and nuts?  
What type by eating eggs and meat?
3. Is it true that we should decrease our intake of unsaturated fats in the western world?
4. Name a function of fat that is useful for a boxer?
5. Name two ways to cut down on saturated fats.

### Minerals

1. *What mineral combines with calcium in the formation of strong bones and teeth?*
2. *Muscle weakness could be a sign of what?  
What foods would you recommend I eat?*
3. *Red meat, eggs, pulses, and nuts are good sources of what mineral?*
4. *Approximately how many mineral elements does the human body require?*

### Carbohydrates

1. *Name the four classifications of carbohydrates.*
2. *What is the main function of fibre rich and starchy foods?*
3. *What is an empty kilocalorie?*
4. *Name three sources of starches.*

### Water

1. *Water helps us out when we are exercising by doing what?*
2. *How many litres of water are required daily to avoid dehydration?*
3. *Other than beverages, where do we get the most water?*
4. *What % of the human body is made up of water?*

# 6 Reasons to Eat

## Answer Sheet

### Vitamins

6. Which vitamins are fat soluble? **A, D, E, K**  
Which vitamins are water soluble? **B group, C**
7. What function does vitamin K serve? **Clotting of the blood.**  
Name three (3) good sources of vitamin K. **Liver, green veggies, fish liver oil.**
8. Which vitamin is involved in releasing energy from foods and essential for healthy skin? **B3 (Niacin.)**
9. The word vitamin comes from vita, the Latin word for what? **Life.**
10. A severe deficiency of this vitamin causes anemia, particularly during pregnancy.  
**Folic Acid.**

### Proteins

5. How many essential amino acids are needed by an adult? **8.**  
How many are needed by children? **10.**
6. Name two (2) functions of proteins. **New cell growth, repair damaged cells, produce heat and energy, and manufacture body chemicals.**
7. If you weighed 240 kg, how many grams of protein would be recommended?  
**240 g**
8. Name two diseases caused by protein deficiencies in underdeveloped countries.  
**Kwashiorkor and Marasmus.**

### Fats

6. Why do fats give us so much energy? **They contain a lot of carbon.**
7. What type of fats are you consuming by eating peas and nuts? **Unsaturated.**  
What type by eating eggs and meat? **Saturated.**
8. Is it true that we should decrease our intake of unsaturated fats in the western world? **No.**

9. Name a function of fat that is useful for a boxer? *It protects delicate and vital organs such as the kidneys and nerves.*
10. Name two ways to cut down on saturated fats. *Grill rather than fry, Use veggie oils instead of hard fats, remove meat fat, look for hidden fats in diet, and use low fat milk, cheese and yogurt.*

### Minerals

5. What mineral combines with calcium in the formation of strong bones and teeth? *Phosphorus.*
6. Muscle weakness could be a sign of what? *Potassium.*  
What foods would you recommend I eat? *Meat, milk, dates, and bananas.*
7. Red meat, eggs, pulses, and nuts are good sources of what mineral? *Iron.*
8. Approximately how many mineral elements does the human body require? *20.*

### Carbohydrates

5. Name the four classifications of carbohydrates. *Sugar, starches, cellulose, and pectin.*
6. What is the main function of fibre rich and starchy foods? *Give us a "full feeling."*
7. What is an empty kilocalorie? *Foods that contain no nutrients, only sugar.*
8. Name three sources of starches. *Cereals, pasta, flour, bread, potatoes, root and pulse veggies.*

### Water

5. Water helps us out when we are exercising by doing what? *Regulating body temperature by perspiration.*
6. How many litres of water are required daily to avoid dehydration? *2-2.5 litres.*
7. Other than beverages, where do we get the most water? *Fruits and green veggies.*

*What % of the human body is made up of water? 70%.*