Nutrition Principles
& The Food Pyramid

By

Stephen O’Donnell
Introduction
Influences on Food Choices

TO ANSWER
Why do I choose the kinds of food I eat?

Nutritional Components of Food

TO ANSWER
How do I organize or categorize foods?

The USDA Food Pyramid

TO ANSWER
What tools can I use to understand what food I need?

Analyzing Your Nutrition Needs

TO ANSWER
How do I understand what my body needs?

Completing a Menu Plan

TO ANSWER
How do I plan a menu to meet my needs?
**FUNCTIONAL NOTATIONAL CHART:**
**LESSON 1**
The Difference Between Hunger & Appetite

<table>
<thead>
<tr>
<th><strong>Learning strategies</strong></th>
<th><strong>Content</strong></th>
<th><strong>Tasks and activities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicting</td>
<td>Science</td>
<td>Creating collage or writing down favorite foods</td>
</tr>
<tr>
<td>Classifying</td>
<td>Nutrition</td>
<td>Work individually to create collage or list.</td>
</tr>
<tr>
<td>Discussing</td>
<td></td>
<td>Discuss and share with a group</td>
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<tr>
<td>Writing</td>
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<tr>
<td>Interacting</td>
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<tr>
<th><strong>Listening Skills</strong></th>
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<th><strong>Writing Skills</strong></th>
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<tbody>
<tr>
<td>Listening for directions and information</td>
<td>Taking turns</td>
<td>Reading vocabulary definitions.</td>
<td>Journal writing</td>
</tr>
<tr>
<td></td>
<td>Using gestures when necessary</td>
<td></td>
<td>Complete vocabulary worksheets to show understanding.</td>
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<tr>
<td></td>
<td>Using appropriate responses: one-word, phrases or full sentences</td>
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<table>
<thead>
<tr>
<th><strong>Grammar</strong></th>
<th><strong>Vocabulary</strong></th>
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<tbody>
<tr>
<td>Using Adjectives to describe</td>
<td>Using new and previously learned terms</td>
</tr>
<tr>
<td>Present Simple Tense to describe food preferences</td>
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<tr>
<td>Simple Past Tense</td>
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**FUNCTIONAL NOTATIONAL CHART:**
**LESSON 2**
The Nutritional Components of Food

<table>
<thead>
<tr>
<th>Learning strategies</th>
<th>Content</th>
<th>Tasks and activities</th>
</tr>
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<tbody>
<tr>
<td>Predicting</td>
<td>Science</td>
<td>Circle foods eaten last week or write out foods eaten.</td>
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<tr>
<td>Classifying</td>
<td>Nutrition</td>
<td>Classify and categorize foods eaten individually and then in a group.</td>
</tr>
<tr>
<td>Discussing</td>
<td></td>
<td>Discuss and share foods and food categories in a group.</td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td>Check-off, match, or fill-in vocabulary words.</td>
</tr>
<tr>
<td>Interacting</td>
<td></td>
<td>Complete or follow along on a graphic organizer.</td>
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<td></td>
<td>Discuss and share with a group</td>
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<th>Reading Skills</th>
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<tr>
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<td>Reading vocabulary definitions.</td>
<td>Complete vocabulary worksheets to show understanding.</td>
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<td>Using gestures when necessary</td>
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<tr>
<td>Using Adjectives to describe</td>
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<td>Present Simple Tense</td>
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<td>Simple Past Tense</td>
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FUNCTIONAL NOTATIONAL CHART:
LESSON 3
The Food Pyramid

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<th>Content</th>
<th>Tasks and activities</th>
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</thead>
<tbody>
<tr>
<td>Predicting</td>
<td>Science</td>
<td>Point to or gesture or describe different parts of the food pyramid.</td>
</tr>
<tr>
<td>Classifying</td>
<td>Nutrition</td>
<td>Identify or name the different categories of the Food Pyramid.</td>
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<tr>
<td>Discussing</td>
<td></td>
<td>Complete or follow along on a graphic organizer.</td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td>Discuss and share with a group.</td>
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<tr>
<td>Interacting</td>
<td></td>
<td>Play a game with a group to practice the food categories of the Food Pyramid.</td>
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<th>Speaking Skills</th>
<th>Reading Skills</th>
<th>Writing Skills</th>
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<tbody>
<tr>
<td>Listening for directions and information</td>
<td>Taking turns</td>
<td>Reading vocabulary definitions.</td>
<td>Complete vocabulary worksheets to show understanding.</td>
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<td></td>
<td>Using gestures when necessary</td>
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<td>Complete listening guides and graphic organizers.</td>
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<td>Using appropriate responses: one-word, phrases or full sentences</td>
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<td>Using Adjectives to describe</td>
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<td>Present Simple Tense</td>
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<td>Simple Past Tense</td>
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**FUNCTIONAL NOTATIONAL CHART:**
**LESSON 4**
**Understanding Your Nutritional Needs**

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<th>Tasks and activities</th>
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<tbody>
<tr>
<td>Predicting</td>
<td>Science</td>
<td>Use the computer to find out nutritional needs.</td>
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<tr>
<td>Classifying</td>
<td>Nutrition</td>
<td>Identify favorite foods and classify them into food groups.</td>
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<td>Writing</td>
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<td>Interacting</td>
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<th>Writing Skills</th>
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<tbody>
<tr>
<td>Listening for directions and information</td>
<td>Taking turns</td>
<td>Reading vocabulary definitions.</td>
<td>Using the computer to enter information.</td>
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<tr>
<td></td>
<td>Using gestures when necessary</td>
<td>Reading information on nutritional needs.</td>
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<td>Using appropriate responses: one-word, phrases or full sentences</td>
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| **Grammar**          | **Vocabulary** | |
|----------------------|----------------||
| *Using Adjectives to describe* | Using new and previously learned terms | |
| *Present Simple Tense* |                     | |
| *Simple Past Tense* |                     | |
**FUNCTIONAL NOTATIONAL CHART:**  
**LESSON 5**  
Completing a Menu Plan

<table>
<thead>
<tr>
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<th>Content</th>
<th>Tasks and activities</th>
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</thead>
<tbody>
<tr>
<td>Predicting</td>
<td>Science</td>
<td>Complete a menu plan based on nutritional needs.</td>
</tr>
<tr>
<td>Classifying</td>
<td>Nutrition</td>
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<td>Writing</td>
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<td>Interacting</td>
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<tbody>
<tr>
<td>Listening for directions and information</td>
<td>Taking turns</td>
<td>Reading vocabulary definitions.</td>
<td>Write down a plan for eating based on nutritional needs.</td>
</tr>
<tr>
<td></td>
<td>Using gestures when necessary</td>
<td>Reading information on nutritional needs.</td>
<td></td>
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<tr>
<td></td>
<td>Using appropriate responses: one-word, phrases or full sentences</td>
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**Grammar**  
*Using Adjectives to describe*  
*Present Simple Tense*  
*Simple Past Tense*  
*Simple Future Tense*  

**Vocabulary**  
Using new and previously learned terms
### Instructional Unit Selection Overview

<table>
<thead>
<tr>
<th>Title of Unit</th>
<th>“Nutrition Principles, &amp; The Food Pyramid”</th>
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<tbody>
<tr>
<td>Grade Level</td>
<td>Adult Education ESL Class</td>
</tr>
<tr>
<td>Target Group</td>
<td>Content-based ESL class</td>
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</tbody>
</table>
| Source & Source of Lessons | *Holt Health – Annotated Teacher’s Ed.* ©1999 by Holt, Rinehart, Winston  
(copies of text chapters are included) |
| Additional materials adapted from MyPyramid.gov and created by author. |
| Goals | I want my students to know:  
- Why do I choose the kinds of food I eat?  
- How do I organize or categorize foods?  
- What tools can I use to understand what I need?  
- How do I understand what my body needs?  
- How do I plan a menu to meet my needs? |
| Explanation of Theme | I am currently teaching ESL to adults. Since I plan on actually using the unit that I am designing I did an interest inventory with my students last week to find out content topics that they find interesting. They overwhelmingly selected topics related to nutrition and health. I selected a chapter from a secondary health education textbook to base my adapted lessons on. Although some of these adults have had schooling beyond high school in their own language I still feel that the content presented in this unit is out of their reach linguistically. Although my lessons are based on this chapter I have significantly departed from the use of the textbook and incorporated outside information. Specifically, information related to the USDA Food Pyramid which has changed significantly since the publishing of this textbook. |
| Standards Incorporated (ESL Standards for Grades 9-12) | Goal 1, Standard 1 – Use English in social settings  
Goal 2, Standard 1 – Use English to achieve academically – Classroom interaction  
Goal 2, Standard 2 – Use English to achieve academically – obtain, process, construct, provide subject matter information spoken and written  
Goal 2, Standard 3 – Use English to achieve academically – use appropriate learning strategies to construct and apply knowledge |
| Standards Incorporated (Standards for Adult Education ESL Programs) | 2. Standards for Curriculum & Instruction  
A. Curriculum developed based on needs assessment of learners.  
3. Standards for Instruction  
A. Instructional activities adhere to adult learning principles, content is relevant to learners lives  
B. Instructional approaches include whole language approach, participatory approach, content-based, project-based.  
D. Instructional activities incorporate four language skills. |
| Learning Outcomes | Detailed on the lesson plans. |
Lesson 1
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Nutrition Principles &amp; The Food Pyramid</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Target Group</td>
<td>Content-based ESL Class</td>
</tr>
<tr>
<td>Lesson 1</td>
<td>The Difference Between Hunger &amp; Appetite</td>
</tr>
<tr>
<td>Timing</td>
<td>80 Minutes</td>
</tr>
</tbody>
</table>

**Content Objectives:**
- Describe a favorite food and discuss how you feel about that food.
- Describe hunger and the symptoms of hunger.
- Describe appetite.
- Describe times when you were hungry and describe times when your appetite was at work.

**Beginner Language Objectives:**
- Describe a favorite food by making a picture collage and pointing to a picture of a favorite food.
- Describe hunger by connecting the word *hungry* to the picture of someone who is hungry.
- Describe appetite by connecting the word *appetite* to a picture of someone who is experiencing the desire to eat because of his appetite.
- Describe the key terms *stomach, empty,* and *full* by connecting those words to pictures expressing those ideas.

**Intermediate Language Objectives:**
- Describe a favorite food and why it is a favorite food by having a discussion in pairs and completing a worksheet with sentence starters.
- Describe hunger by connecting the word to a short definition on a matching vocabulary worksheet.
- Describe appetite by connecting the word to a short definition on a matching vocabulary worksheet.
- Describe the key terms *stomach, empty, full, need,* and “I’m hungry” to a short definition on a matching vocabulary worksheet.

**Advanced Language Objectives**
- Describe a favorite food by completing a journal entry answering the question “Think of a food that is your favorite and why it is your favorite. What are your memories of this food?”
- Describe hunger by connecting the word to a short definition on a matching vocabulary worksheet.
- Describe appetite by connecting the word to a short definition on a matching vocabulary worksheet.
- Describe the key terms *stomach, empty, full, need,* and “I’m hungry” to a short definition on a matching vocabulary worksheet.
Lesson 1 – The Difference Between Hunger & Appetite

The purpose of the first lesson in the unit is for students to see and understand the differences between hunger and appetite. Throughout the following lesson plan are activities that are designed to keep all levels of language learners engaged in exploring the differences between hunger and appetite. The lesson is comprised of the following components:

- **Warm-Up** (15 Minutes) – An opportunity for students to identify a favorite food. Beginning students will be able to participate in this activity by sharing what their favorite food is and showing it to the class on a collage that they create. Intermediate and advanced students will share their favorite food and will also share why it is their favorite food. The purpose of having students share a favorite food is so that they can begin to see that these favorite foods are often connected to memories or emotions that can trigger eating that is not related to being hungry.

- **Mini-Lesson #1** (15 Minutes) – This PowerPoint lesson will give students an overview of hunger and other key terms. During the mini-lesson be sure to refer to the activity section of the lesson plan and ask students the appropriate questions for their level. For example, beginning students will engage with this lesson by pointing, gesturing, answering yes/no questions while intermediate and advanced students should be engaged through the more in-depth questions provided.

- **Practice/Review #1** – (15 Minutes) The practice section of the lesson gives students an opportunity to practice reviewing the key terms presented in the first Mini-Lesson. Beginning students will complete a worksheet with the key terms and pictures of their meaning while intermediate and advanced students will complete a matching worksheet with phrases for definitions. Intermediate and advanced students will discuss how they feel when they are hungry. These feelings will be captured onto a flip chart for beginning students to copy onto their worksheets.

- **Mini-Lesson #2** – (15 Minutes) This PowerPoint lesson will give students an overview of appetite and other key terms. During the mini-lesson be sure to refer to the activity section of the lesson plan and ask students the appropriate questions for their level. For example, beginning students will engage with this lesson by pointing, gesturing, answering yes/no questions while intermediate and advanced students should be engaged through the more in-depth questions provided.

- **Practice/Review #2** – (15 Minutes) The second practice section of the lesson gives beginning students an opportunity to review all key terms by creating a word wall with pictures and key terms. Intermediate and advanced students will read a modified version of the text (Hunger vs. Appetite) and have a discussion about times when they have eaten when they weren’t hungry or continued to eat after they were full.

- **Conclusion** – (5 Minutes) The conclusion of the lesson is a time to revisit the key terms by reviewing the word wall with the entire class, revisiting objectives and
checking understanding. Connection should be made between favorite foods
shared at the beginning of class and the idea of appetite.

**Homework Assignment** – Students are to keep a food journal for the rest of the week. Beginning students may draw pictures of food they have eaten, cut out pictures, or write in words that they know. Intermediate and Advanced students will fill-in a food journal for the rest of the week. Advanced students should try to complete their journals in text forms. If Intermediate students struggle with words they can use picture dictionaries or draw pictures on their food journal. The food journal will be used in Lesson 4.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
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</table>
| **Warm-Up**<br>Favorite Food Memories<br><br>*Pre-Teach – “favorite”*
| • Review Objectives<br>• Break students into three groups; beginner, intermediate, advanced.<br>• Beginner group will make collages/drawing depicting their “favorite food”<br>• Intermediate group in pairs will discuss the question – *Think of a food that is your favorite and tell your partner why it is your favorite food – Groups will complete a worksheet with fill-in sentences.*<br>• Advanced students will journal by writing an answer to *think of a food that is your favorite and think why it is your favorite. Write in your journal your memories of this food.* | • Picture dictionaries<br>• Magazines with pictures of food<br>• Construction paper<br>• Crayons<br>• Markers<br>• Scissors<br>• Tape<br>• Glue<br>• Learner dictionaries<br>• Warm-up worksheet for intermediate students.<br>• Journals for advanced students. | 15 Minutes |

All students will share what their favorite food is (beginners will show their pictures, intermediates will report out to large group answers to their questions, advanced will share what they wrote in their journals)

Intermediate/Advanced students will discuss/share WHY the food they selected is their favorite.

Capture the names of favorite foods on flip chart/board.

Capture reasons that food is their favorite on flip chart/board.
<table>
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<tbody>
<tr>
<td>Mini-Lesson #1 Slide 1-3 John's Story</td>
<td>Show Slide 1 of PowerPoint Presentation. <strong>Question</strong> students in the following way: ▪ (Basic) Point to the <em>food</em>.... ▪ (Basic) Find the <em>stomach</em>.... ▪ (Basic) What do you see in the picture? ▪ (Basic) Is John <em>thinking</em>? ▪ (Int./Adv.) What is John doing? (Thinking) ▪ (Int./Adv.) What is John thinking about? (Food, Chicken, etc.) ▪ (Int./Adv.) Why is John thinking about food? (He’s hungry.)</td>
<td>▪ Projector and laptop with PowerPoint presentation on CD-ROM ▪ Handouts of presentation for students.</td>
<td>5 Minutes</td>
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</table>

*Hunger*

**Objective**

Students will be able to identify “hunger”.

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O’Donnell – Nutrition Unit Modification
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<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
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<th>Time</th>
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<tbody>
<tr>
<td><strong>Mini-Lesson #1</strong>&lt;br&gt;Slide 1-3&lt;br&gt;John’s Story</td>
<td>Show Slide 2, read each bullet&lt;br&gt;<strong>Question</strong> students:&lt;br&gt;▪ (Basic) Did John eat breakfast today? (No)&lt;br&gt;▪ (Basic) Did John eat lunch today? (No)&lt;br&gt;▪ (Basic) Did John eat today? (No)&lt;br&gt;▪ (Basic) Where did John go today? or Did John go to work today?&lt;br&gt;▪ (Int./Adv) What did John eat today? (Nothing)&lt;br&gt;▪ (Int./Adv) Why is John hungry?</td>
<td>▪ Projector and laptop with PowerPoint presentation on CD-ROM&lt;br&gt;▪ Handouts of presentation for students.</td>
<td>5 Minutes</td>
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</tbody>
</table>

<p>| <strong>Mini-Lesson #1</strong>&lt;br&gt;Slide 1-3&lt;br&gt;John’s Story | Show slide 3, read each bullet&lt;br&gt;<strong>Question</strong> students:&lt;br&gt;▪ (Int./Adv.) What is the feeling that we have when we are hungry? (<em>hunger</em>)&lt;br&gt;▪ (Int./Adv.) What do we <em>need</em> when we are hungry? (<em>food</em>)&lt;br&gt;▪ (Int./Adv.) When we are not hungry we say that we are...? (<em>full</em>)&lt;br&gt;▪ (Basic) Point to the <em>stomach</em>? | ▪ Projector and laptop with PowerPoint presentation on CD-ROM&lt;br&gt;▪ Handouts of presentation for students. | 5 Minutes |</p>
<table>
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<th>Objectives</th>
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<tbody>
<tr>
<td><strong>Practice #1</strong></td>
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<td>15 Minutes</td>
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<tr>
<td>Key Terms – Hunger</td>
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<tr>
<td>Students will</td>
<td><strong>Beginner</strong></td>
<td><strong>Intermediate / Advanced</strong></td>
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<td>practice/review key</td>
<td>complete a matching</td>
<td>complete a matching</td>
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<td>terms presented in</td>
<td>worksheet with pictures of</td>
<td>worksheet with text/phrases for definitions of</td>
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<td>first lesson.</td>
<td>vocabulary introduced in</td>
<td>vocabulary introduced in</td>
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<td>prior mini-lesson.</td>
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<td>When finished with worksheet</td>
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<td>Key Terms:</td>
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<td>compare answers in small groups</td>
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<td>Hungry</td>
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<td>and discuss question *How do I feel when I am</td>
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<td>Hunger</td>
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<td>hungry?</td>
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<td>Stomach</td>
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<td>Empty</td>
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<td>Need (not sure how</td>
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<td>Pleasure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>**Capture words, phrases to</td>
<td>**Three worksheets for students to complete</td>
<td></td>
</tr>
<tr>
<td></td>
<td>describe how I feel when I</td>
<td>(matching with pictures, matching with words, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>am hungry?</td>
<td>questionnaire)</td>
<td></td>
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</tbody>
</table>

*O'Donnell – Nutrition Unit Modification*  
Page 7 of 29
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mini-Lesson #2</strong>&lt;br&gt;Slide 4-6&lt;br&gt;David’s Story</td>
<td><strong>Appetite</strong>&lt;br&gt;<strong>Objective</strong>&lt;br&gt;Students will be able to identify “appetite”</td>
<td><strong>Show</strong> Slide 4 review bullets <strong>Question</strong> students in the following way:&lt;br&gt;- (Basic) Point to the cake....&lt;br&gt;- (Basic) Find the stomach....&lt;br&gt;- (Basic) What do you see in the picture?&lt;br&gt;- (Basic) Is David thinking?&lt;br&gt;- (Int./Adv.) What has David just finished doing?&lt;br&gt; (eating)&lt;br&gt;- (Int./Adv.) What is David doing?&lt;br&gt; (Thinking)&lt;br&gt;- (Int./Adv.) What is David thinking about?&lt;br&gt; (Food, chocolate cake)&lt;br&gt;- (Int./Adv.) Why is David thinking about cake?&lt;br&gt; (answers will vary)</td>
<td>• Projector and laptop with PowerPoint presentation on CD-ROM&lt;br&gt;• Handouts of presentation for students.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Objectives</th>
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<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mini-Lesson #2</strong>&lt;br&gt;Slide 4-6&lt;br&gt;David’s Story</td>
<td><strong>Appetite</strong>&lt;br&gt;<strong>Objective</strong>&lt;br&gt;Students will be able to identify “appetite”</td>
<td><strong>Show</strong> slide 5 review bullets <strong>Question</strong></td>
<td>• Projector and laptop with PowerPoint presentation on CD-ROM&lt;br&gt;• Handouts of presentation for students.</td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
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</tr>
<tr>
<td>Mini-Lesson #2&lt;br&gt;Slide 4-6&lt;br&gt;David’s Story&lt;br&gt;<em>Appetite</em>&lt;br&gt;<strong>Objective</strong> Students will be able to identify “appetite”&lt;br&gt;<strong>Practice/Review #2</strong>&lt;br&gt;Beginners&lt;br&gt;• As a team will work on a word wall by taking all pictures of key terms, matching them with sentence strip labels and hanging them on word wall.</td>
<td>Show slide 6 review bullets&lt;br&gt;<strong>Question</strong></td>
<td>• Projector and laptop with PowerPoint presentation on CD-ROM&lt;br&gt;• Handouts of presentation for students.</td>
<td>5 Minutes</td>
</tr>
<tr>
<td>Intermediate / Advanced&lt;br&gt;• Will read modified text (Hunger vs. Appetite) from page 67 of text then in pairs discuss times they have eaten when they weren’t hungry or continued to eat after they were full.</td>
<td></td>
<td>• Pictures of main vocabulary (in red) from presentation for word wall.&lt;br&gt;• Sentence strips with names of key terms (see above) for word wall.&lt;br&gt;• Additional pictures of food and sentence strips (?).</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>Conclusion</td>
<td>Revisit Objectives / Revisit Wordwall / Q&amp;A</td>
<td>• Word Wall&lt;br&gt;• Flip Chart with Objectives&lt;br&gt;• Tie back to favorite foods shared at the beginning of class. (Hunger vs. Appetite)</td>
<td>5 Minutes</td>
</tr>
</tbody>
</table>
Warm-Up Worksheet
Group Discussion Questions
My Favorite Food

Talk about these questions with your partner. Write your answers on this sheet to share with the rest of the class.

<table>
<thead>
<tr>
<th>Question</th>
<th>My Answer</th>
<th>My Partner’s Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your favorite food?</td>
<td>My favorite food is ____________________________________________________</td>
<td>My partner’s favorite food is ___________________________</td>
</tr>
<tr>
<td>Why is this food your favorite food?</td>
<td>_________________ is my favorite food because __________________________</td>
<td>__________________ is my partner’s favorite food because __________________________</td>
</tr>
<tr>
<td>Memories of my favorite food...</td>
<td>When I think of my favorite food it reminds me or makes me think of _______</td>
<td>When my partner thinks of their favorite food it reminds them or makes them think of __________________.</td>
</tr>
</tbody>
</table>
Nutrition Principles & The Food Pyramid

Lesson 1

Influences on Food Choices
John’s Story

Slide 1
Lesson 1 - Mini-Lesson #1
John’s Story

- John woke up this morning and went to work.
- John did not eat breakfast.
- John forgot to bring his lunch to work with him.
- John did not eat lunch.
- It is now 6:00 p.m.
- John did not eat any food today.
- What word do we use to tell how John feels?

John is hungry.
Hunger

- **Hunger** is the feeling that we have when we need food.
- When we feel hunger we say we are **hungry** (our stomachs are empty).
  - Our stomachs can be empty the same way that a glass can be empty.
- When we are **not hungry** we say we are **full**.
  - Our stomachs can be full the same way a glass can be full.
Key Terms
Match (B)

Draw a line from the picture to the correct word.

STOMACH

HUNGRY

APPETITE

EMPTY

FULL
Key Terms Match (Intermediate / Advanced)

Match the key term in the left column with the correct definition in the right column.

<table>
<thead>
<tr>
<th></th>
<th>STOMACH</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A. This is the feeling that we have when we want something to eat.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“I’M HUNGRY”</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>B. The part of our body where food goes to after we chew it and swallow it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HUNGER</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>C. Having nothing inside</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EMPTY</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>E. Having as much or as many things as possible.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FULL</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>F. This is what we say when we feel hunger.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NEED</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>G. To have to have something.</td>
<td></td>
</tr>
</tbody>
</table>

Discuss this question in a small group. Write some words or phrases here to remember what you and your group members said.

How do I feel when I am hungry?
David’s Story
David’s Story

- David woke up this morning and went to work.
- David ate a big breakfast.
- David went to a restaurant for lunch.
- David ate his lunch.
- After lunch, he was full.
- The waiter in the restaurant offered him a piece of cake.
- Cake is one of David’s favorite foods.
- David was full, but he ate the cake.

David ate because he had an appetite for the cake.
Appetite

- Appetite is the feeling that we have when we want to eat.
- We have an appetite for certain foods because they taste good.
- We sometimes have an appetite for food when we are not hungry or when we are full.
- Appetite comes from our brain telling us that we want to eat something.
- Appetite can make us eat when we are not hungry.
Influences on Food Choices
Imagine that you and your best friend are together. She says, “I’m hungry. I want to eat something.” You are not hungry but you say “OK. Let’s eat.”

There are many things that influence what we choose to eat. Sometimes we choose to eat food when we are full (not hungry). To help you make more healthy food choices you need to think about when and why you eat. The two key terms that we are learning today are hunger and appetite.

Hunger
Hunger is the feeling that we get when our body needs food. Hunger is your body telling you to eat. Food is used by our body the same way that a car uses gas. Our body needs food to make it work the same way a car needs gas to make it go. Your body will tell you when it is hungry or when it needs food. It tells you by giving you signs that it needs food. The signs that our body gives us when something is wrong are called symptoms.

The symptoms of hunger are:

- Hunger Pains – When something hurts in our body it is called a pain. We feel hunger pains in our stomach when our body needs food.
- Weakness – When your body doesn’t feel strong it is weak. We can feel weak when we are hungry because our body needs food. When you are weak it is difficult or hard to do things that are usually easy to do.
- Dizziness – When you are dizzy it is difficult or hard to stand steady. Dizziness is the feeling of being dizzy.
- Nausea – The feeling that you have when you think you are going to vomit.
- Loss of concentration – Concentration is the ability to think about something carefully for a long time. When we read or study or work we are concentrating. When our body needs food it can be difficult to concentrate and we can loose our concentration.

The symptoms of hunger go away when we eat. You should eat until your stomach is full. The feeling of fullness is sometimes called satiety.

Appetite
Appetite is different from appetite. Hunger is the feeling that we get when our body needs food. Appetite is the feeling we get when we want food. Our appetite comes from us wanting to eat food because we get pleasure from it. Think about some of the reasons that you and your classmates gave for why you liked your favorite foods. Most of these reasons are probably based on appetite.

Questions for Discussion
Think about times when you ate because you were hungry. Talk about them in your group. How did you feel? Now, think about times when you ate when you were not hungry. Was this because of your appetite? How did you feel?
FULL
APPETITE
Lesson 2
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Nutrition Principles &amp; The Food Pyramid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>Adult Education ESL Class</td>
</tr>
<tr>
<td>Target Group</td>
<td>Content-based ESL Class</td>
</tr>
<tr>
<td>Lesson 2</td>
<td>The Nutritional Components of Food</td>
</tr>
<tr>
<td>Timing</td>
<td>80 Minutes</td>
</tr>
</tbody>
</table>

**Content Objectives:**
- Describe the roles and functions of the six classes of dietary nutrients.
- Identify problems that can occur from inadequate amounts of certain nutrients.
- List recommended dietary levels for various nutrients.
- Describe the differences among the various types of fats.

**Beginner Language Objectives:**
- Circle foods that they ate during the previous week from a sheet of pictures and draw additional pictures of food they ate.
- Show the foods they ate by sharing their completed picture sheets.
- Listen to a group discussion and share names of foods (if comfortable).
- Check-off key terms as they hear them said during a lecture.
- Read about a nutrient and share information about that nutrient. (if comfortable).
- Listen to other students talk about problems that occur from inadequate amounts of certain nutrients and the recommended dietary levels for each nutrient and follow along on a completed graphic organizer.

**Intermediate Language Objectives:**
- Copy food names they ate during the previous week and make a list from food pages in Picture Dictionaries.
- Tell other group members what they ate. Record other students’ foods on a group sheet.
- Categorize foods eaten and share their categories with the class.
- Read about a nutrient and share information about the role and function of that nutrient with other students.
- Listen to other students talk about problems that occur from inadequate amounts of certain nutrients and the recommended dietary levels for each nutrient and complete a graphic organizer.

**Advanced Language Objectives**
- Make a list of foods eaten during the previous week.
- Tell another student what they ate and record the other students’ foods on a group sheet.
- Categorize the foods eaten and share their categories with the class.
- Read about a nutrient and share information about the role and function of that nutrient with other students.
- Listen to other students talk about problems that occur from inadequate amounts of certain nutrients and the recommended dietary levels for each nutrient and complete a graphic organizer.
Lesson 2 – The Nutritional Components of Food

Narrative

The purpose of the second lesson in the unit is for students to see how different food choices can have an impact on their health and to understand the recommended amounts of nutrients and vitamins they should consume on a daily basis. The lesson is comprised of the following components:

- **Warm-Up (15 Minutes)** – The warm up of the lesson is designed to get students thinking about the different categories of food. The main focus of this lesson is on the six categories of dietary nutrients. In a Think-Pair-Share activity students will brainstorm lists of the different kinds of foods they ate last week. After students have made their lists they will work on putting the food into their own groups or categories. This will also give the teacher an opportunity to tap into the students’ prior knowledge of nutrition.

- **Mini-Lesson #1/Practice/Review #1 (15 Minutes)** – This PowerPoint lecture will introduce students to key terms (Nutrients, Nutrition, Calories, Digestion, Essential Nutrients, Non-Essential Nutrients). During this mini-lesson beginning students will listen for key terms and check them off on a worksheet as they hear them. Intermediate students will connect each key term to a definition on a matching worksheet. Advanced students will take notes on key terms on a graphic organizer.

- **Jigsaw Learning Activity: Six Essential Nutrients (30 Minutes)** – Now that students have had an opportunity to think about different categories of foods they will have an opportunity to learn about the Six Essential Nutrients. Students are placed into six mixed-ability groups to read about one essential nutrient. Each group will complete a graphic organizer on their nutrient and then share their work with the whole class. Differentiated texts are given to beginner students, intermediate students, and advanced students.

- **Conclusion/Wrap-Up (20 Minutes)** – The Wrap-Up discussion will focus on creating a word web with the class on the six essential nutrients and the important main ideas from their reading. This is also time to look at the food categories that students came up with during the Think/Pair/Share exercise and relate them back to the Six Essential Nutrients and to review key terms and add additional words to the word wall.
<table>
<thead>
<tr>
<th><strong>Objectives</strong></th>
<th><strong>Activity</strong></th>
<th><strong>Resources</strong></th>
<th><strong>Time</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warm Up</strong></td>
<td><strong>Review Lesson Objectives</strong></td>
<td>Picture Dictionaries</td>
<td>5 Minutes</td>
</tr>
<tr>
<td>Think-Pair-Share “Categories of Foods”</td>
<td><strong>Think</strong> - Ask students to work <em>individually</em> and make a list of all of the foods that they eat in a normal week. They should work to think of as many foods as they can. They should/can use as many resources as they would like to help them make their lists (see resources). Ask students to <em>think</em> about how they might put these foods into six similar categories or groups.</td>
<td>Text dictionaries</td>
<td></td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>Beginner - Circle foods that they ate on a sheet of pictures, draw additional pictures if they choose</td>
<td>Beginner – Sheet that has pictures of foods that belong to the six categories of nutrients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermediate – Copy food names and make list from food pages in Picture Dictionaries.</td>
<td>Intermediate / Advanced – Worksheet to fill-in with lists of foods and space to categorize foods into six groups</td>
<td></td>
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<td></td>
<td>Advanced – Make list of foods.</td>
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<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
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<td>------------------------------------------------</td>
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<tr>
<td><strong>Warm Up</strong></td>
<td><strong>PAIR Activity</strong> - Break students into groups of 2-3 students of mixed abilities. Students should first share their food lists (or pictures) with their partners. One person in the group should compile one list of foods for the group. Then students should discuss how they think the foods can be grouped or categorized.</td>
<td>Flip chart pages divided into six segments so students can put foods into groups</td>
<td>5 Minutes</td>
</tr>
</tbody>
</table>

**Objectives**
Beginners – Show the foods they ate with their group members by sharing their picture sheets. Share ideas for categories (if possible).

Intermediate / Advanced – Tell other group members what they ate. Share ideas for categories of foods.
<table>
<thead>
<tr>
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<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warm Up</strong></td>
<td><strong>SHARE</strong> – Call on groups of students to share the categories or groupings that they came up with for their foods and capture them on the whiteboard/flipchart.</td>
<td>Whiteboard / Flip Chart</td>
<td>5 Minutes</td>
</tr>
<tr>
<td><strong>SHARE Activity</strong></td>
<td><strong>Objectives</strong>&lt;br&gt;Beginners – Can listen to the group discussion or can share names of foods if they are comfortable.&lt;br&gt;&lt;br&gt;Intermediate / Advanced – share foods and categories with the class.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mini Lesson #1</strong></td>
<td><strong>PowerPoint Presentation</strong>&lt;br&gt;Show slide 2-4 which introduces Key Terms on left.&lt;br&gt;&lt;br&gt;Beginners – check-off key terms as they hear them said during the lecture.&lt;br&gt;&lt;br&gt;Intermediate – Draw a line from the key term to the definition as they hear it said during the lecture.&lt;br&gt;&lt;br&gt;Advanced – Write definitions to key terms as they hear them said during the lecture.</td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Mini-Lesson #1 Slides 2-4&lt;br&gt;Beginner checklist of vocabulary words&lt;br&gt;Intermediate matching of vocabulary words&lt;br&gt;Advanced fill-in sheet of key terms&lt;br&gt;Key terms on sentence strips for Word Wall</td>
<td>15 Minutes</td>
</tr>
</tbody>
</table>

Add these key terms to Word Wall during presentation.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
</table>
| **Jigsaw Learning: The Six Essential Nutrients** | Students are broken into six mixed ability groups (one for each essential nutrient) and given a modified version of the text to read on their nutrient. Students should first read their modified version of the text silently. Students discuss their modified version of the text and fill-in a graphic organizer on their nutrient that includes:  
- a description of the nutrient  
- why our bodies need it  
- what happens when we don't get enough of it or when we get too much of it  
- examples of foods that contain the nutrients including healthy and unhealthy choices  
- recommended dietary levels for each nutrient | Modified version of text on each essential nutrient for each level. Completed graphic organizer for beginners to follow along with during discussion. Blank graphic organizer for Intermediate and Advanced students to complete during the discussion. | **15 Minutes** |
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
</table>
| Small Group Discussion | Students are now broken into mixed ability groups with each group having representation for each nutrient.  
  - Students share the information from their graphic organizer on their nutrient.  
  - Students listen to other students share their information and fill-in their graphic organizer. | White Board  
  Markers  
  Sentence Strips for additional vocabulary. | 15 Minutes |
| Conclusion/Wrap-Up  | In whole group review six essential nutrients by working with students to create a word web on the whiteboard. Review a completed graphic organizer with students. When completed review key terms, add any additional vocabulary to the word wall. Finish by answering any questions and clarifying information for students. |                                                                      | 20 Minutes |
Categories of Foods
Beginner Worksheet

Circle the foods that you ate last week. Draw foods on another page that you ate.
Categories of Foods
Intermediate Worksheet

Make a list of the foods that you ate last week. When you are finished try to put all of your foods into six groups of categories.
Categories of Foods
Advanced Worksheet

Make a list of the foods that you ate last week. When you are finished try to put all of your foods into six groups of categories.
Nutrition Principles
& The Food Pyramid

Lesson 2
Nutritional Components of Food

Lesson 2 - Mini-Lesson #1
Nutrition

Nutrients - things in the foods we eat that we need to stay healthy. Our bodies can also make some nutrients.

Nutrition - the study of how food affects our health

- Nutrition studies how food affects our health
  - Eating the right food helps us grow, reproduce, stay healthy
  - Eating the right food helps us get better faster when we are sick
  - Eating the wrong food can make us sick or cause diseases

- Nutrients help our bodies grow, reproduce, and stay healthy
- Our bodies make some nutrients
- We need to get some nutrients from the food we eat
Digestion

- Our body needs to use the nutrients in the food we eat.
- When we eat food our body digests the food so it can use the nutrients.
- *Digestion* turns nutrients into energy.
  - A car needs gasoline for energy, we need nutrients for energy.
  - Gasoline is measured in gallons, the energy we get from Nutrients is measured in *calories*.

**Digestion** - when we eat food our body *digests* it so we can use it for energy.

**Calories** - how we measure the energy we get from nutrients.

Lesson 2 - Mini-Lesson #1
Nutrients

Essential Nutrients -
Nutrients we need to get from the food we eat because our body doesn’t make them.

Non-Essential Nutrients -
Nutrients that we don’t need to get from the food we eat because our body makes them.

- There are two kinds of nutrients:
  1) Essential Nutrients
  2) Non-Essential Nutrients

- We need to eat essential nutrients because our body doesn’t make them.

- We don’t need to eat non-essential nutrients because our body does make them.
Lesson 2
The Nutritional Components of Food
Key Term Checklist (Beginners)

Check-off each of the words you hear the teacher say during Mini-Lesson #1.

- Nutrients
- Nutrition
- Calories
- Digestion
- Essential Nutrients
- Non-Essential Nutrients
Lesson 2
The Nutritional Components of Food
Key Term Checklist (Intermediate)

Listen to Mini-Lesson #1. Draw a line from each of the key terms to the correct definition as you hear your teacher say it.

<table>
<thead>
<tr>
<th>NUTRIENTS</th>
<th>What our body does to food so we can use it for energy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUTRITION</td>
<td>How we measure the energy we get from nutrients.</td>
</tr>
<tr>
<td>CALORIES</td>
<td>Nutrients we need to get from the food we eat because our body doesn’t make them.</td>
</tr>
<tr>
<td>DIGESTION</td>
<td>Things in the foods we eat that we need to stay healthy. Our bodies can also make some nutrients.</td>
</tr>
<tr>
<td>ESSENTIAL NUTRIENTS</td>
<td>Nutrients that we don’t need to get from the food we eat because our body makes them.</td>
</tr>
<tr>
<td>NON-ESSENTIAL NUTRIENTS</td>
<td>The study of how food affects our health.</td>
</tr>
</tbody>
</table>
Lesson 2
The Nutritional Components of Food
Key Term Checklist (Advanced)

Listen to Mini-Lesson #1. Fill-in the definitions to the key terms as you hear your teacher say them.

<table>
<thead>
<tr>
<th>NUTRIENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NUTRITION</td>
<td></td>
</tr>
<tr>
<td>CALORIES</td>
<td></td>
</tr>
<tr>
<td>DIGESTION</td>
<td></td>
</tr>
<tr>
<td>ESSENTIAL NUTRIENTS</td>
<td></td>
</tr>
<tr>
<td>NON-ESSENTIAL NUTRIENTS</td>
<td></td>
</tr>
</tbody>
</table>
## Six Essential Nutrients - Graphic Organizer

**Beginners**

<table>
<thead>
<tr>
<th></th>
<th>Carbohydrates</th>
<th>Fats</th>
<th>Protein</th>
<th>Vitamins</th>
<th>Minerals</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Why do our bodies need it?</strong></td>
<td>Energy, Digestion</td>
<td>Energy, Protect parts of the body</td>
<td>Grow and heal from injury</td>
<td>To fight diseases</td>
<td>grow and fight disease</td>
<td>Keep temperature regular.</td>
</tr>
<tr>
<td><strong>What happens when we don't get enough of it?</strong></td>
<td>No Energy Feel Tired</td>
<td>We feel less “full”</td>
<td>Lowered immune system; more sickness</td>
<td>Sickness and Disease</td>
<td>Sickness and Disease</td>
<td>Dehydration – loss of water -</td>
</tr>
<tr>
<td><strong>What happens when we get too much of it?</strong></td>
<td>Heart Disease Diabetes Obesity</td>
<td>Heart Disease Diabetes Obesity &amp; Cancer</td>
<td>bone damage Kidney disease heart disease dehydration</td>
<td>Too many fat soluble vitamins make us sick too many water-soluble vitamins are passed in our urine</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Examples of foods that are part of this group.</strong></td>
<td>Rice Fruit Potatoes Vegetables</td>
<td>Oils Butter Mayonnaise</td>
<td>meat, chicken, fish, peanut butter, eggs</td>
<td>milk products, meats, vegetables, fruits</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>How much should we eat per day?</strong></td>
<td>45-65% of what we eat should be carbohydrates</td>
<td>Less than 25% is healthy</td>
<td>About 10% should come from protein</td>
<td></td>
<td></td>
<td>6-8 Glasses</td>
</tr>
<tr>
<td><strong>What are healthy choices?</strong></td>
<td>Fruits (Simple Carbohydrates) High-Fiber (Complex Carbohydrates)</td>
<td>Monounsaturated Fats (olive oil, peanut oil)</td>
<td>Combine plant foods to get complete proteins; limit high fat meats</td>
<td></td>
<td></td>
<td>Vegetables, beans, whole grains</td>
</tr>
</tbody>
</table>
## Six Essential Nutrients - Graphic Organizer

(Advanced & Intermediate)

<table>
<thead>
<tr>
<th>Carbohydrates</th>
<th>Fats</th>
<th>Protein</th>
<th>Vitamins</th>
<th>Minerals</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why do our bodies need it?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What happens when we don’t get enough of it?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Minerals
(Reading for Beginners)

Minerals are found in the earth.

Minerals are found in food.

Minerals are like vitamins.

Minerals help our bodies grow.

Minerals help our bodies stay healthy.

There are two kinds of minerals: macrominerals and trace minerals.

The most important minerals are macrominerals.

Macrominerals are calcium, iron, potassium, and zinc.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>What it Does</th>
<th>Foods We Get it From</th>
<th>What Happens if We Don’t Get Enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>Builds strong bones and teeth</td>
<td>Milk, cheese, yogurt, canned fish, dark leafy vegetables</td>
<td>Weak bones</td>
</tr>
<tr>
<td>Iron</td>
<td>Moves oxygen from our lungs to the rest of our body</td>
<td>Red meats and beef, tuna fish and salmon, eggs, beans, dried fruits, broccoli</td>
<td>no energy, dizziness</td>
</tr>
<tr>
<td>Potassium</td>
<td>Helps muscles work, helps our body give us energy</td>
<td>Bananas, broccoli, tomatoes, oranges, beans, peas, lentils</td>
<td>weak muscles, confusion, depression, heart problems</td>
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<tr>
<td>Zinc</td>
<td>Helps the immune system fight off illness and infections. Helps heal wounds and cuts.</td>
<td>Beef, pork, lamb, beans and peanuts</td>
<td>anemia, hair loss, diarrhea, slow healing of wounds and cuts</td>
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Minerals
(Reading for Intermediate Students)

Minerals are things that can be found in the earth (like quartz and iron) but they can also be found in foods.

Just like vitamins, minerals help your body grow, develop, and stay healthy. The body uses minerals to perform many different functions - like building strong bones.

**Macro and Trace**
There are two kinds of minerals: **macrominerals** and **trace minerals**. Macro means "large" in Greek (and your body needs **larger** amounts of macrominerals than trace minerals). The macromineral group is made up of calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulfur.

A trace of something means that there is only a little of it. So even though your body needs trace minerals, it needs just a tiny bit of each one. Scientists aren't even sure how much of these minerals you need each day. Trace minerals include iron, manganese, copper, iodine, zinc, cobalt, fluoride, and selenium. Let's take a closer look at some of the minerals you get from food.

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Minerals
(Reading for Advanced Students)

Did you ever notice how TV commercials for breakfast cereal always mention vitamins and minerals? But when you think of minerals, food isn't the first thing that comes to mind. Aren't minerals something you find in the earth, like iron and quartz?

Well, yes, but small amounts of some minerals are also in foods. For instance, red meat, such as beef, is a good source of iron.

Just like vitamins, minerals help your body grow, develop, and stay healthy. The body uses minerals to perform many different functions - from building strong bones to transmitting nerve impulses. Some minerals are even used to make hormones or maintain a normal heartbeat.

Macro and Trace
There are two kinds of minerals: macrominerals and trace minerals. Macro means "large" in Greek (and your body needs larger amounts of macrominerals than trace minerals). The macromineral group is made up of calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulfur.

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Vitamins
(Reading for Beginning Students)

Vitamins help our body work.

We need vitamins to stay healthy.

There are two different kinds of vitamins:

1. Fat-Soluble Vitamins
   - Vitamins A, D, E, and K are fat-soluble vitamins.
   - Fat-soluble vitamins help our eyes, skin, bones, blood, and teeth.
   - Too many Fat Soluble Vitamins can make us sick.
   - If we don’t get enough Fat Soluble Vitamins we will have problems with our eyes, skin, bones, blood, and teeth.

2. Water-Soluble Vitamins
   - The B Vitamins and Vitamin C are water-Soluble vitamins.
   - We must get Water-Soluble vitamins from the foods we eat.
Vitamins help our body work. We need vitamins to stay healthy. The only vitamins the body can make are vitamins D and K.

There are two different kinds of vitamins:

(1) Fat-Soluble – Fat-soluble means that the vitamins dissolve in fat. Vitamins A, D, E, and K are fat-soluble vitamins. Because they dissolve in fat, these vitamins can be stored in our body fat. When our body needs to use one of these vitamins it can carry it to the part of the body where it is needed. A balanced diet provides the right levels of fat-soluble vitamins and the fats needed to store these vitamins. If a person takes in high levels of fat-soluble vitamins either from food or from vitamin supplements, the extra is stored in the liver or skin and can make us sick.

(2) Water-Soluble – Water-soluble means that the vitamins dissolve in water. Water-Soluble vitamins like the B group and vitamin C can’t be stored in the body. If we take in more than we need our body eliminates the vitamins when we urinate. Because of this we must get water-soluble vitamins from the food we eat on a regular basis to prevent disease.
### Fat Soluble Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
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</tr>
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<tbody>
<tr>
<td>A</td>
<td>Maintains healthy eyes, skin, bones, teeth</td>
<td>Milk products, liver, yellow fruits and vegetables, dark-green leafy vegetables</td>
<td>Night blindness, impaired growth.</td>
</tr>
<tr>
<td>D</td>
<td>Promotes normal growth, helps build bones and teeth</td>
<td>Fish-liver oils, fortified milk, liver, egg yolk, salmon, tuna</td>
<td>Rickets (when our bones and teeth don’t grow)</td>
</tr>
<tr>
<td>E</td>
<td>Keeps our blood healthy; keeps lungs healthy</td>
<td>Wheat germ, vegetable oils, legumes, nuts, dark green vegetables</td>
<td>Anemia</td>
</tr>
<tr>
<td>K</td>
<td>Helps our body heal; for example after we get a cut and bleed</td>
<td>Green, leafy vegetables and vegetable oils, tomatoes, potatoes</td>
<td>Cuts take too long to heal; hemorrhage (when our body bleeds too much)</td>
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### Water Soluble Vitamins

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<tr>
<td>B Vitamins</td>
<td>Help give our body energy; help move oxygen through our body</td>
<td>Whole grains, fish, meats, poultry, eggs, milk, yogurt, leafy green vegetables, beans, peas, oranges</td>
<td>Skin diseases, heart problems, depression</td>
</tr>
<tr>
<td>B1, B2, B6, B12, niacin, folic acid, biotin, and pantothenic acid</td>
<td>Helps our body tissues (like our gums), helps us heal, helps us stay healthy</td>
<td>Oranges, cantaloupe, strawberries, tomatoes, broccoli, cabbage</td>
<td>Scurvy (when our body takes a long time to heal), bleeding gums, loose teeth</td>
</tr>
</tbody>
</table>
Vitamins are compounds that help regulate certain chemical reactions in the body. Though vitamins do not supply energy, they are essential for good health. The only vitamins the body can make are vitamins D and K.

Vitamins are grouped into two different categories: those that are fat-soluble and those that are water-soluble. Fat-soluble means that the substance dissolves in fat. Fat-soluble vitamins include vitamins A, D, E, and K. Because they dissolve in fat, these vitamins can be stored in body fat. A balanced diet provides the right levels of fat-soluble vitamins and the fats needed to store these vitamins. If a person takes in high levels of fat-soluble vitamins either from food or from vitamin supplements, the excess is stored in the liver or skin and may be harmful.

Water-soluble vitamins like the B group and vitamin C are not stored in the body. Because water-soluble vitamins dissolve in water, any excess is excreted in urine. Therefore, you must have consistent sources of water-soluble vitamins to prevent deficiency diseases.
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</tr>
<tr>
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<td>Green, leafy vegetables and vegetable oils, tomatoes, potatoes</td>
<td>Cuts take too long to heal; hemorrhage (when our body bleeds too much)</td>
</tr>
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</table>

### Water Soluble Vitamins

<table>
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<th>What Happens if We Don’t Get Enough?</th>
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</tr>
</tbody>
</table>
Water
(Reading for Beginners)

Our body needs water.

If we don’t get enough water we will die.

Dehydration – When our body loses too much water.

**Amount to Drink Each Day**
We should drink 8-10 cups of water per day.

If we are vomiting or have diarrhea or a fever it is important for us to drink even more water.

**Making Healthy Choices**
Drinking liquids helps us replace the water in our body that we lose.

Avoid coffee and alcohol.
Water
(Reading for Intermediate Students)

<table>
<thead>
<tr>
<th>Water is probably the most important of the essential nutrients. We would not be able to live without water for more than 10 days. It is possible to live many weeks without food.</th>
<th>Water is the most important of the essential nutrients.</th>
</tr>
</thead>
<tbody>
<tr>
<td>When our body loses too much water it is called <strong>dehydration</strong>. Vomiting, diarrhea, or fever can cause dehydration. If our body sweats a lot and we don’t drink enough water to replace the water we are losing we can also dehydrate. If we don’t get enough water every day our body can have problems digesting food.</td>
<td><strong>Dehydration</strong> – When our body loses too much water. Vomiting, diarrhea, or fever can cause our body to dehydrate. If we don’t get enough water our body will have problems digesting food.</td>
</tr>
<tr>
<td>Because our bodies are 65% water it is important for us to drink enough water every day. If we are vomiting or have diarrhea or a fever it is important for us to drink even more water.</td>
<td>Our bodies are 65% water. We need to drink enough water every day to live.</td>
</tr>
</tbody>
</table>

**Amount to Drink Each Day**
We should drink 8-10 cups of water per day. If we are vomiting or have diarrhea or a fever it is important for us to drink even more water.

**Making Healthy Choices**
Drinking liquids helps us replace the water in our body that we lose. It is best to avoid coffee and alcohol as they dehydrate the body. We also get water from what we eat. Fruits, vegetables, grains, meat are all made up of water.
Water
(Reading for Advanced Students)

Water is probably the most important of the essential nutrients. We would not be able to live without water for more than 10 days. It is possible to live many weeks without food.

When our body loses water it is called dehydration. Vomiting, diarrhea, or fever can cause dehydration. If our body sweats a lot and we don’t drink enough water to replace the water we are losing we can also dehydrate. If we don’t get enough water every day our body can have problems digesting food.

Because our bodies are 65% water it is important for us to drink enough water every day. If we are vomiting or have diarrhea or a fever it is important for us to drink even more water.

Amount to Drink Each Day
We should drink 8-10 cups of water per day. If we are vomiting or have diarrhea or a fever it is important for us to drink even more water.

Making Healthy Choices
Drinking liquids helps us replace the water in our body that we lose. It is best to avoid coffee and alcohol as they dehydrate the body. We also get water from what we eat. Fruits, vegetables, grains, meat are all made up of water.
Carbohydrates
(Reading for Beginners)

We need carbohydrates.

They give us energy.

Examples of Carbohydrates:

- RICE
- FRUIT
- POTATOES

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<thead>
<tr>
<th>SIMPLE CARBOHYDRATES</th>
<th>COMPLEX CARBOHYDRATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRUIT</td>
<td>BEANS</td>
</tr>
<tr>
<td>SUGAR</td>
<td>BROCCOLI</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>High-Fiber</td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Banana</td>
</tr>
<tr>
<td></td>
<td>Tomato</td>
</tr>
<tr>
<td></td>
<td>White Bread</td>
</tr>
</tbody>
</table>

Amount to Eat Each Day - 45-65% of the food we eat every day should come from the carbohydrate group.

Making Healthy Choices - Fruits are the best simple carbohydrates. High Fiber carbohydrates are the best Complex Carbohydrates.
Carbohydrates are sometimes called carbs. We need carbohydrates because they give our body and brain energy. Examples of carbohydrates are rice, wheat, fruit, sugar, corn and potatoes.

Carbohydrates come in two forms:
- Simple Carbohydrates – They taste sweet.
- Complex Carbohydrates – They taste good, but not sweet.

There are two groups of complex carbohydrates:
- high-fiber
- low-fiber

Fiber is something that helps our body digest food. Fiber also helps fight diseases.

Because carbohydrates give our bodies energy we may feel tired when we don’t eat enough carbohydrates. Here are some examples of the different types of carbohydrates:

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<td>Fruits</td>
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<td>Table Sugar</td>
<td>Broccoli</td>
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<td>Sugar in Milk</td>
<td>Whole Grain Bread, Rice,</td>
</tr>
<tr>
<td>Candies &amp; Sweets</td>
<td>Pasta</td>
</tr>
<tr>
<td>Cookies</td>
<td>Peas</td>
</tr>
<tr>
<td>Honey</td>
<td>Beans</td>
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<tr>
<td>Cakes</td>
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Amount to Eat Each Day
45-65% of the foods we should come from the carbohydrate group.

Making Healthy Choices
Eat mostly high-fiber complex carbohydrates, limit low fiber carbohydrates and choose fruits instead of candies and sweets from the simple carbohydrate group.
Carbohydrates
(Reading for Advanced Group)

Carbohydrates are sometimes called carbs. Our bodies need carbs because they give our body and brain energy. Rice, wheat, fruit, sugar, corn and potatoes are some examples of foods that are carbohydrates.

Carbohydrates come in two forms: simple carbohydrates and complex carbohydrates. Simple carbohydrates taste sweet and complex carbohydrates taste good but not sweet.

There are two groups of complex carbohydrates: high-fiber and low-fiber. Fiber is a substance that helps our body digest food. It also helps fight diseases.

Because carbohydrates give our bodies energy we may feel tired when our body doesn’t eat enough carbohydrates. Here are some examples of the different types of carbohydrates:

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Making Healthy Choices
Eat mostly high-fiber complex carbohydrates, limit low fiber carbohydrates and choose fruits instead of candies and sweets from the simple carbohydrate group.
Proteins
(Reading for Beginners)

Protein is important for growth and development.

We need protein because it gives us energy.

We need protein because it builds muscles in our bodies.

Too much protein - kidney disease, bone damage, or heart disease.
Not enough protein - we will get sick.

Protein Foods

Meat  Chicken  Fish  Peanut Butter  Eggs

All proteins are made of amino acids.

Our bodies make non-essential amino acids.
Our bodies cannot make essential amino acids.

Amount to Eat Each Day
Overall our protein intake should be 10% of the total calories that we eat.

Making Healthy Choices
The healthiest choices we can make from the protein group complete proteins by combining 2 foods from the legumes, grains, and nuts and seeds groups.
Amount to Eat Each Day
Overall our protein intake should be 10% of the total calories that we eat.

Making Healthy Choices
The healthiest choices we can make from the protein group complete proteins by combining 2 foods from the legumes, grains, and nuts and seeds groups.
Proteins
(Reading for Intermediate Students)

Protein is important for growth and development. We need protein because it gives us energy. Protein also helps us to build muscles and tissues in our bodies. If we get too much protein it can cause kidney disease, bone damage, or heart disease. If we don’t get enough protein we are more likely to get sick. Examples of foods that have protein in them are meat, chicken, fish, peanut butter and eggs.

- Protein gives us energy.
- Protein helps to build muscles.
- Protein helps to build tissues.
- Too much protein can cause:
  - kidney disease
  - bone damage
  - heart disease
- If we don’t get enough protein we can get sick.
- Protein foods – meat, chicken, fish, peanut butter, eggs

All proteins are made of amino acids. There are 20 amino acids. Our bodies make non-essential amino acids. There are 11 non-essential amino acids. Our bodies cannot make essential amino acids. There are 9 essential amino acids. Essential amino acids must come from the food that we eat.

- Proteins are made of amino acids.
- There are 20 amino acids.
  - 11 are Non-Essential and made by our body
  - 9 are Essential, our body can’t make them
- We have to get essential amino acids from the food we eat

The protein in foods is sometimes called incomplete protein or complete protein. A complete protein has all 9 essential amino acids. An incomplete protein does not have all 9 essential amino acids. Foods that come from animal products (meat, chicken, fish, milk) have complete proteins. Most proteins that come from plants are not complete. It is possible to combine proteins from plant sources to make complete proteins. Because food that comes from animal sources is usually high in fat it is healthier to get our proteins from plant sources. It is important to eat proteins that provide all of the necessary amino acids.

- Complete proteins have all 9 essential amino acids.
- Incomplete proteins do not have all 9 essential amino acids.
- Foods that come from animals (meat, chicken, fish, milk) have complete proteins.
- Foods that come from plants are not complete proteins.
- Different plant foods can be eaten at the same time to make a complete protein.
- Foods that come from animals are not as healthy as foods that come from plants.
- The healthiest proteins we can eat are combined proteins from plant sources.

Creating Complete Proteins

To create a complete protein, combine foods from at least two of the following groups at a single meal:

<table>
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<th>Legumes</th>
<th>Grains</th>
<th>Nuts, Seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>dry beans and peas (navy lima, pinto, black, soybeans), tofu, soy flour, peanuts, peanut butter</td>
<td>whole grains, (barley, oats, rice, rye, wheat, corn, pasta)</td>
<td>almonds, pecans, walnuts, sunflower seeds, sesame seeds</td>
</tr>
</tbody>
</table>
Proteins
(Reading for Advanced Students)

Protein is important for growth and development. We need protein because it gives us energy. Protein also helps us to build muscles and tissues in our bodies. If we get too much protein it can cause kidney disease, bone damage, or heart disease. If we don’t get enough protein we are more likely to get sick. Examples of foods that have protein in them are meat, chicken, fish, peanut butter and eggs.

All proteins are made of amino acids. There are 20 amino acids. Our bodies make non-essential amino acids. There are 11 non-essential amino acids. Our bodies cannot make essential amino acids. There are 9 essential amino acids. Essential amino acids must come from the food that we eat.

The protein in foods is sometimes called incomplete protein or complete protein. A complete protein has all 9 essential amino acids. An incomplete protein does not have all 9 essential amino acids. Foods that come from animal products (meat, chicken, fish, milk) have complete proteins. Most proteins that come from plants are not complete. It is possible to combine proteins from plant sources to make complete proteins. Because food that comes from animal sources is usually high in fat it is healthier to get our proteins from plant sources. It is important to eat proteins that provide all of the necessary amino acids.

Creating Complete Proteins

To create a complete protein, combine foods from at least two of the following groups at a single meal:

<table>
<thead>
<tr>
<th>Legumes</th>
<th>Grains</th>
<th>Nuts, Seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>dry beans and peas (navy lima,</td>
<td>whole grains, (barley, oats, rice, rye,</td>
<td>almonds, pecans, walnuts,</td>
</tr>
<tr>
<td>pinto, black, soybeans), tofu,</td>
<td>wheat, corn, pasta)</td>
<td>sunflower seeds, sesame seeds</td>
</tr>
<tr>
<td>soy flour, peanuts, peanut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>butter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amount to Eat Each Day
Overall our protein intake should be 10% of the total calories that we eat.

Making Healthy Choices
The healthiest choices we can make from the protein group complete proteins by combining 2 foods from the legumes, grains, and nuts and seeds groups.
Our bodies need a little fat every day.
Fat gives us energy.
Fat helps us to grow.
Fat helps us to feel full.
Too much fat can cause diseases.
Too much fat can make us fat.

<table>
<thead>
<tr>
<th>Saturated Fats</th>
<th>Polyunsaturated Fats</th>
<th>Monounsaturated Fats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Milk</td>
<td>Corn Oil</td>
<td>Olive Oil</td>
</tr>
<tr>
<td>Beef and Meat</td>
<td>Sunflower Oil</td>
<td>Peanut Oil</td>
</tr>
</tbody>
</table>

**Amount to Eat Each Day**
The fat we eat should be less than 30% of the total calories that we eat.

**Making Healthy Choices**
The healthiest choices we can make from the fat group are monounsaturated fats.
Fats
(Reading for Intermediate Students)

Americans need to eat less fat but our bodies need some fat. Our bodies need fat to give us energy and to help us grow. If we don’t get enough fat in our diets we feel less full. If we eat too much fat it can cause obesity and disease (high blood pressure, heart disease, and cancer). Examples of foods that are fats are oils, butter, and mayonnaise. There are four kinds of fats. They are saturated, polyunsaturated, and monounsaturated.

**Saturated Fats** are found in dairy foods (whole milk, cream, and cheese, and fatty meats like beef, veal, lamb, pork, and ham). Some vegetable oils like coconut oil, palm kernel oil, and vegetable shortening are also high in saturated fat.

Our body uses saturated fats to make cholesterol. Cholesterol is something that our body needs to help us digest foods. There are two different kinds of cholesterol (LDL or bad cholesterol and HDL or good cholesterol). LDL Cholesterol is bad for our body. Saturated fat can make our bodies produce LDL bad cholesterol. It is recommend that the daily intake of saturated fats be kept below 10 percent of total caloric intake.

**Polyunsaturated Fats** are found in corn, soybean, safflower, and sunflower oils. Some fish oils are also high in polyunsaturated fats. Polyunsaturated fats lower both LDL bad cholesterol and HDL good cholesterol. Because of this our intake of polyunsaturated fats should not be more than 10 percent of the total calories we eat.

**Monounsaturated Fats** are found mostly in olive oil, peanut oil, and canola oil. These fats reduce LDL bad cholesterol. They do not reduce our HDLs good cholesterol. It is recommend that monounsaturated fats be kept between 10 and 15 percent of the total calories that we eat per day.

**Amount to Eat Each Day**
Overall our fat intake should be less than 30% of the total calories that we eat.

**Making Healthy Choices**
The healthiest choices we can make from the fat group are monounsaturated fats.
Fats
(Reading for Advanced Students)

Although it is important for most Americans to reduce the amount of fat we eat our bodies do need fat. Our bodies need fat to give us energy and to help us grow. If we don’t get enough fat in our diets we feel less full. If we eat too much fat it can cause obesity and disease (high blood pressure, heart disease, and cancer). Examples of foods that are fats are oils, butter, and mayonnaise. There are four kinds of fats. They are saturated, polyunsaturated, and monounsaturated.

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**Amount to Eat Each Day**
Overall our fat intake should be less than 30% of the total calories that we eat.

**Making Healthy Choices**
The healthiest choices we can make from the fat group are monounsaturated fats.
FATS
Carbohydrates
PROTEINS
VITAMINS
MINERALS
Lesson 3
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Nutrition Principles &amp; The Food Pyramid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>Adult Education ESL Class</td>
</tr>
<tr>
<td>Target Group</td>
<td>Content-based ESL Class</td>
</tr>
<tr>
<td>Lesson 3</td>
<td>The Food Pyramid</td>
</tr>
<tr>
<td>Timing</td>
<td>80 Minutes</td>
</tr>
</tbody>
</table>

**Content Objectives:**
- Identify the six different food groups of the USDA’s new Food Pyramid.
- Classify Foods into the appropriate food groups.
- Demonstrate understanding of serving sizes of different food groups.

**Beginner Language Objectives:**
- Point to the different parts of the USDA Food Pyramid and hold up a color-coded card with the name of the corresponding food group when they hear the teacher or another student say it.
- Bring labelled pictures of food to a wall Food Pyramid and attach the picture to the correct food group.
- Check off serving sizes for each category of the Food Pyramid on a listening guide.

**Intermediate Language Objectives:**
- Draw a line from each food group on the Food Pyramid to the correct category name.
- Copy names of foods from a list onto a graphic organizer that corresponds to their Food Pyramid category.
- Draw lines from Food Pyramid categories to the way that the category is measured.

**Advanced Language Objectives**
- Label a blank Food Pyramid with the correct name of each category.
- Complete a graphic organizer that includes the names of foods and their Food Pyramid categories.
- Complete a graphic organizer that includes names of Food Pyramid categories and how a serving of that category is measured.
Lesson 3 – The Food Pyramid
Narrative

The purpose of the third lesson in the unit is to introduce students to the food pyramid and the different food groups in the pyramid. All of the lessons in this unit have been significantly modified from the original text especially because of new dietary guidelines and a newly designed food pyramid.

- **Warm-Up (10 Minutes)** – The warm up of the lesson is designed to get students thinking about the different parts of the food pyramid by using the new graphic that represents the food pyramid. Each section of the food pyramid corresponds to a particular food group and the amount of that food that should be consumed every day. The steps represent physical activity and taking steps to be healthy. During the warm-up beginning students can be asked to point and gesture at different parts of the pyramid while intermediate students and advanced students can be asked more open-ended questions. See anatomy of a pyramid for more information on the different parts of the pyramid.

- **Mini-Lesson #1/Quicktime Movie/Practice #1 (20 Minutes)** – This PowerPoint based lecture will introduce students to the new food pyramid. Students have already discussed different categories of foods and nutrients in Lessons 1 and 2 of this unit. This Mini-Lesson will teach students the names that the USDA uses for each food group. A quicktime movie will be shown in a PowerPoint presentation three times. The first time all students listen. The second time students will complete differentiated listening guides based on their level. The third time students will listen and check their listening guides. The last step of this mini-lesson is to review the colors and category names of the food pyramid. As the category names are spoken by you or your students, beginning students will hold up color-coded cards with the name of the food groups. Select one beginning student from each food group to attach their card to a word wall dedicated to the food pyramid.

- **Mini-Lesson #2/#3 (30 Minutes)** – This is a PowerPoint lecture on the 5 different food groups and oils. Students will hear the names of the categories, names of foods in each of the groups, and see and hear appropriate serving sizes for each of the categories. All students will complete a graphic organizer. Beginning students’ graphic organizers will be more picture-based while intermediate and advanced students will be more text-based with supporting visuals.

- **Practice / Food Pyramid Game (15 Minutes)** – Students are divided into mixed ability groups to play the Food Pyramid Game. Students will practice identifying foods that fall into the 6 categories on the Food Pyramid.

- **Conclusion/Wrap-Up (5 Minutes)** – The Conclusion/Wrap-Up is a time to check for students’ understanding, review word wall, Food Pyramid wall, and vocabulary. This is also a time to review objectives covered during the lesson.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warm Up</strong></td>
<td><strong>Show Food Pyramid Graphic – Lesson 3 Slide #1</strong></td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 3, Slide #1</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>Class Discussion</td>
<td><strong>Review Lesson Objectives</strong></td>
<td></td>
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<tr>
<td>“The Food Pyramid”</td>
<td><strong>Ask Students the following questions:</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Beginners</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Point to the pyramid or triangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Point to the stairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- How many colors are there in the pyramid? (six)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- What are the colors in the pyramid.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- What are the colors in the pyramid? (orange, green, red, yellow, blue, purple).</td>
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<td></td>
<td><strong>Intermediate / Advanced</strong></td>
<td></td>
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<tr>
<td></td>
<td>- What do you think each color represents in the pyramid or triangle? (A different category or group of food).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
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</tbody>
</table>
| Warm-Up (continued) | - Why are some colors or sections wider or bigger than others?  
- What do the stairs represent?  
- What do you think each of the categories or colors represent specifically? | Projector and laptop with PowerPoint presentation on CD-ROM - Lesson 3, Slide #1 | 10 Minutes |
| Mini-Lesson #1 / Quicktime Movie | PowerPoint Presentation Food Pyramid Movie | Projector and laptop with PowerPoint presentation on CD-ROM - Lesson 3, Slide #2 | 20 Minutes |
| The Food Groups of the Food Pyramid | Play movie 3 times.  
First Viewing  
ALL students watch and listen to movie.  
Second Viewing  
ALL students complete listening guides  
Third Viewing  
Beginners – distribute color-coded cards with different food groups. S’s hold up their card when they hear their color and food group. Select 1 student from each food group to hang their card on the food pyramid word wall.  
Intermediate/Advanced Check their work on their listening guides. | Differentiated Listening Guides for Beginner, Intermediate, Advanced  
Color Coded cards with nutrient names on them. |
<table>
<thead>
<tr>
<th>Objectives</th>
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<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mini-Lesson #2 – PowerPoint Lecture</strong></td>
<td>Show slides 3-15 which present the foods in each food group. During this mini-lecture students are engaged in the following activities: <strong>Beginning Students</strong> Bring labeled pictures of food to the correct category on the Food Pyramid wall when they hear and see them spoken in the mini-lesson. <strong>Intermediate Students</strong> Copy names of foods from a food list onto a graphic organizer that corresponds to their Food Pyramid category. <strong>Advanced Students</strong> Complete a graphic organizer that includes names of foods and their Food Pyramid categories.</td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 3, Slide #3-15 Labeled pictures of foods. Graphic organizers for Intermediate and Advanced Students.</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
</tr>
<tr>
<td>---------------------</td>
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</tr>
<tr>
<td><strong>Mini-Lesson #3</strong></td>
<td><strong>Show</strong> slides 16-21 which present the foods in each food group.</td>
<td><strong>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 3, Slide #16-21</strong></td>
<td><strong>15 Minutes</strong></td>
</tr>
<tr>
<td><strong>PowerPoint Lecture</strong></td>
<td>During this mini-lecture students are engaged in the following activities:</td>
<td><strong>Differentiated listening guides for all students.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Beginning Students:</strong> Check-off the way each food category is measured on their listening guides.</td>
<td></td>
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<tr>
<td></td>
<td><strong>Intermediate Students:</strong> Draw lines from Food Pyramid Categories to the way the category is measured on their listening guides.</td>
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</tr>
<tr>
<td></td>
<td><strong>Advanced Students:</strong> Complete listening guides by filling-in how each Food Pyramid category is measured.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
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</tr>
<tr>
<td>Practice / Food Pyramid Game</td>
<td>Divide students into mixed ability groups.</td>
<td>Food Pyramid Game Board</td>
<td>15 Minutes</td>
</tr>
<tr>
<td></td>
<td>Give each student a copy of the Food Pyramid Game board and a die.</td>
<td>1 die for each group.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students roll die and have to name, show, or point to a food that is part of the category that corresponds to the number on their die.</td>
<td>Pictures of foods, picture dictionaries with food sections for beginning students to point or show foods.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students get 1 point for each correct answer given.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginners</td>
<td>Can hold up a picture, point to a picture in a picture dictionary or gesture to a food on the Food Pyramid Wall.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate / Advanced</td>
<td>Can say the name of a food that fits that category.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If time permits this game can be expanded to include serving sizes. Students could also name or show an unhealthy choice and a healthier choice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conclusion / Wrap-Up</td>
<td>Review word wall and Food Pyramid Wall.</td>
<td></td>
<td>5 Minutes</td>
</tr>
<tr>
<td></td>
<td>Check for understanding and Review Objectives.</td>
<td></td>
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</tr>
</tbody>
</table>
Nutrition Principles & The Food Pyramid

Lesson 3

The Food Pyramid
The Food Pyramid

USDA
What Foods are in the Grain Group?

Food made from

wheat  rice  oats  cornmeal

and

barley

is part of the GRAINS group.
Grains are divided into two groups:

### Whole Grains
- Brown Rice
- Whole Grain Bread
- Oatmeal
- Popcorn

### Refined Grains
- White Rice
- White Bread
- Cornbread
- Pasta
Grains are divided into two groups:

**Whole Grains**

Whole Grains are healthier choices than refined grains

**BECAUSE**

Whole Grains are higher in fiber and have more vitamins than refined grains.

**Refined Grains**

Refined Grains are less healthy than whole grains

**BECAUSE**

when they are made important vitamins and fiber are removed.
What Foods are in the Vegetable Group?

Any vegetable or 100% vegetable juice is part of the VEGETABLE group.
What Foods are in the Vegetable Group?

- Carrots
- Beans
- Lettuce
- Green Beans
- Broccoli
- Artichokes
- Asparagus
- Okra

Slide #7
Lesson 3 - Mini-Lesson #2
What Foods are in the Fruit Group?

Any fruit or 100% fruit juice is a part of the FRUIT group.
What Foods are in the Fruit Group?

- Apricots
- Avocado
- Blueberries
- Cantaloupe
- Cherries
- Lemons
What Foods are in the Milk Group?

All liquid milk products and many foods made from milk are part of the MILK group.

Foods made from milk that have little to no calcium, like cream cheese, cream, and butter, are not part of the MILK group.

Healthy milk group choices should be fat-free or low-fat.
What Foods are in the Milk Group?

- All Kinds of Milk
- Ice Cream!
- Yogurt
- Hard Cheeses
- Ricotta Cheese
- Cottage Cheese
What Foods are in the Meat & Beans Group?

Foods made from

- Meat
- Poultry
- Fish
- Dry Beans & Peas (Are also part of the Vegetable Group)
- Eggs
- Nuts

are part of the MEAT & BEANS group.

Slide #12
Lesson 3 - Mini-Lesson #2
What Foods are in the Meat & Beans Group?

- Lean Lunch Meat
- Pistachios
- Ham
- Lentils
- Tofu
- Ground Turkey

Slide #13
Lesson 3 - Mini-Lesson #2
What are Oils?

Oils are fats that are liquid at room temperature.

Safflower Oil
Canola Oil
Corn Oil
Olive Oil

Some foods have oil in them like:

Nuts
Olives
Some Fish

Slide #14
Lesson 3 - Mini-Lesson #2
What Foods are Oils?

Solid Oils
- Butter
- Mayonnaise
- Margarine

Solid Oils usually come from animals.

Liquid Oils
- Safflower Oil
- Canola Oil
- Olive Oil

Liquid Oils usually come from vegetables.
Liquid Oils are healthier than Solid Oils.
Food Servings

Food Servings are measured in

Cups

OR

Ounces
How much is one serving from the grain group?

1 Serving = 1 Ounce or....

- Brown Rice - 1/2 Cup
- Whole Wheat Cereal Flaks - 1 Cup
- Popcorn - 3 Cups
- Bread - 1 Slice
- Oatmeal - 1/2 Cup
- Whole Wheat Crackers - 5 Crackers
How Much is One Serving from the Vegetable Group?

Vegetables are measured in Cups

- Cooked Black Beans: 1/2 Cup
- Raw Cauliflower: 1/2 Cup
- Corn: 1/2 Cup
- Cooked Green Beans: 1/2 Cup
- Iceburg Lettuce: 1 Cup
- Cooked Kidney Beans: 1/2 Cup
How Much is One Serving from the Fruit Group?

Fruits are measured in Cups

Gala Apple
1 Cup

Grapefruit
1/2 Cup

Mango
1 Cup

Orange Juice
1/2 Cup

Orange
1/2 Cup

2 Plums
1 Cup

Slide #19

Lesson 3 - Mini-Lesson #3
How Much is One Serving from the Milk Group?
Milk is measured in Cups

- Frozen Yogurt: 1/2 Cup
- Yogurt: 1 Cup
- Chocolate Pudding: 1/2 Cup
- Cheddar Cheese: 1/3 Cup
- Fat Free Milk: 1 Cup
- Swiss Cheese: 2 Slices
How Much is One Serving from the Meat & Beans Group?

Meat is measured in Ounces

- **Cooked Black Beans**
  1/2 Cup = 2 ounces

- **Ham**
  6 Thin Slices = 6 Ounces

- **Pork Chop**
  4 Ounces Cooked

- **Beef Strip Steak**
  5 Ounces Cooked

- **Small Chicken Breast**
  3 Ounces Cooked

- **Salmon Steak**
  8 Ounces Cooked

Slide #21

Lesson 3 - Mini-Lesson #3
Food Pyramid Game

Roll a dice. Name, show, or point to a food that is part of the category next to the number you roll.

Slide #22

Lesson 3 - Practice/Food Pyramid Game
LESSON 3 – MINI-LESSON #1
QUICKTIME MOVIE TRANSCRIPTION

After 12 years it was time for USDA to update the Food Guide Pyramid to reflect the government’s new dietary guidelines including the importance of balancing what we eat with our physical activity. To do this we tip the pyramid on its side.

Now all the food group bands run from the top of the pyramid to the base.

The different sizes of the bands show the proportion of food we should eat from each food group. The bands are much wider at the base to remind us to eat mostly foods without solid fats and added sugar.

- Orange is for GRAINS. Remember to make half of them whole grains.
- Green is for VEGETABLES. Don’t forget to eat dark green and orange ones.
- Red is for FRUITS; fresh, canned, frozen, or dried.
- Blue is for MILK PRODUCTS. Go for low fat or fat-free.
- Purple is for MEAT & BEANS. Choose lean meats and poultry and more fish, beans, nuts, and seeds
- Yellow is for OILS. In addition to the five food groups, choose your oils carefully.

Now, physical activity or exercise... No matter what you call it the steps remind us to be active every day. One pyramid does not fit all of us so we created 12 different ones depending upon how many calories you need and how active you are. There’s one that’s just right for you at MyPyramid.gov for steps to a healthier you.
Lesson 3
Mini-Lesson #1
The Food Pyramid Movie
Listening Guide
(Beginner Students)

Check the words that you hear during the Food Pyramid Movie.

☐ ORANGE  ☐ GRAINS
☐ GREEN    ☐ VEGETABLES
☐ RED      ☐ FRUITS
☐ BLUE     ☐ MILK PRODUCTS
☐ PURPLE   ☐ MEAT & BEANS
☐ YELLOW   ☐ OILS
Lesson 3
Mini-Lesson #1
The Food Pyramid Movie
Listening Guide
(Intermediate Students)

Write the name of the food group for each color that you hear during the movie.

**ORANGE**

**GREEN**

**RED**

**BLUE**

**PURPLE**

**YELLOW**
Lesson 3
Mini-Lesson #1
The Food Pyramid Movie
Listening Guide
(Advanced Students)

Complete the following passage. Write the words you hear during the movie in the blank spaces.

After ________ years it was time for USDA to update the Food Guide Pyramid to reflect the government’s new dietary guidelines including the importance of balancing what we ________ with our physical activity. To do this we tip the pyramid on its side.

Now all the ________ group bands run from the ________ of the pyramid to the base.

The ________ sizes of the bands show the proportion of food we should eat from each food _________. The bands are much ________ at the base to remind us to eat mostly foods without ________ fats and added _________.

- ________ is for _________. Remember to make half of them whole grains.
- ________ is for _________. Don’t forget to eat dark green and orange ones.
- ________ is for _________.; fresh, canned, frozen, or dried.
- ________ is for _________. Go for low fat or fat-free.
- ________ is for _________. Choose lean meats and poultry and more fish, beans, nuts, and seeds
- ________ is for _________. In addition to the five food groups, choose your oils carefully.

Now, physical activity or ________...No matter what you call it the ________ remind us to be active every day. One pyramid does not fit all of us so we created 12 different ones depending upon how many ________ you need and how active you are. There’s one that’s just right for you at MyPyramid.gov for ________ to a ________ you.
VEGETABLES

Lesson 4 - Mini-Lesson #1
GRAINS

Lesson 4 - Mini-Lesson #1
MEAT & BEANS

Lesson 4 - Mini-Lesson #1
MILK PRODUCTS

Lesson 4 - Mini-Lesson #1
Whole Wheat Bread  Yogurt  Asparagus  

Meat & Beans  Fruits  Oils  

Eggs  Apple  Safflower Oil  

Example Food Pyramid Wall  Lesson 3 - Mini-Lesson #2
Lesson 3
Mini-Lesson #2
What’s in the ______ Group?
(Intermediate Students)

Write names of foods you like to eat in the correct category of the Food Pyramid. Use the attached list of foods to help you.
<table>
<thead>
<tr>
<th>Brown rice</th>
<th>Soy beans</th>
<th>Pretzels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oatmeal</td>
<td>Split peas</td>
<td>Corn flakes</td>
</tr>
<tr>
<td>Popcorn</td>
<td>Tofu (bean curd)</td>
<td>White bread</td>
</tr>
<tr>
<td>Cereal</td>
<td>Made from soy beans</td>
<td>White sandwich</td>
</tr>
<tr>
<td>Whole wheat bread</td>
<td>White beans</td>
<td>Buns and rolls</td>
</tr>
<tr>
<td>Whole wheat</td>
<td>Corn</td>
<td>White rice</td>
</tr>
<tr>
<td>Crackers</td>
<td>Green peas</td>
<td>Bok choy</td>
</tr>
<tr>
<td>Whole wheat pasta</td>
<td>Lima beans (green)</td>
<td>Broccoli</td>
</tr>
<tr>
<td>Whole wheat</td>
<td>Potatoes</td>
<td>Collard greens</td>
</tr>
<tr>
<td>Tortillas</td>
<td>Artichokes</td>
<td>Kale</td>
</tr>
<tr>
<td>Wild rice</td>
<td>Asparagus</td>
<td>Mesclun</td>
</tr>
<tr>
<td>Cornbread*</td>
<td>Bean sprouts</td>
<td>Mustard greens</td>
</tr>
<tr>
<td>Corn tortillas</td>
<td>Beets</td>
<td>Romaine lettuce</td>
</tr>
<tr>
<td>Couscous*</td>
<td>Brussels sprouts</td>
<td>Spinach</td>
</tr>
<tr>
<td>Crackers*</td>
<td>Cabbage</td>
<td>Turnip greens</td>
</tr>
<tr>
<td>Flour tortillas*</td>
<td>Celery</td>
<td>Watercress</td>
</tr>
<tr>
<td>Grits</td>
<td>Cucumber</td>
<td>Acorn squash</td>
</tr>
<tr>
<td>Noodles</td>
<td>Eggplant</td>
<td>Apples</td>
</tr>
<tr>
<td>Spaghetti</td>
<td>Green beans</td>
<td>Apricots</td>
</tr>
<tr>
<td>Macaroni</td>
<td>Green or red</td>
<td>Avocado</td>
</tr>
<tr>
<td>Pitas</td>
<td>Peppers</td>
<td>Bananas</td>
</tr>
<tr>
<td>Butternut squash</td>
<td>Iceberg (head)</td>
<td>Berries:</td>
</tr>
<tr>
<td>Carrots</td>
<td>Lettuce</td>
<td>Strawberries</td>
</tr>
<tr>
<td>Hubbard squash</td>
<td>Mushrooms</td>
<td>Blueberries</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>Okra</td>
<td>Raspberries</td>
</tr>
<tr>
<td>Sweetpotatoes</td>
<td>Onions</td>
<td>Cherries</td>
</tr>
<tr>
<td>Dry beans and peas</td>
<td>Parsnips</td>
<td>Grapes</td>
</tr>
<tr>
<td>Black beans</td>
<td>Tomatoes</td>
<td>Kiwi fruit</td>
</tr>
<tr>
<td>Black-eyed peas</td>
<td>Tomatoes juice</td>
<td>Lemons</td>
</tr>
<tr>
<td>Garbanzo beans (chickpeas)</td>
<td>Vegetable juice</td>
<td>Limes</td>
</tr>
<tr>
<td>Kidney beans</td>
<td>Turnips</td>
<td>Mangoes</td>
</tr>
<tr>
<td>Lentils</td>
<td>Wax beans</td>
<td>Melons:</td>
</tr>
<tr>
<td>Lima beans (mature)</td>
<td>Zucchini</td>
<td>Cantaloupe</td>
</tr>
<tr>
<td>Navy beans</td>
<td>Orange</td>
<td>Honeydew</td>
</tr>
<tr>
<td>Pinto beans</td>
<td>Apple</td>
<td>Watermelon</td>
</tr>
<tr>
<td>Fat-free (skim)</td>
<td>Grape</td>
<td>Nectarines</td>
</tr>
<tr>
<td>Low fat milk (1%)</td>
<td>Grapefruit</td>
<td>Oranges</td>
</tr>
<tr>
<td>Reduced fat</td>
<td>Cheddar cheese</td>
<td>Peaches</td>
</tr>
<tr>
<td>Milk (2%)</td>
<td>Mozzarella cheese</td>
<td>Pears</td>
</tr>
<tr>
<td>Whole milk</td>
<td>Swiss cheese</td>
<td>Papaya</td>
</tr>
<tr>
<td>Puddings made with milk</td>
<td>Parmesan cheese</td>
<td>Pineapple</td>
</tr>
<tr>
<td>Ice milk</td>
<td>Ricotta cheese</td>
<td>Plums</td>
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<tr>
<td>Frozen yogurt</td>
<td>Cottage cheese</td>
<td>Prunes</td>
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<td>Ice cream</td>
<td>American cheese</td>
<td>Raisins</td>
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<td></td>
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<td>Tangerines</td>
</tr>
<tr>
<td>BEEF</td>
<td>YOGURT*</td>
<td>CANOLA OIL</td>
</tr>
<tr>
<td>------</td>
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<td>------------</td>
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<tr>
<td>HAM</td>
<td>SNAPPER</td>
<td>CORN OIL</td>
</tr>
<tr>
<td>LAMB</td>
<td>SWORDFISH</td>
<td>COTTONSEED OIL</td>
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<tr>
<td>PORK</td>
<td>TROUT</td>
<td>OLIVE OIL</td>
</tr>
<tr>
<td>VEAL</td>
<td>TUNA</td>
<td>SAFFLOWER OIL</td>
</tr>
<tr>
<td>LIVER</td>
<td>CLAMS</td>
<td>SOYBEAN OIL</td>
</tr>
<tr>
<td>GIBLETS</td>
<td>CRAB</td>
<td>SUNFLOWER OIL</td>
</tr>
<tr>
<td>CHICKEN</td>
<td>CRAYFISH</td>
<td>BUTTER</td>
</tr>
<tr>
<td>DUCK</td>
<td>LOBSTER</td>
<td>BEEF FAT (TALLOW, SUET)</td>
</tr>
<tr>
<td>GOOSE</td>
<td>MUSSELS</td>
<td>CHICKEN FAT</td>
</tr>
<tr>
<td>TURKEY</td>
<td>OCTOPUS</td>
<td>PORK FAT (lard)</td>
</tr>
<tr>
<td>GROUND CHICKEN</td>
<td>OYSTERS</td>
<td>SHORTENING</td>
</tr>
<tr>
<td>AND TURKEY</td>
<td>SCALLOPS</td>
<td></td>
</tr>
<tr>
<td>EGGS*</td>
<td>SQUID (CALAMARI)</td>
<td></td>
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<tr>
<td>CHICKEN EGGS</td>
<td>SHRIMP</td>
<td></td>
</tr>
<tr>
<td>DUCK EGGS</td>
<td>ANCHOVIES</td>
<td></td>
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<tr>
<td>BLACK BEANS</td>
<td>CLAMS</td>
<td></td>
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<tr>
<td>BLACK-EYED PEAS</td>
<td>TUNA</td>
<td></td>
</tr>
<tr>
<td>CHICKPEAS</td>
<td>SARDINES</td>
<td></td>
</tr>
<tr>
<td>(GARBANZO BEANS)</td>
<td>WALNUTS</td>
<td></td>
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<tr>
<td>FALAFEL</td>
<td>CATFISH</td>
<td></td>
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<tr>
<td>KIDNEY BEANS</td>
<td>COD</td>
<td></td>
</tr>
<tr>
<td>LENTILS</td>
<td>FLOUNDER</td>
<td></td>
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<tr>
<td>LIMA BEANS</td>
<td>HADDOCK</td>
<td></td>
</tr>
<tr>
<td>(MATURE)</td>
<td>HALIBUT</td>
<td></td>
</tr>
<tr>
<td>NAVY BEANS</td>
<td>HERRING</td>
<td></td>
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<tr>
<td>PINTO BEANS</td>
<td>MACKEREL</td>
<td></td>
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<tr>
<td>SOY BEANS</td>
<td>POLLOCK</td>
<td></td>
</tr>
<tr>
<td>SPLIT PEAS</td>
<td>PORGY</td>
<td></td>
</tr>
<tr>
<td>TOFU (BEAN CURD MADE FROM SOY BEANS)</td>
<td>SALMON</td>
<td></td>
</tr>
<tr>
<td>WHITE BEANS</td>
<td>SEA BASS</td>
<td></td>
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<tr>
<td>TEMPEH</td>
<td></td>
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<tr>
<td>ALMONDS</td>
<td></td>
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<tr>
<td>CASHEWS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAZELNUTS (FILBERTS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEANUTS</td>
<td></td>
<td></td>
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<tr>
<td>PEANUT BUTTER</td>
<td></td>
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<tr>
<td>PECANS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PISTACHIOS</td>
<td></td>
<td></td>
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<tr>
<td>PUMPKIN SEEDS</td>
<td></td>
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<tr>
<td>SESAME SEEDS</td>
<td></td>
<td></td>
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<tr>
<td>SUNFLOWER SEEDS</td>
<td></td>
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</tr>
</tbody>
</table>
Lesson 3
Mini-Lesson #2
What’s in the ________ Group?
(Advanced Students)

Write names of foods you like to eat in the correct category of the Food Pyramid.
Lesson 3
Mini-Lesson #3
What is a serving of the ________ Group?
(Intermediate Students)

DRAW A LINE FROM THE FOOD PYRAMID CATEGORY TO THE WAY FOOD IN THAT CATEGORY IS MEASURED.
Lesson 3
Mini-Lesson #3
What is a serving of the _________ Group?
(Beginner Students)

CIRCLE THE WORDS THAT YOU HEAR YOUR TEACHER SAY.

Grains are measured in ounces.

Vegetables are measured in cups.

Fruits are measured in cups.

Milk is measured in cups.

Meat is measured in ounces.
Lesson 3
Mini-Lesson #3
What is a serving of the _______ Group?
(Advanced Students)

Complete the chart. Write the way we measure each category of the Food Pyramid.

Grains are measured in ____________________.

Vegetables are measured in ____________________.

Fruits are measured in ____________________.

Milk is measured in ____________________.

Meat is measured in ____________________.
Lesson 4
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Nutrition Principles &amp; The Food Pyramid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>Adult Education ESL Class</td>
</tr>
<tr>
<td>Target Group</td>
<td>Content-based ESL Class</td>
</tr>
<tr>
<td>Lesson 4</td>
<td>Understanding Your Nutritional Needs</td>
</tr>
<tr>
<td>Timing</td>
<td>50 Minutes</td>
</tr>
</tbody>
</table>

**Content Objectives:**
- Identify individual nutritional needs based on your age, gender, and level of physical activity.

**Beginner Language Objectives:**
- Identify favorite foods and place them into appropriate Food Pyramid categories by drawing or cutting out pictures and pasting them onto a graphic organizer.
- Answer questions verbally or by pointing or gesturing regarding your age, gender, and level of physical activity to be used to calculate your nutritional needs based on the Food Pyramid.

**Intermediate Language Objectives:**
- Identify favorite foods and place them into appropriate Food Pyramid categories by writing their names on a graphic organizer.
- Complete a web form asking for age, gender, and level of physical activity to generate your nutritional needs based on the Food Pyramid.

**Advanced Language Objectives**
- Identify favorite foods and place them into appropriate Food Pyramid categories by writing their names on a graphic organizer.
- Complete a web form asking for age, gender, and level of physical activity to generate your nutritional needs based on the Food Pyramid.
Lesson 4 – Understanding Your Nutritional Needs
Narrative

The purpose of the fourth lesson in the unit is for students to find their nutritional needs from the [www.mypyramid.gov](http://www.mypyramid.gov) website. They will then print out their nutritional needs and use them in Lesson 5 to plan menus to meet these needs for the following week.

- **Warm-Up (15 Minutes)** – The purpose of the warm-up is for students to start using the knowledge they have learned in the previous lesson. Review the names of the six groups of categories of the Food Pyramid with students. Write the categories on the board or show slide #2 for Lesson 4 after students have identified their names. Ask students to write down or draw foods that they enjoy eating from each of the five food categories of the Food Pyramid. They will use these foods later in the lesson to plan a week of meals for themselves.

- **Mini-Lesson #1/Discussion (10 Minutes)** – Discuss with students how we know how much food we need to eat every day. Discuss age factors, gender, and physical activity. Activate prior knowledge and tie in answers to the Food Pyramid graphic. Have students write down their age, their gender, and the amount of exercise that they get every day. Beginning students may need help answering these questions.

- **Computer Mini-Lesson #2 (20 Minutes)** – Students will need to have access to a computer for this mini-lesson. Students will use [www.mypyramid.gov](http://www.mypyramid.gov) to find out their daily nutritional needs based on their age, gender, and amount of daily activity. Students will print out a worksheet that details how much they should eat from each of the food categories on the Food Pyramid. PowerPoint slides are available to show students what parts of the website they need to interact with.

- **Conclusion/Wrap-Up (5 Minutes)** – The Conclusion/Wrap-Up is a time to check for students’ understanding, review word wall, Food Pyramid wall, and vocabulary.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-Up</td>
<td></td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 4, Slide #2</td>
<td>15 Minutes</td>
</tr>
<tr>
<td></td>
<td>Show slide #2</td>
<td>Warm-Up Worksheet for Beginners and Intermediate / Advanced.</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Review prior material.</td>
<td></td>
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<tr>
<td></td>
<td>Prepare students to complete food plan with Food Pyramid food categories in Lesson 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ask students the following warm-up/review questions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginners:</td>
<td>Point to a food from the ________ group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Point to a food from the ________ group that you like to eat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate/Adv.</td>
<td>Name some foods from the ________ group you like to eat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students complete worksheet with foods they like to eat from each food group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beginners draw or cut out pictures for their worksheet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermediate / Advanced write out names of foods on worksheet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------</td>
<td>-----------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Mini-Lesson #1 / Discussion</strong></td>
<td><strong>Show slide #3</strong></td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 4, Slide #3</td>
<td><strong>10 Minutes</strong></td>
</tr>
<tr>
<td><strong>Stimulate thinking – how much food do we need?</strong></td>
<td><strong>Ask students the following discussion questions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Food Pyramid Guidelines based on:</strong></td>
<td><strong>Beginners:</strong> Point to the stairs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age, Sex, Physical Activity</strong></td>
<td><strong>Intermediate:</strong> What is the man on the stairs doing?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Does exercise make you hungry?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advanced:</strong> What do the stairs on the food pyramid represent or remind us of?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Do people who exercise need to eat more food or less food?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
</tr>
<tr>
<td>---------------------</td>
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<td>-----------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Computer Mini-</td>
<td>This portion of the lesson is best if conducted in a computer lab where students can sit at a computer with web access and view what the teacher is doing simultaneously. PowerPoint slides #4-7 can be used to review what the students will do prior to doing it on the computer. Students should do the following: <strong>Beginning Students</strong> – If they are not comfortable using the computer should communicate their age, level of physical activity to the teacher or a more advanced student who enters that information into the webform to generate their nutritional requirements and helps them print their results. <strong>Intermediate Students</strong> - Enter their age, gender, and level of physical activity and click SUBMIT to get their nutritional requirements. Print their nutritional requirements.</td>
<td>Projector and laptop with PowerPoint presentation on CD-ROM – Lesson 4, Slide #4-7</td>
<td>20 Minutes</td>
</tr>
<tr>
<td>Lesson #2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
<td>Time</td>
</tr>
<tr>
<td>------------------</td>
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</tr>
<tr>
<td>Conclusion / Wrap-Up</td>
<td>Review word wall and Food Pyramid Wall.</td>
<td></td>
<td>5 Minutes</td>
</tr>
<tr>
<td></td>
<td>Check for understanding and Review Objectives.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Nutrition Principles & The Food Pyramid

Lesson 4

Understanding Your Nutritional Needs
The Food Pyramid

Grains: Make half your grains whole
Vegetables: Vary your veggies
Fruits: Focus on fruits
Milk: Get your calcium-rich foods
Meat & Beans: Go lean with protein

Slide #1
Lesson 4 - Warm-Up
Warm-Up

Draw or write down foods that you like to eat from each of the five Food Pyramid groups.
How Much Food Should I Eat Daily?

We all need different amounts of food. How much food we need is based on:

- Age
- Gender/Sex (Male/Female)
- How much exercise we get.

How old are you?  

Circle your gender or sex:  

Male  Female

How much exercise do you do every day?  

_________ minutes
Find Your Daily Needs

Use the MyPyramid.gov website to find your daily needs.

Point to My Pyramid Plan and click.
Enter your age
Enter your sex/gender
Enter your Physical Activity
Click SUBMIT
View Your Plan

My Pyramid Plan

Based on the information you provided and the average needs for your age, gender and physical activity [Age: 32, Sex: male, Physical Activity: 30 to 60 Minutes] your results indicate that you should eat these amounts from the following food groups daily.

Your results are based on a 2600 calorie pattern.*

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains ¹</td>
<td>9 ounces</td>
<td></td>
</tr>
<tr>
<td>Vegetables ²</td>
<td>3.5 cups</td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td>2 cups</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>3 cups</td>
<td></td>
</tr>
<tr>
<td>Meat &amp; Beans</td>
<td>6.5 ounces</td>
<td></td>
</tr>
</tbody>
</table>

Click the food groups above to learn more.
Print Your Plan

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Amount</th>
<th>Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>9 ounces</td>
<td>tips</td>
</tr>
<tr>
<td>Vegetables</td>
<td>3.5 cups</td>
<td>tips</td>
</tr>
<tr>
<td>Fruits</td>
<td>2 cups</td>
<td>tips</td>
</tr>
<tr>
<td>Milk</td>
<td>3 cups</td>
<td>tips</td>
</tr>
<tr>
<td>Meat &amp; Beans</td>
<td>6.5 ounces</td>
<td>tips</td>
</tr>
</tbody>
</table>

Click the food groups above to learn more.

2 Make Half Your Grains Whole
Aim for at least 4.5 whole grains a day

2 Vary Your Veggies
Aim for this much every week:
- Dark Green Vegetables = 3 cups weekly
- Orange Vegetables = 2 1/2 cups weekly
- Dry Beans & Peas = 3 1/2 cups weekly

View, Print & Learn More:
- Click here to view and print a PDF version of your results.
- Click here to view and print a PDF of a helpful Meal Tracking Worksheet.

Click here to print your plan.
Click here to print a Meal Tracking Worksheet.
Lesson 5
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Nutrition Principles &amp; The Food Pyramid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>Adult Education ESL Class</td>
</tr>
<tr>
<td>Target Group</td>
<td>Content-based ESL Class</td>
</tr>
<tr>
<td>Lesson 5</td>
<td>Completing a Menu Plan Based on Your Needs</td>
</tr>
<tr>
<td>Timing</td>
<td>50 Minutes</td>
</tr>
</tbody>
</table>

**Content Objectives:**

- Complete a nutritional plan for one week that is based on nutritional needs identified in Lesson 4.

**Beginner Language Objectives:**

- Complete a menu plan for one week based on your nutritional needs by drawing or cutting out pictures representing a food plan for one day based on your nutritional needs.

**Intermediate Language Objectives:**

- Complete a menu plan for one week based on your nutritional needs by writing out a food plan for one week based on your nutritional needs.

**Advanced Language Objectives**

- Complete a menu plan for one week based on your nutritional needs by writing out a food plan for one week based on your nutritional needs.
Lesson 5 – Completing A Food Plan

Narrative

The purpose of the final lesson in the unit is for students to apply what they have learned about nutrition, the Food Pyramid, and their nutritional needs and create a food plan for one week that matches those needs.

- **Warm-Up** (15 Minutes) – The purpose of the warm-up is to give students an opportunity to share their nutritional needs and the foods that they like to eat that meet those nutritional needs. Beginning students can show pictures of those foods and show the nutritional needs chart that they printed out in Lesson 4. Intermediate and advanced students can speak to one another about their favorite foods and their nutritional needs.

- **Practice / Food Planning Workshop** (30 Minutes) – Students will take their plans and plan a day (or a week if they can) of eating within the Food Pyramid Guidelines. Beginning students will plan their menu using graphics and pictures and intermediate students will plan their menu in writing. While students are working on their food plan circulate to offer individual support and answer questions.

- **Conclusion/Wrap-Up** (5 Minutes) – The Conclusion/Wrap-Up is a time to check for students’ understanding, review word wall, Food Pyramid wall, and vocabulary. You should also check students food plans to ensure they have understood the lesson. This is also a time to review objectives covered during the lesson.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activity</th>
<th>Resources</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-Up Class Discussion</td>
<td><strong>Ask</strong> students to look at the Warm-Up worksheet that they created in Lesson 4 and compare it to the nutritional needs that they printed out in Lesson 4.**&lt;br&gt;<strong>Ask students the following questions:</strong>&lt;br&gt;<strong>Beginner Students:</strong>&lt;br&gt;Point to some of your favorite foods from the Food Pyramid Wall.&lt;br&gt;Do you eat too much of any of your favorite foods?&lt;br&gt;<strong>Intermediate/Advanced:</strong>&lt;br&gt;What foods did you write on the warm-up worksheet from lesson 4 that you can eat on your Food Pyramid Plan?&lt;br&gt;What changes do you want to make because of what you learned?</td>
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<td>15 Minutes</td>
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<tr>
<td>Objectives</td>
<td>Activity</td>
<td>Resources</td>
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<tr>
<td>Practice / Food Planning Workshop</td>
<td>Students will take their plans and plan a day (or a week if they have enough time) of eating within the Food Pyramid Guidelines. Beginning Students: Plan their day using graphics and pictures. Intermediate / Advanced Students plan their day using a graphic organizer and writing in food choices and amounts.</td>
<td>Food &amp; Exercise Planner – One per day for each student.</td>
<td>30 Minutes</td>
</tr>
<tr>
<td>Conclusion / Wrap-Up</td>
<td>Review word wall and Food Pyramid Wall. Check for understanding and Review Objectives. Check students food plans for understanding.</td>
<td></td>
<td>5 Minutes</td>
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</table>
Nutrition Principles & The Food Pyramid

Lesson 5
Completing A Food Plan
### Food & Exercise Planner

Complete the plan with the name and the amount of food you will eat for each meal.

<table>
<thead>
<tr>
<th></th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Snacks</th>
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<tr>
<td><strong>GRAINS</strong></td>
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<td><strong>VEGETABLES</strong></td>
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<td><strong>FRUITS</strong></td>
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<td><strong>MILK</strong></td>
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<td><strong>MEAT &amp; BEANS</strong></td>
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<tr>
<td><strong>PHYSICAL ACTIVITY</strong></td>
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</table>

Slide #8

Lesson 4 - Practice / Food Planning Workshop
Original Lessons
Chapter 4

Nutrition Principles
Lesson Plan

Section 4.1
Influences on Food Choices

Objectives
- Describe the difference between hunger and appetite.
- Describe how different factors affect your food choices.
- List the short-term consequences of making poor nutritional choices.

MOTIVATE
Personal Health Inventory: Have students complete the Personal Health Inventory for this chapter.
Journal 4A: Have students write in their Journal about their memories associated with their favorite food.
Class Discussion: Ask students to name factors they think influenced Mary Anne’s choice of snack food.

TEACH
Journal 4B: Have students record in their Journal the factors they think caused them to eat when they were not hungry or to continue to eat after they were full.
Extension: Have students contact the local chamber of commerce and learn about ethnic restaurants in the area.

Guided Practice
Class Discussion: Have students name all the factors they can think of that affect where, when, and how often a person eats.

Independent Practice
Role-Playing: If possible, pair a student who is knowledgeable about the food of another region or country with another student who is not, and have them role-play ordering a meal in a restaurant in that country or region.

ASSESS
Section Review: Have students answer the Section Review questions.
Alternative Assessment: Have students explain in their own words why many decisions to eat are based on psychological or emotional rather than physical reasons.
Section Quiz: Have students take Section Quiz 4.1.
Reteach: Students who have difficulty with the material may complete Reteaching Worksheet 4.1.
Closure: Have students write a brief paragraph persuading readers to follow a healthful diet to avoid health problems.

Section 4.2
Nutritional Components of Food

Objectives
- Describe the roles and functions of the six classes of dietary nutrients.
- Identify problems that can occur from inadequate amounts of certain nutrients.
- List recommended dietary levels for various nutrients.
- Describe the differences among the various types of fats.

MOTIVATE
Cooperative Learning: Divide the class into small groups. List the six groups of essential nutrients on the board as column headings. Then have each group write facts about each nutrient in each column. Other students can challenge information they believe is improperly placed or incorrect.

TEACH
Class Discussion: Bring in labels of products that contain sugars and compare them for their sugar content.
Class Discussion: Ask students why they should eat fiber-rich foods, since fiber is not digested and provides no energy.

Cooperative Learning: Have students work in small groups to list reasons why an apple is a better snack than a candy bar.

Demonstration: Ask students to guess the percent of total calories that are fat in a number of popular snack foods. Then color in the portion on a popsicle stick that indicates the actual percentage of fat content.

Reinforcement: Stress to students the importance of distinguishing between saturated fat and unsaturated fat.

Class Discussion: Have students look at Figure 4-7 to discover other favorite foods that are high in fat.

Making a Choice 4A: Assign the Party Refreshments card, which asks students to plan healthy refreshments for a party.

Reinforcement: Stress to students the importance of distinguishing between cholesterol and fat. Also stress that, for a number of reasons, lowering cholesterol intake does not necessarily lower the level of cholesterol in the blood.

Class Discussion: Discuss why even though cholesterol is essential, ingesting great amounts over long periods of time can cause severe health problems.

Demonstration: Show students a copy of a lab report showing a patient’s cholesterol levels. Discuss the meaning and significance of each term.

Class Discussion: Discuss how it is possible to get all of your protein from plant sources, even though plants generally do not supply “complete” proteins. Help students understand that eating certain combinations of plant foods can provide a complete source of protein.

Cooperative Learning: Have small groups locate and clip pictures of foods that are good sources of protein.

Game: Make a wheel with the 13 vitamins listed on it and attach a spinner. A student team spins the wheel and must describe a function, one source, and a deficiency related to the vitamin landed on.

Class Discussion: Ask students questions to help them understand that vitamins B and C are particularly important to get every day because the body cannot store these vitamins.

Class Discussion: Discuss the negative effects of large doses of some vitamin supplements.

Class Discussion: Discuss how minerals differ from other nutrients and why macrominerals and trace minerals are equally important to the diet.

Class Discussion: Have students assess their diets and note any mineral deficiencies they may have.

Class Discussion: Discuss how a person can get adequate sodium in his or her diet without using any table salt.

Cooperative Learning: Have students bring labels of foods containing calcium. Have them work in groups to determine several ways to include the 1,200 mg of calcium they need every day.

Journal 4C: Have students note in their Journal how much water they drink in a day and explain why drinking more water would be beneficial.

Class Discussion: Ask students why water might be considered the most important of the six nutrients.

Demonstration: Use a cup of colored fresh water and a larger glass container of salt water to model thirst at the cellular level.

Reinforcement: Stress to students that most Americans do not drink enough water, that body processes and cell maintenance cannot proceed without water, and that many of the beverages people drink actually cause the body to lose water.

Guided Practice

Debate the Issue: Have two teams of students debate the question: Should teens take vitamin pills?

Independent Practice

Extension: Have students interview adults who are monitoring their sodium intake, to learn what methods they use to reduce their salt consumption.

ASSESS

Section Review: Have students answer the Section Review questions.

Alternative Assessment: Have students bring in fresh foods to “sell” to the class. Each is responsible for persuading students of the food’s value in promoting good health by explaining its nutrients.

Section Quiz: Have students take Section Quiz 4.2.

Reteach: Students who have difficulty with the material may complete Reteaching Worksheet 4.2.

Closure: Have students write a paragraph stating the pros and cons of fats—why we need some fats in the diet—but not too many.
Section 4.3
Analyzing Your Nutritional Needs

Objectives
- Define the nutritional requirements for healthy teens.
- Classify foods into the appropriate food groups.
- Interpret food labeling to analyze nutritional breakdown.
- Make food selections that satisfy nutritional requirements using the Food Pyramid and Dietary Guidelines.
- Identify special nutritional needs of selected populations.

MOTIVATE
Class Discussion: Ask students to select items they would order for breakfast, lunch or dinner, given a menu.

TEACH
Class Discussion: Ask students questions about the purpose of the Dietary Guidelines shown in Figure 4-13.
Cooperative Learning: Have students design and make their own daily reference charts using Figures 4-14 and 4-15 as information sources.
Class Discussion: Discuss why the pyramid is a good shape to illustrate the needs for various food groups.
Class Discussion: Discuss the rationale for the limitations placed on the food groups in the upper levels of the pyramid.
Reinforcement: Emphasize to students the relative area of the food triangle given to each food group.
Class Discussion: Discuss how added high-fat ingredients in some breads, pastas, cereal, and rice can make them undesirable, and discuss the advantages and disadvantages of purchasing fresh baked goods.
Demonstration: Challenge students to bring in fruits and vegetables that other students have not tried. Encourage them to bring nutritional information as well.
Demonstration: Demonstrate the meaning of lean by showing students the fat cooked off of ground beef.
Role-Playing: Have students practice resisting pressure by role-playing ordering dinner at a fast-food restaurant.
Game: Have students play a game that requires them to choose a day's worth of meals that provide the needed calories.

Teaching Transparency 4A: Use this transparency to relate the information in the food pyramid to the six classes of nutrients discussed in Section 4-2.
Class Discussion: Use Figure 4-21 to discuss the contents of a food label.
Class Discussion: Have students analyze the nutrition of the cereal shown in Figure 4-21. Discuss other foods that could be added to round out the breakfast.
Cooperative Learning: In small groups, students should use the information on page 88-90 to critique one aspect of a food label.
Life Skills Worksheet 4A: Assign the Examining Food Labels Life Skills Worksheet, which asks students to search for food labels that list various forms of sugar, fat, or sodium.
Life Skills Worksheet 4B: Assign the Planning a Menu Life Skills Worksheet, which asks students to plan a daily menu by using information from the text and other sources.
Teaching Transparency 4B: Use this transparency of Figure 4-13 to review the dietary guidelines, and discuss how they relate to the Guidelines for Improving Your Food Selections.
Class Discussion: Discuss strategies for lowering fat and sugar intake.
Role-Playing: Have pairs of students role-play making a shopping list for one day's menu. One student criticizes the other's choice of snack, breakfast, or other food, and the other must defend his or her choice.
Reinforcement: Encourage students to compare the costs of buying fresh foods and processed ones in preparing a day's meals and snacks.
Life Skills Worksheet 4C: Assign the More for Your Money Life Skills Worksheet, which requires students to compare the cost of prepared foods and fresh foods.
Writing: Have students write about ways they can try foods of a distinctive cultural cuisine that interests them.
Writing: Have students who are familiar with the foods of another culture write food descriptions for menus. The object is to entice the customer to try a variety of healthful foods from that culture.
Cooperative Learning: Have small student groups prepare a 3 to 5 minute presentation describing the healthfulness and balance of ingredients in several recipes of a specific international cuisine.
Life Skills Worksheet 4D: Assign the Eating Your Diet Life Skills Worksheet, which requires students to evaluate their diet by using information from the text.
Class Discussion: Discuss what it would take to convince teens to switch from unhealthful snack foods to healthful ones.

Journal 4D: Have students write in the Student Journal a plan for improving their food selections.

Class Discussion: Discuss the risks associated with poor teen nutrition.

Class Discussion: Discuss why a person might become a vegetarian and what measures vegetarians need to take to be certain that their diets contain sufficient nutrients.

Making a Choice 4B: Assign the Eating Away from Home card, which asks students to plan a healthful diet for people who are away from home and to assess the availability of healthful food options in the community.

Extension: Have students keep a log of television commercials about food for one weekend. They should analyze the types of food promoted and make a graph to show where these foods fit on the food pyramid. Students should then write a critique of the ads from a nutritionist’s point of view.

Guided Practice

Debate the Issue: Have students debate the issue: Teenagers should limit their fast-food meals to no more than three a week.

Independent Practice

Cooperative Learning: Have students work in small groups to collect and analyze the ingredients of one or more food products and classify them according to the food pyramid groupings. Have the class rank the food products according to their nutrient value.

ASSESS

Section Review: Have students answer the Section Review questions.

Alternative Assessment: Have students draw a food pyramid with the food groups represented and write a healthful day’s menu around it, drawing arrows from each item to its food group and tallying the numbers of servings for each group for the day.

Section Quiz: Have students take Section Quiz 4.3.

Reteach: Students who are having difficulty with the material may complete Reteaching Worksheet 4.3.

Closure: Have students write a paragraph evaluating a particular food’s fat, sugar, and sodium content, calories per serving, and percentages of Daily Reference Values.

Section 4.4

Food Safety

Objectives

- Describe the symptoms common to food-borne illness.
- Discuss ways to prevent bacterial contamination of foods.
- Locate the “use by” or “sell by” dates on common food items.

MOTIVATE

Class Discussion: Have students share any stories of food poisoning.

TEACH

Cooperative Learning: Have students review the food items in Figure 4.24, and then divide the class into small groups. Have the groups compose another list of foods that are stored in the refrigerator. Ask students to identify those items that could cause health risks.

Guided Practice

Extension: Collect a number of food packages that show “use by” or “sell by” dates. Discuss the fact that these dates do not apply once the container is opened.

ASSESS

Section Review: Have students complete Section Review Worksheet 4.4.

Alternative Assessment: Have students make a food safety chart giving tips about how to avoid eating spoiled foods.

Section Quiz: Have students take Section Quiz 4.4.

Reteach: Students who are having difficulty with the material may complete Reteaching Worksheet 4.4.

Closure: Divide the class into small groups, provide each group with a list of foods, and ask them to state if the foods are OK to eat, risky, or dangerous.
Chapter 4
Chapter Opener

Getting Started

Using the Chapter Photograph
Ask students to describe the chapter photograph and compare it with that of Mary Ann at the snack machine. Discuss the food choices shown in the photos. Ask students how reading food labels can help people make healthful choices about their diets.

Question Box
Have students write any questions they have about nutrition or diet and put them in the Question Box.

Sensitivity Alert
Students who are seriously overweight or underweight may be reluctant to discuss eating habits. Some students may be reluctant to discuss diet because of religious or cultural food customs practiced at home. The privacy of such students should be respected; allow them to volunteer information.

Myths & Misconceptions
- Drinking 10 cups of any fluid fulfills the daily water requirement. While most fluids contain a lot of water, they are not 100 percent water. Fluids that contain caffeine and alcohol act as diuretics, causing the body to eliminate more water than normal. They actually increase the body's need for fluids.
- Athletes need extra protein, so they should consume a lot of meat and protein supplements. Most athletes only need to replace the calories they expend. The percentages of nutrients in their diet should not change.
- Eating right means cutting out snacks. Many nutritionists recommend eating small snacks. What is important is to pick healthful snacks most of the time and to use moderation when eating ones that are high in fat and calories.
Mary Anne is really hungry and tired. She’s got two more classes and then band practice. A snack would be great right now. Standing in front of the vending machine, she wonders what to pick—chips, candy, gum, pretzels, or cookies. The candy bar looks really good, especially since Mary Anne feels she needs energy to stay awake through her next two classes and get through the band workout. A half hour after eating the candy bar, she feels terrible. Could Mary Anne have made a better snack choice from the machine to satisfy her hunger and give her a boost of energy?

Section 4.1
Influences on Food Choices

Objectives

1. Describe the difference between hunger and appetite.
2. Describe how different factors affect your food choices.
3. LIFE SKILLS: Assessing Your Health
   - short-term consequences of making poor nutritional choices.

Picture yourself in this scene. Your best friend says she is hungry and wants a snack. You are not really hungry, but you decide to join her and eat anyway.

Hunger: Selecting snacks and eating when you are not hungry are two situations that may be common in making choices about what and when you eat. To understand some important issues regarding food, you need to think about why you eat. There are two important terms that are related to eating: hunger and appetite. Hunger is the body’s physical response to the need for food. Your body uses food as the fuel to power the many chemical reactions that keep you alive and functioning. Hunger is a feeling you are born with. Symptoms of hunger include hunger pangs, weakness, dizziness, nausea, and a loss of concentration. Symptoms of hunger are relieved by eating. So how much should you eat? That is a question you will explore in detail in this chapter and the next one. For now, it is enough to say that you should eat until you feel full. The feeling of fullness you feel after eating is called satiety.

Appetite: Hunger differs from appetite. Appetite describes your desire to eat based on the pleasure you get from eating certain foods. When you are dealing with appetite, you might ask, What do I want to eat? There are a number of factors that influence your appetite, such as the taste, texture, or aroma of certain foods. Your physical health can affect your appetite. If you are

TEACH

Journal 4B: Motivations for Eating
Have students silently recall times when they have eaten when they were not hungry or continued to eat after they were full. Have them record in their Journal factors that affect their decisions about eating.

INFLUENCES ON FOOD CHOICES

47
Check Up

Charting Your Appetite

Answer the following questions related to hunger and appetite on a separate sheet of paper.

1. When is your desire to eat strongest?
2. When is your desire to eat weakest?
3. What mood cause an increase in your appetite?
4. What mood reduce your appetite?
5. What people affect your appetite?
6. What places cause an increase in your appetite?
7. What times of day do you notice an increase in your appetite?
8. At what times of day or in what situations do you eat, even if you are not hungry? Why?

Now look at your responses. Do you have food habits that can lead to overeating? What changes can you make to have better control over your appetite?

(FIGURE 4-1) Eating can be a highly social activity, causing you to eat even when you are not hungry.

...TEACH continued

Class Discussion
Eating Habits and Health

Have students name all the factors they can think of that affect where, when, and how often a person eats. Write the list on the chalkboard and have volunteers identify factors that they think contribute to poor nutrition in America.

Role-Playing
Broadening Tastes in Food

If you have several students who are knowledgeable about the foods of another region or country, pair them with students who are not familiar with the foods of those places. Then have them role-play ordering a meal in a restaurant in that country or region. The waiter can describe several dishes, and the customer can make a selection.

Extension
Ethnic Foods in Your Area

Encourage students to contact the local chamber of commerce and learn about ethnic restaurants in the area. Some students may prepare a graph showing how many different cultures are represented. Others may contact selected restaurants to learn about foods they serve.
Some Health Problems Related to Diet

**Short Term Conditions**
- Fatigue
- Bad moods
- Depression

**Long Term Conditions**
- Obesity
- Heart disease
- Stroke
- Adult-onset diabetes
- High blood pressure
- Cirrhosis of the liver
- Tooth decay
- Cancer (some types)
- Birth of low birth weight babies with poor mental and physical development
- Dietary deficiency diseases (such as scurvy)

![Diagram](image)

**FIGURE 4-3** What you eat and when you eat is influenced by many factors. Describe how each of these factors affects your own food selections.

**Review**

1. How does hunger differ from appetite? Should you eat to satisfy hunger or to satisfy your appetite?
2. **LIFE SKILLS: Assessing Your Health**
   - List two ways in which your ethnic background may affect the types of food you eat.
3. Describe two consequences of poor nutrition that could affect you as an adult.
4. **Critical Thinking**
   - How do you know when you are hungry? How do you know when your appetite is at work?

**SECTION 4.1**

**Review Answers**
1. Hunger is your body telling you to eat; appetite is your desire to have food. You should eat to satisfy your hunger.
2. Students may answer that some foods may be more appealing than others because of familiar ethnic dishes or spices. Ethnic holidays may influence the types of foods eaten and how they are prepared.
3. Answers may include fatigue, bad moods, depression, obesity, heart disease, diabetes, high blood pressure, tooth decay, cancer, and dietary deficiency diseases.
4. Signs of hunger include hunger pangs, weakness, dizziness, nausea, and a loss of concentration. Your appetite is at work when you are eating for reasons other than being hungry.

**ASSESS**

**Section Review**
Have students answer the Section Review questions.

**Alternative Assessment**
**Psychology of Eating**
Have students explain in their own words why many decisions to eat are based on psychological or emotional reasons rather than physical reasons.

**Closure**
**Persuading People to Follow a Healthful Diet**
Have students write a brief paragraph that attempts to persuade readers to follow a healthful diet in order to avoid health problems.
Background

Nutrition and Disease

In adolescents, nutrition directly affects growth and development, dental health, and body composition. Poor diet contributes to the development of many chronic diseases that afflict American adults. For adults, coronary heart disease, some forms of cancer, stroke, non-insulin-dependent diabetes, and arteriosclerosis have been linked to a poor diet. While food is no longer scarce in the United States, undernutrition remains a problem for the isolated and some of the poor. In addition, there is a new problem—a pattern of overeating and dietary imbalance that leads to malnutrition. Americans whose diets follow this pattern place themselves needlessly at risk for many diseases.

Section 4.2

Nutritional Components of Food

Objectives

- Describe the roles and functions of the six classes of dietary nutrients.
- Identify problems that can occur from inadequate amounts of certain nutrients.
- List recommended dietary levels for various nutrients.
- Describe the differences among the various types of fats.

Nutrition refers to the study of the way in which the substances in food affect our health. Over the last 100 years, the American diet has changed drastically. It was not uncommon for a person’s diet 100 years ago to reflect a heavy dependence on grains, fruits, and vegetables. While there is far more attention paid today to health and nutrition, the typical American diet is not as nutritionally balanced as that of our grandparents. Analyzing your eating patterns is very important because diet is related to six of the ten leading causes of death in the United States. Diet also plays a role in infant death, tooth decay, and being overweight, as shown in Figure 4-3.

In a national survey of 10th graders, most students know too much fat, sugar, or salt is unhealthy. They know these substances increase the risk of getting diseases such as heart disease and cancer. However, most students don’t know which foods are high in fat, sugar, salt, and fiber. It is clear that their eating patterns frequently include fried foods, nutrient-poor snack foods, and beverages high in sugar.

Basic Principles of Nutrition

Foods contain substances needed for growth and development. The substances are classified into six groups called essential nutrients, which are necessary for the maintenance of health. There are six categories of essential nutrients: carbohydrates, fats, proteins, vitamins, minerals, and water. Of these six groups, carbohydrates, fats, and protein provide energy for the body in the form of calories. The remaining three—vitamins, minerals, and water—are essential for the body to use these other nutrients properly.

Carbohydrates

The term carbohydrate comes from the names of the three chemical elements in carbohydrates: carbon, oxygen, and hydrogen. In fact, the oxygen and hydrogen in carbohydrates are in the same proportions as found in water. Therefore, we get the same calories (carbon and hydrogen) from water.

Carbohydrates are our main source of food energy. One gram of carbohydrate provides 4 calories of available energy. Carbohydrates can be divided into three classes based on their size: simple sugars, short-chain sugars, and long-chain sugars. Simple sugars are also called mono-saccharides. The most important simple sugar is glucose because it is the major energy source for cells in your body. Carbohydrates are found in many plants and foods. They are good for you if you eat them in moderation and choose whole grains and fiber-rich foods. The best sources of carbohydrates are whole grains, vegetables, fruits, and beans.

TEACH

Class Discussion
Sugar Sources

Bring in, or have students bring in, a variety of cans or labels from products that contain sugars. Read the ingredient labels to identify the sources of the sugar. Notice that some products will contain sugars from more than one source. Make a list of all the products that contain more than 10 percent of the daily recommended value of sugar.
Dietary fiber is a complex carbohydrate, but it does not provide energy (calories). Dietary fiber that does not dissolve in water is commonly called roughage because it provides bulk in the large intestine. Roughage helps to move undigested food through the digestive tract, preventing constipation and reducing the risk of certain diseases, such as colon cancer. Whole-grain wheat bran, corn, rice, corn bran, and rice bran are good sources of roughage. Some dietary fiber dissolves in water. This kind of fiber, found in oats and beans, helps to lower blood cholesterol and thus reduce the risk of cardiovascular disease. Fruits and vegetables contain both kinds of fiber.

Carbohydrates should make up 60 percent of your daily caloric consumption. Fewer than 10 percent of your day's calories should come from sugars. It is recommended that you consume between 20 and 35 grams of dietary fiber daily.

Complex carbohydrates: a subclass of carbohydrates that includes starches, dietary fiber, and glycogen.

Dietary fiber: a subclass of complex carbohydrates with a high ratio of plant material that is not absorbed by the body.

Class Discussion

Fiber Rich, Calorie Poor

Ask: Why should you eat fiber-rich foods, since fiber isn't digested and provides no energy? [Fiber is essential for the proper functioning of the digestive tract. Fiber helps move undigested food through the digestive tract, preventing constipation and decreasing the risk of developing colon cancer. Fiber also helps lower blood cholesterol, thus reducing the risk of cardiovascular disease.]

Cooperative Learning

An Apple a Day

Have students work in small groups to list as many reasons as possible why an apple is a better snack than a candy bar. Suggest that they include both the positives of the fruit and the negatives of the candy.
Making a Choice 4A
Assign the Party Refreshments card. The card asks students to plan healthful refreshments for a party.

**Fats:**
A class of nutrients that supply more energy per gram than carbohydrates or proteins.

**Saturated fats:**
Fats that contain single bonds between carbon atoms and the maximum number of hydrogen atoms bonded to carbon.

**Unsaturated fats:**
Fats that contain one or more double bonds between carbon atoms and have less than the maximum number of hydrogen atoms bonded to carbon.

**Fat**
Fat is the most concentrated form of energy in food. Along with carbohydrates, fat is an important fuel for the body, yielding 9 calories per gram, or 252 calories per ounce. One tablespoon of fat contains about 13.5 grams of fat, or 120 calories. Like carbohydrates, fat consists of carbon, hydrogen, and oxygen, but these elements are arranged differently. And like glycogen, fat is stored in your body. Fat storage sites are called adipose, or fatty, tissue.

Fat in the diet belongs to a class of compounds called lipids. Lipids are essential for good health. Many hormones, including the sex hormones, are made from lipids. Several vitamins will dissolve only in fat. Fat takes a longer time to digest than either carbohydrates or protein, and it contributes to that sense of fullness that lasts for several hours after a meal.

Just as there are different kinds of dietary carbohydrates, there are also different kinds of dietary fat. They differ in their chemical structure which affects their physical state at room temperature and their fate in the body.

The long chains of carbon atoms in saturated fats have all bond sites filled with hydrogen atoms. Saturated fats are often solid at room temperature, because the carbon chains are straight and can be layered. Animal fats, like butter and lard, are essentially saturated fat. Saturated fats predominate in only two vegetable oils—palm oil and coconut oil. But other vegetable oils can become saturated, either completely or partially, through a process called hydrogenation.

Unsaturated fats are also made of long carbon chains. However these chains consist of multiple bonds between carbon atoms leaving fewer bond sites available for hydrogen atoms. Therefore, all the carbon atoms are not saturated with hydrogen atoms. Vegetable oils and fish oils are unsaturated by nature. Monounsaturated fats

**Saturated and Unsaturated Fatty Acids in Fats Commonly Found in Foods**

![Saturated and Unsaturated Fatty Acids in Fats Commonly Found in Foods](image)

**(Figure 4-5)** Avoid foods with ingredients that have high percentages of saturated fats.

Reinforcement

**There's Fat and There's FAT**
Stress to students the importance of distinguishing between saturated fat and unsaturated fat. Have them study Figure 4-5 and name the types of oil or fat that contain more saturated fat than is healthful. (chicken fat, beef fat, butter, palm oil, and coconut oil)

Provide several snack food labels and ask students to determine (1) the grams of fat per serving and (2) the ratio of saturated fat to unsaturated fat. Students can then rate each food according to a "health rating scale" they invent. Include snack foods such as chips, crackers, pretzels, cookies, and doughnuts.

Class Discussion

**Favorite Foods and Fat**
Refer students to Figure 4-7 on page 74 to discover other foods that are high in fat. Ask students which foods they eat too much of.
are hard at room temperature, but they harden when refrigerated. Monounsaturated means that the bond between two carbon atoms is not saturated. Polyunsaturated fats have two or more carbon atoms that are not saturated.

Fats can play different roles in the development of disease. Saturated fats are linked to the development of cardiovascular disease and some forms of cancer. Monounsaturated and polyunsaturated oils appear to provide protection against the development of some of these diseases. But vegetable oils that have been hydrogenated are different. During hydrogenation, the bonding between carbon atoms in vegetable oils changes, producing fats called trans fats. Trans fats don’t spoil rapidly and can be reused longer. However, trans fats behave like any other saturated fat in the body.

To reduce your risk of cardiovascular disease, cancer, and diabetes, limit the total amount of fat in your diet to no more than 30 percent of your day’s total calories. Figure 4.7 shows the percentages of calories from fat in various foods. Compare the foods shown with what you normally eat.

**Cholesterol**

Cholesterol is a fatlike substance found in some foods of animal origin, also produced by the liver. Cholesterol is part of the membrane around a cell, and it provides some protective covering to nerve fibers in the body. It is essential for the production of vitamin D and bile salts, which are used in the digestion of lipids. Cholesterol is also needed for the production of certain sex hormones. The body makes all the cholesterol it needs.

You may have heard two different terms associated with cholesterol, high-density lipoproteins (HDL) and low-density lipoproteins (LDL). HDL is sometimes referred to as good cholesterol because it is thought to provide some protection against heart disease. LDL carries cholesterol and other fats from the digestive system through the blood to the body’s cells. The amount of LDL in the blood is regulated by LDL receptors on cells. If there is too much cholesterol in the blood, it can build up on the walls of blood vessels. Eventually, these deposits can clog arteries and restrict the supply of oxygenated blood to the heart, resulting in a heart attack. It is now generally agreed that cholesterol levels in the blood should be below 200 milligrams per deciliter (mg/dL).

Diet that are high in fat increase blood cholesterol levels. Saturated fat is thought to cause the increase in cholesterol level by affecting the LDL cholesterol absorbed by the liver. Therefore dietary guidelines suggest reducing the intake of foods that are high in saturated fat to help lower cholesterol levels.

![Heart disease resulting from clogged arteries can be the long-term effect of a diet that is high in cholesterol. The artery on the right is completely blocked with plaque. Start now to monitor cholesterol levels throughout your life.](image)

**Class Discussion**

Limiting Cholesterol

Ask: If cholesterol is essential, why should you worry about how much you eat? [The body makes cholesterol to fill its needs. Ingesting large amounts of cholesterol and saturated fats can lead to a buildup of the fatlike substance in the artery walls, which ultimately can lead to heart disease. In addition, high cholesterol is linked to some kinds of cancer.]

**Reinforcement**

**Cholesterol Confusion**

Write on the chalkboard:

**CHOLESTEROL ≠ FAT**

Explain that foods with no cholesterol are not necessarily low in fat. Have students refer again to snack food labels and compare cholesterol with fat content. Also write on the board:

**CHOLESTEROL INTAKE ≠ CHOLESTEROL IN BLOOD**

Stress the fact that eating foods that contain no cholesterol is not a guarantee that you will have a low cholesterol blood serum level. Many factors influence the level and types of cholesterol circulating in the blood. However, eating foods high in saturated fats can increase your cholesterol level. When saturated fats are digested, they circulate in the bloodstream as forerunners of the components of LDL ("bad cholesterol"). The body can then use these components to build LDL.

**HDL:** (high-density lipoproteins) compounds that remove cholesterol from the blood and transport it back to the liver.

**LDL:** (low-density lipoproteins) compounds that carry cholesterol to cells for cell processes.

**Cholesterol:** a fatlike substance that is part of all animal cells and is needed for the production of some hormones and fat digestion.
Background

Cholesterol

Physicians now think that the best way to evaluate a person's cholesterol level is to look at the ratio of the total cholesterol level to the HDL level. To find this ratio, divide the total cholesterol level by the HDL level. Although a ratio between 5 and 9 is considered normal, a ratio of four or less is associated with a decreased risk of heart disease. One study showed that men whose ratio was less than 3 have a 60 percent lower risk for developing heart disease than those in the normal range.

### Percentage of Calories from Fats

**More than 75% calories from fat**
- Avocado
- Bacon
- Coconut
- Cold cuts
- Cream cheese
- Franks fers
- Nuts
- Olives
- Peanut butter

**SELECTED FOODS**

**50-75% calories from fat**
- American cheese
- Cheddar cheese
- Chicken roasted with skin
- Chocolate candy
- Eggs
- Ice cream
- Lamb chops
- Lean hamburger

**SELECTED FOODS**

**40-50% calories from fat**
- Fried chicken
- Sardines
- Whole milk
- Yogurt

**SELECTED FOODS**

**30-40% calories from fat**
- Chicken roasted without skin
- Corn muffin
- Creamed cottage cheese
- Granola
- Ice milk
- Milk, 2 percent
- Pizza
- Turkey, dark meat

**SELECTED FOODS**

**20-30% calories from fat**
- Liver
- Pancakes
- Low fat yogurt
- French toast
- Crabmeat
- Frozvan yogurt

**SELECTED FOODS**

**Less than 20% calories from fat**
- Beans and lentils
- Bread
- Breakfast cereals
- Fruits
- Grains
- Skim milk
- Tuna in Water
- Turkey, white meat
- Vegetables
- Whiskies

*(FIGURE 4-7)* You might be surprised at the amount of fat some foods contain. Learn how to determine these percentages later in this chapter.

---

**TEACH continued**

**Demonstration**

**Clinical Bloodwork to Show Serum Cholesterol Levels**

To help students differentiate HDL from LDL, ask a medical lab or a doctor's office for a facsimile of a lab form for bloodwork, showing hypothetical results for a patient's levels of cholesterol in general and broken down into HDL and LDL levels. Or, you may prefer to use the following example.

<table>
<thead>
<tr>
<th>TEST NAME</th>
<th>RESULT</th>
<th>LIMITS</th>
<th>NORMAL RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol</td>
<td>190</td>
<td>mg/dL</td>
<td>120 - 200</td>
</tr>
<tr>
<td>LDL</td>
<td>170*</td>
<td>mg/dL</td>
<td>130 - 160</td>
</tr>
<tr>
<td>HDL</td>
<td>20**</td>
<td>mg/dL</td>
<td>30 - 90</td>
</tr>
</tbody>
</table>

*High level may mean higher risk; desirable LDL = 130 mg/dL or less; 130-159 mg/dL = borderline level.
**Low level may mean higher risk; HDL should be above 35 mg/dL.

Copy the form for viewing on the overhead projector or chalkboard and help students read and interpret the data. The example included here shows that a normal range cholesterol level may, when further broken down to show HDL and LDL, reveal a high level of LDL, or "bad cholesterol."

**Class Discussion**

**Complete Versus Incomplete**

Help students see that proteins supplied by plants are not inferior because they are incomplete. Ask: How is
Creating Complete Proteins

To create a complete protein, combine foods from at least two of the following groups at a single meal:

- Legumes: dry beans and peas (navy, lima, pinto, black, soybeans), soybean curd (tofu), soy flour, peanuts, peanut butter
- Grains: whole grains (barley, oats, rice, rye, wheat), corn, pasta
- Nuts, seeds: almonds, pecans, walnuts, sunflower seeds, pumpkin seeds, sesame seeds

(FIGURE 4-8) When selecting nuts and seeds to create complete proteins, limit the amount you eat because they are high in fat.

Proteins

Like carbohydrates and fats, proteins are made of carbon, hydrogen, and oxygen, but they also contain nitrogen. Proteins play a unique role in the growth and repair of body tissues. All cells contain some protein. It is also found in antibodies and hormones. Enzymes that speed up chemical reactions in the body are proteins.

All proteins are made of amino acids. There are 20 amino acids; 11 of them can be made in the body and 9 others must be supplied by food. The 9 amino acids that cannot be produced in the body are called essential amino acids.

Because proteins perform so many necessary functions, you can see that the foods you select should include good sources of protein. However, the proteins found in the human body are not supplied directly from food. During digestion, proteins in food are broken down to their amino acids. These amino acids are the building blocks of new proteins for growth and tissue repair.

The proteins in food are sometimes classified as complete or incomplete proteins. A complete protein is one that contains all nine essential amino acids; an incomplete protein contains only some of these nine amino acids. Generally, foods that come from animal products (meat, poultry, fish, and milk products) contain complete proteins. Most proteins that come from plant sources are incomplete. It is possible, however, to get the proper amount of complete proteins from plant sources by selecting various protein sources so that all essential amino acids are supplied. Figure 4-8 contains a recommendation on how to select from a mix of plant foods to achieve a diet that has complete proteins. Proteins should make up about 10 percent of your daily caloric intake for adequate nutrition.

Cooperative Learning

Picturing Plenty of Protein

Have small groups of students locate and clip pictures of foods that are good sources of protein. They should divide the pictures into foods that provide complete or incomplete proteins. Then have students arrange incomplete proteins into combinations that form complete proteins.

--- TEACH continues on p. 76
Section 4.2

Fat Soluble Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Function</th>
<th>Sources</th>
<th>Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Maintains healthy eyes, skin, bones, teeth, keeps lining of digestive tract resistant to infection</td>
<td>Milk products, liver, yellow fruits and vegetables, dark green leafy vegetables</td>
<td>Night blindness, impaired growth</td>
</tr>
<tr>
<td>D</td>
<td>Promotes normal growth, works with calcium and phosphates in building bones and teeth</td>
<td>Fish-liver oils, fortified milk, liver, egg yolk, salmon, tuna</td>
<td>Rickets (inadequate growth of bones and teeth)</td>
</tr>
<tr>
<td>E</td>
<td>Prevents destruction of red blood cells; needed for certain enzymes to function</td>
<td>Wheat germ, vegetable oils, legumes, nuts, dark green vegetables</td>
<td>Red blood cell rupture causing anemia</td>
</tr>
<tr>
<td>K</td>
<td>Assists with blood clotting, bone growth</td>
<td>Green, leafy vegetables and vegetable oils, tomatoes, potatoes</td>
<td>Slow clotting of blood, hemorrhage</td>
</tr>
</tbody>
</table>

Vitamins: Vitamins are compounds that help regulate certain chemical reactions in the body. Though vitamins do not supply energy, they are essential for good health. The only vitamins the body can make are vitamins D and K.

Vitamins are grouped into two different categories: those that are fat soluble and those that are water soluble. Fat soluble means that the substance dissolves in fat. Fat-soluble vitamins include vitamins A, D, E, and K. Because they dissolve in fat, these vitamins can be stored in body fat. A balanced diet, which you will learn about in the next section, provides the right levels of fat-soluble vitamins and the fats needed to store these vitamins. If a person takes in high levels of fat-soluble vitamins either from food or from vitamin supplements, excess is stored in the liver or skin and may be harmful. Figure 4-9 lists the fat-soluble vitamins, their sources, and their importance to health.

Water-soluble vitamins like the B group and vitamin C are not stored in the body. Because water-soluble vitamins dissolve in water, any excess is excreted in urine. Therefore, you must have consistent sources of water-soluble vitamins to prevent deficiency diseases. Figure 4-9 also lists the water-soluble vitamins, their sources, and their importance to health. A well-balanced diet, which you will learn about in the next section, provides the right levels of water-soluble vitamins and the sources needed to store these vitamins. If a person takes in high levels of water-soluble vitamins, they are not stored in the body and may be harmful. Figure 4-9 lists the water-soluble vitamins, their sources, and their importance to health.

---

**TEACH continued**

**Game**

**Vitamin Spin**

Make a wheel with the 13 vitamins listed on it, and a spinner. A student team spins the wheel and must describe a function, one source, and a deficiency related to the vitamin landed on. The majority of team members must agree with the answers provided by the spokesperson. For each correct answer, the team wins 5 points. If all three answers are correct, the team spins again. A vitamin may be used more than once, but answers should not be duplicated.

**Class Discussion**

**Some Things Bear Repeating**

Have students explain why it's a good idea to eat foods rich in vitamins C and E every day. Ask them to respond to the following scenario:

Suppose a healthy person who has had an adequate diet is shipwrecked on an island. There is water on the island but no food. The person is rescued one month later. Ask: Which vitamins will the person need most? (B and C) Why? (The body cannot store them; they must be replenished daily.)

**Debate the Issue**

**Vitamin Pills**

Have two teams of students debate the question: Should teens take vitamin pills? Each team will need time to collect
### Water Soluble Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Function</th>
<th>Sources</th>
<th>Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 Thiamine</td>
<td>Assists with conversion of carbohydrates to energy, normal appetite and digestion, nervous system function</td>
<td>Pork products, liver, legumes, enriched and whole grain breads, cereals, nuts</td>
<td>Beriberi (inflamed nerves, muscle weakness, heart problems)</td>
</tr>
<tr>
<td>B2 Riboflavin</td>
<td>Assists with nerve cell function, healthy appetite and release of energy from carbohydrates, protein, and fats</td>
<td>Milk, eggs, whole grain products, green leafy vegetables, dried beans, enriched breads, cereals, and pasta</td>
<td>Cheilosis (skin sores on nose and lips, sensitive eyes)</td>
</tr>
<tr>
<td>B3 Niacin</td>
<td>Maintenance of normal metabolism, digestion, nerve function, energy release</td>
<td>Red meats, organ meats, fish, enriched breads and cereals</td>
<td>Pellagra (soreness on mouth, diarrhea, irritability, depression)</td>
</tr>
<tr>
<td>B6 Pyridoxine</td>
<td>Necessary for normal carbohydrate, protein, and fat metabolism</td>
<td>Whole grain products, fish, bananas, green leafy vegetables</td>
<td>Anemia, dermatitis</td>
</tr>
<tr>
<td>B12</td>
<td>Necessary for formation of red blood cells; normal cell function</td>
<td>Lean meats, liver, egg products, milk, cheese</td>
<td>Pernicious anemia, stunted growth</td>
</tr>
<tr>
<td>Folacin</td>
<td>Necessary for formation of hemoglobin in red blood cells; necessary for production of genetic material</td>
<td>Green vegetables, liver, whole grain products, legumes</td>
<td>Anemia, diarrhea</td>
</tr>
<tr>
<td>Folic Acid</td>
<td>Assists with energy release from carbohydrates, protein, and fats; used to produce some hormones</td>
<td>Whole grain cereals, liver, green vegetables, eggs, nuts</td>
<td>Reduced resistance to stress</td>
</tr>
<tr>
<td>Biotin</td>
<td>Necessary for normal metabolism of carbohydrates and some other B vitamins</td>
<td>Organ meats, egg yolks, green vegetables</td>
<td>Skin disorders, hair loss</td>
</tr>
<tr>
<td>C Ascorbic Acid</td>
<td>Needed for normal development of connective tissue, including those holding teeth; wound healing; use of iron</td>
<td>Citrus fruits, melons, green vegetables, peppers</td>
<td>Scurvy (slow healing of wounds, bleeding gums and loose teeth)</td>
</tr>
</tbody>
</table>

---

**Class Discussion**

**Vitamin Megadoses**

Students should be aware of the negative effects of large doses of vitamin supplements. Ask: What might happen if you take megadoses of vitamin A or E? [The body would use what it needs. Then it would store these fat-soluble vitamins, even to a toxic level.]

**What are the effects of megadoses of vitamin C?** [The body will excrete the excess, wasting the vitamins.]

... TEACH continues on p. 78
Background

**Getting Enough Calcium**

Research shows that many women and teenagers do not get enough calcium. Experts in the field of nutrition say that teenagers need between 1200 and 1400 mg of calcium daily to build strong bones. For girls especially, failure to consume adequate calcium will greatly increase the risk for developing osteoporosis later in life. A sufficient and varied diet is the preferred method of obtaining calcium. Good dietary sources include milk and other dairy products; figs; broccoli; dark, leafy green vegetables; beans, especially soybeans; canned salmon consumed with the bones; and seeds and nuts, especially almonds. Many products that are high in calcium are also high in fat. However, it is important not to sacrifice calcium to achieve a low-fat diet. A recent study of 900 ten-year-olds revealed that those who obtained less than 30 percent of their calories from fat had diets that were deficient in vitamins and

Class Discussion

**Minerals Stand Alone**

Ask: How do minerals differ from other nutrients? [They are not produced by organisms.] Do you need macrominerals more than you need trace minerals? [No. You need macrominerals in larger doses than trace minerals, but both types are essential.]

**Class Discussion**

**Minerals Up Close and Personal**

Have students refer to Figure 4-10 and identify the macrominerals and the trace minerals. Ask them to assess their diets and note any deficiencies they may have. Encourage students to discuss reasons why calcium and sodium intake should be kept at recommended doses. (Calcium deficiency leads to bone weakness and osteoporosis; excess sodium intake is thought to be related to heart disease and high blood pressure.)

**Class Discussion**

**Salt Without Shakers**

Ask: How can a person who uses no table salt be getting adequate sodium in his or her diet? [Many foods contain some naturally-occurring sodium, and most processed foods contain high levels of added sodium. In addition, sodium intake comes in forms other than sodium chloride, for example, MSG and sodium nitrate.]
## Listing of Important Minerals and Their Function

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Function</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>Necessary for normal growth of bones and teeth, transmission of nerve cell impulses, muscle contraction</td>
<td>Milk and dairy products, dark leafy green vegetables</td>
</tr>
<tr>
<td>Chromium</td>
<td>Necessary for proper blood sugar regulation and insulin activity</td>
<td>Cheese, plums, apple juice, prunes, peanuts and peanut butter, corn and corn oil, mushrooms</td>
</tr>
<tr>
<td>Copper</td>
<td>Needed for normal production of hemoglobin, bone, and melanin (involved in skin color)</td>
<td>Liver, shellfish, legumes, nuts, whole-grain products</td>
</tr>
<tr>
<td>Iodine</td>
<td>Essential for production of thyroid hormone</td>
<td>Iodized salt, seafood</td>
</tr>
<tr>
<td>Iron</td>
<td>Found in hemoglobin; needed for some enzymes</td>
<td>Organ meats, red meat, whole grains, dark green vegetables, legumes</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Needed for chemical reactions during metabolism</td>
<td>Milk, dairy products, green leafy vegetables</td>
</tr>
<tr>
<td>Manganese</td>
<td>Used in enzymes for synthesis of cholesterol, formation of urea, normal function of nervous tissue</td>
<td>Whole grain products, leafy green vegetables, fruits, legumes, nuts</td>
</tr>
<tr>
<td>Potassium</td>
<td>Helps maintain normal metabolism, nerve and muscle function</td>
<td>Meats, poultry, fish, fruits, vegetables</td>
</tr>
<tr>
<td>Sodium</td>
<td>Needed for normal taste sensation, nerve impulse conduction</td>
<td>Tuna and other seafood, whole grains, organ meats, molasses, Brazil nuts</td>
</tr>
<tr>
<td>Sodium</td>
<td>Essential for proper water balance in cells and tissues; nerve cell conduction</td>
<td>Table salt, high salt meats (ham), cheeses, crackers</td>
</tr>
<tr>
<td>Sulfur</td>
<td>Found in several amino acids</td>
<td>Meats, milk, eggs, legumes, nuts</td>
</tr>
<tr>
<td>Zinc</td>
<td>Needed for several digestive enzymes; plays a role in respiration, bone and liver metabolism, and healing of wounds</td>
<td>Seafood, meats, milk, poultry</td>
</tr>
</tbody>
</table>

### Cooperative Learning

**Bone Builders**

Have students bring to class labels from calcium-rich foods and work in groups to determine several ways to supply the 1,200 mg of calcium they need every day. Suggest they use a form like the one at right to record their data.

### Class Discussion

**Importance of Water**

Ask: Why might water be considered the most important of the six nutrients? (It makes up the greatest part of the body; it provides a medium for essential body reactions and keeps levels of other nutrients in balance; water regulates temperature and allows passage of gases, nutrients, and wastes.)

### Journal 4C

**Water Intake**

Have students note in their journal how much water they drink in a day. Suggest that they list times during the day when it would be convenient to have a drink of water.

---

Section 4.2

minerals, including calcium. A low-fat diet should include low-fat or nonfat dairy foods plus vegetables high in calcium. Note that a number of factors influence calcium absorption. Vitamin D enhances it. High levels of sodium and animal protein, excessive caffeine consumption, and the use of steroids may reduce absorption. Also, the aluminum in antacids may increase calcium excretion and therefore should not be used on a regular basis without medical supervision.
Section Review
Worksheet 4.2
To reinforce the concepts presented in this section, assign Section Review Worksheet 4.2.

Section Quiz 4.2
Have students take Section Quiz 4.2

Reteaching
Worksheet 4.2
Students who have difficulty with the material may complete Reteaching Worksheet 4.2.

Review Answers
1. Complex carbohydrates supply the body with energy as well as vitamins, minerals, proteins, and fiber.
2. fat
3. If calcium levels are low during the developmental years, the body will not be able to build strong bones. As a result, the bones will weaken and become brittle with age. Adequate calcium intake is also important for building strong teeth.

Functions of Water in the Body
1. All body functions are the result of chemical reactions. Most chemical reactions in the body can occur only in a water medium because substances dissolve in water.
2. The speed at which some of these chemical reactions occur is affected by how acidic body fluids are. Water helps maintain acidity at the proper levels.

![Diagram of the body showing water distribution] (FIGURE 4-11) Since the body is mostly water, maintaining proper fluid balance is critical for good health.

Demonstration
Thirsty Cells
You can model the process that stimulates thirst: excess sodium in the blood causes water to move out of cells and into the blood. In other words, water diffuses across cell membranes to equalize the concentration of solutions. This can be illustrated with a small clear cup containing colored water (representing the cell) and a clear glass container of salt water (representing the fluid around the cell). Cover the cup of colored water with a piece of fine cheesecloth or an old nylon stocking, and secure it with a rubber band. Lower it carefully into the container of salt water. Over time, colored water should diffuse through the fabric “cell membrane” into the surrounding salt water. Explain that water leaves the cells to try to correct the imbalance of sodium concentration in the blood. This triggers a signal to the brain, resulting in a feeling of thirst.

Reinforcement
Who Needs Water?
Most Americans fail to drink enough water. Remind students of the following.
1. Body processes and cell maintenance cannot proceed normally without adequate water intake. Dehydration doesn’t just make you feel bad; it is actually bad for your body!
Dehydration

Water is so vital that it is rare to live for more than 10 days without water, even though you could live several weeks without food. When the amount of water you excrete exceeds the amount of water you take in, you are in a state of dehydration. Dehydration can occur as a result of heavy physical activity or an illness that includes vomiting, diarrhea, or fever. Situations that cause you to sweat profusely can also cause dehydration if you are not drinking enough water. Drinking too much alcohol or eating a high-protein diet can also cause dehydration. A prolonged state of dehydration can lead to kidney failure and death.

We take in water by drinking fluids and eating. Many foods contain large amounts of water. You need to consume at least one half ounce of water daily for every pound of weight, which totals at least two quarts. If you are very active or live in a very hot climate, extreme water loss through sweating could interfere with your body’s functions.

A simple way to find out if you’re adequately hydrated is to check the color of your urine throughout the day. If it is clear and uncolored, your water intake is adequate. If it is colored to any degree, you need to drink more water. If it is highly colored, you definitely need to increase your intake. It is especially important to drink enough water if you are trying to lose weight.

Review

1. Describe the importance of complex carbohydrates in the diet.
2. Which nutrient supplies the most calories per ounce?
3. How does a low calcium intake affect the body?
4. Why should you limit the amount of sodium in your diet?
5. Why are saturated fats to be avoided in making food selections?
6. How much of your daily caloric intake should come from carbohydrates, fats, and proteins?
7. Why do you need to have some fat in your diet?
8. Critical Thinking Why is it misleading to label peanut butter as having “no cholesterol”?

Dehydration:

A state in which the body has lost more water than has been taken in.

ASSESS

Section Review

Have students answer the Section Review questions.

Alternative Assessment

Good Food Salesmanship

Have students bring in fresh foods or pictures of them to “sell” to the class. Each must persuade other students of the food’s value in promoting good health by explaining its nutrients.

Closure

Importance of Fats

Have students explain the pros and cons of fats—why we need fats in the diet—but not too many.
Analyzing Your Nutritional Needs

Objectives

- Define the nutritional requirements for healthy teens.
- Classify foods into the appropriate food groups.
- Interpret food labeling to analyze nutritional breakdown.
- Make food selections that satisfy nutritional requirements using the Food Pyramid and Dietary Guidelines.
- LIFE SKILLS: Making Responsible Decisions
- Identify special nutritional needs of selected populations.

Knowing about the principles of nutrition is just the first step in improving your health. Putting those principles into action is the next and most important step.

Dietary Guidelines for Americans

- Eat a variety of foods.
- Maintain a healthful weight.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a diet with plenty of fruits, vegetables, and grain products.
- Use sugars only in moderation.
- Use salt and other forms of sodium only in moderation.
- For adults who drink alcohol, do so only in moderation.

Section 4.3 Lesson Plan

MOTIVATE

Class Discussion
May I Take Your Order?

Display (or make a transparency of) a menu from a local restaurant and ask students to select items they would order for breakfast, lunch, or dinner. Encourage the class to discuss reasons for their choices and speculate about which choices are most healthful.
### Daily Reference Values (DRVs)

<table>
<thead>
<tr>
<th>Food component</th>
<th>Daily Reference Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fat</td>
<td>65 g, 30% of total energy requirement</td>
</tr>
<tr>
<td>Saturated fat</td>
<td>20 g, 10% of total energy requirement</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>300 mg</td>
</tr>
<tr>
<td>Total carbohydrate</td>
<td>300 g, 60% of total energy requirement</td>
</tr>
<tr>
<td>Dietary fiber</td>
<td>25 g</td>
</tr>
<tr>
<td>Protein</td>
<td>50 g, 10% of total energy requirement</td>
</tr>
<tr>
<td>Potassium</td>
<td>3,500 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>2,400 mg</td>
</tr>
</tbody>
</table>

(FIGURE 4-14) Daily Reference Values are used as the standard for food labels which show the percentages of nutrients suggested for a 2,000 calorie diet.

(FIGURE 4-15) Reference Daily Intakes (RDIs) have replaced the U.S. Recommended Dietary Allowances (RDAs), which were once the accepted nutrition standard.

---

### Some Vitamin and Mineral Reference Daily Intakes (RDIs)

(for adults and children 4 or more years of age)

<table>
<thead>
<tr>
<th>Mineral/Vitamin</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1 g (gram)</td>
</tr>
<tr>
<td>Iron</td>
<td>18 mg (milligrams)</td>
</tr>
<tr>
<td>Magnesium</td>
<td>400 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>5,000 IUs (international units)</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>60 mg</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>400 IUs</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>30 IUs</td>
</tr>
</tbody>
</table>

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### TEACH

**Class Discussion**

**Dietary Guidelines**

Discuss the Dietary Guidelines shown in Figure 4-13. Ask: What are the purposes of these guidelines? (to provide a profile of a healthful diet, to focus on seven eating practices, and to provide information about the effect of diet on health) Discuss the meaning of terms such as healthful, low, plenty, and moderation. Ask: Why do you think these terms are used rather than specific recommendations? [Answers should stress that because individuals are so different, it is not possible to make specific recommendations that are valid for everyone. In order to know what is "low" or "high," individuals need to use the information in this chapter to determine what is ideal (the most healthful) for them.]

**Cooperative Learning**

**Daily Reference Values**

In small groups or pairs, have students design and make their own daily reference charts using Figures 4-14 and 4-15 as information sources. Although students can organize the information as they wish, suggest that a pie chart is an effective way to present the data given in percentages. Students can use these charts later when they evaluate their own diet or plan a new one.

**Class Discussion**

The Shape of Balanced Nutrition

Ask: Why is the pyramid a good shape to illustrate the needs for...
Check Up

Have students turn in their choices for the two items and tally the answers on the board. Discuss the answers to items many students got wrong.

How Much Do You Know About Food Selection?
From the statements listed below, choose the best answer. Then check the correct answers below.

1. Cooking practice that increases fat in foods
   - cooking
   - broiling
   - frying
   - don't know

2. Boiling vegetables reduces vitamins
   - yes
   - no
   - don't know

3. Salt in peanut butter-and-jelly sandwich compared with a hot dog
   - less salt
   - more salt
   - same
   - don't know

4. Salt in canned vegetables compared with frozen
   - less salt
   - more salt
   - same
   - don't know

5. Fat in frozen yogurt compared with ice cream
   - less fat
   - more fat
   - same
   - don't know

6. Fiber in corn flakes compared with bran cereal
   - less fiber
   - more fiber
   - same
   - don't know

7. Fiber in baked beans compared with baked potato
   - less fiber
   - more fiber
   - same
   - don't know

8. Eating fatty foods may cause
   - heart disease
   - stomach cancer
   - don't know

9. Eating too little fiber may cause
   - colon cancer
   - high blood pressure
   - heart disease
   - don't know

10. Eating sugar may cause
    - heart disease
    - low blood pressure
    - cavities
    - don't know

11. Amount of iron needed by females compared with males
    - less iron
    - more iron
    - same
    - don't know

12. Amount of calcium needed by teenagers compared to middle-aged women
    - less calcium
    - more calcium
    - same
    - don't know

Categorizing Foods—The Food Pyramid
You should know by now that the best nutritional strategies include eating a variety of foods. When you choose a variety of foods, your diet can supply all your daily requirements. One way to select from a variety of foods is by grouping them. The idea of four basic food groups was once used to group foods for nutritional purposes. In May 1992, the U.S. Department of Agriculture provided a new way of categorizing foods called the Food Pyramid, shown in Figures 4-16 on the next page.

Let's look at how the Food Pyramid should be used in planning your diet. The pyramid organizes foods into groups based on the Dietary Guidelines. Notice that the bread, cereal, rice, and pasta group is at the bottom. This placement indicates that foods from this group should be the largest part of your diet. Each day, you should have 6 to 11 servings from this group for good health. Figure 4-17 shows some foods that are part of this group.

As you move up, you see that you need fewer servings from the remaining groups to be healthy. For example, you need 3 to 5 servings daily from the vegetable group and 2 to 4 servings from the fruit group. You need only 2 to 3 servings from the milk, yogurt, and cheese group, and the same number of servings from the meat, poultry, fish, dry beans, eggs, and nuts group. Finally, at the top of the pyramid, you find fats, oils, and sweets. Foods in this category are not part of a food group. These foods should be selected sparingly as part of your diet.

Bread, Cereal, Rice, and Pasta Group
Foods from this group are made from whole grains and grain products. The term "cereal" is used to describe the food crops—rice, wheat, and corn. These grains supply more than half of the energy humans use.

Class Discussion
Diet: What Should You Cut?
Ask: Why are limitations placed on foods in the top three groups of the pyramid rather than on the bottom three? [The first three groups are relatively high in fat, protein, or sugar and are related to the most pressing health problems in our society. They are also the highest in calories. The bottom three groups are generally low in fat and high in fiber, minerals, vitamins, and water. Complex carbohydrates are linked with a low incidence of cancer and heart disease. They also are low in calories.]

Reinforcement
America's Upside-Down Food Triangle
Emphasize to students the relative area given to each food group. Far too often, young people's eating habits reverse these proportions. Many people still believe that the base group is fattening, and curtail their intake of complex carbohydrates when dieting. As a result, their intake is insufficient.
**Background**

*More Guidelines on Healthful Dieting*

Dieting can have unexpected bad side effects if calories are reduced too drastically. In general, a diet that includes less than 1,000–1,200 calories a day (1,500 for a large person) stresses the body. The restricted intake has long-term implications. It triggers a survival mechanism, causing the dieter to lose muscle mass, the metabolism to slow down, and the percent of body fat to increase. The body converts mass to fat because it requires fewer calories to be maintained. Result: the body needs fewer calories than before the diet. After the diet, a return to normal food intake causes weight gain because the body has changed its method of handling energy supplies.

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*Serves: U.S. Department of Agriculture and Department of Health and Human Services*

**URE 4.46 The Food Pyramid replaces the four food groups concept:**

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Daily: Foods derived from these cereal crops are good sources of complex carbohydrates and dietary fiber. They are generally low in fat and high in B vitamins. "Generally low in fat" means you should look at labels to determine if the food selection from this group is low in fat. Recommended serving sizes from this group include one slice of bread, one-half cup of cereal, or one-half cup of pasta.

**Foods to Limits:** Foods containing a lot of butter or eggs should be limited. For example, the following could be very high in fat, cholesterol, and calories: butter rolls, croissants, cheese breads, egg breads, store-bought donuts, muffins, sweet rolls, and biscuits. Battered popcorn (including microwave products), foods made with coconut or palm oil, soups made with cream, and high-fat meats should also be limited.

Sweets and fats, which should be eaten sparingly, are actively promoted by advertisers.

**Class Discussion**

**Don't Butter Me Up**

Ask: How can some bread, cereal, rice, and pasta products be undesirable if everyone needs a high percentage of complex carbohydrates? [When made with butter, lard, vegetable shortening, or eggs, breads and other baked goods can be high in cholesterol and saturated fat. Rice or pasta served with a fatty sauce or butter presents the same problem.] What is the disadvantage of purchasing fresh bread or other baked goods? [Unlike packaged baked goods, fresh ones seldom have Nutrition Facts labels, and often contain high amounts of fat and sugar.] What is an advantage? [They usually do not contain additives or preservatives.]

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*TEACHER continues on p. 86*
Demonstration
Your Fruit and Veggie IQ
Challenge students to bring in fruits and vegetables they think other students may not have tried. (Some possibilities include kale, artichoke, mango, plantain, papaya, kiwi, kohlrabi, winter squash, and ugli fruit.) If possible, students should include nutritional information about the item they bring in.

They may want to include a recipe for its preparation. Place each item at a separate station, and have students rotate through the stations to examine the foods. Include a question-and-answer session in which students can ask any questions they have about the fruits and vegetables.

Demonstration
The Meaning of Lean
The differences in fat content of various grades of ground beef can be dramatically illustrated. In separate skillets cook one-fourth of a pound of ground beef with various fat levels, such as 91 percent, 80 percent, etc. Pour off the fat from each cooked portion, and measure it. Have students view the different quantities of fat, and comment on the difference between eating a hamburger made of regular meat versus eating one made of reduced-fat meat. To dramatize that animal fat saturated, allow the samples to cool before discarding.
Foods to Limit: Though most fruits and vegetables are low in fat, avocados and olives should be limited, as they are high in fat and therefore high in calories.

Fruit Group Foods from this group are also high in vitamins and minerals while being low in fat. Like vegetables, fruits are also good sources of dietary fiber. The fiber content of raw fruit or dried fruit is much higher than that of fruit juices. If you prefer fruit juice, drink 100 percent juice. Fruit drinks do not have the same nutritional value as juices. If you eat canned or frozen fruits, select those packed in light syrups or natural juices.

The size of a serving is one medium-sized piece of fresh fruit, such as an apple, banana, or orange; one-half cup of chopped, cooked, or canned fruit; or three-fourths cup of fruit juice. In making selections in this group, you should also look for good sources of vitamins A and C.

Vitamin C-rich fruits: tomatoes, cantaloupe, grapefruit, oranges, and tangerines.

Vitamin A-rich fruits: tomatoes, apricots, cantaloupe, mango, papaya, and peaches.

Milk, Yogurt, and Cheese Group All dairy products are found in this group. This provides the best sources of calcium, sources of protein, vitamins A and D, and some minerals. Teens and young adults are still building their bones and need the calcium supplied by five servings a day from this group. One cup of milk or yogurt, one and one-half ounces of cheese, or two ounces of processed cheese are recommended serving sizes.

Foods to Limit: Milk products with more than 1 percent fat should be limited. This includes buttermilk and yogurt made from whole milk; condensed milk, evaporated milk, all types of cream, nondairy cream substitutes, and any sour cream substitutes with palm oil. Also limit cheeses with more than 2 grams of fat per ounce of cheese, such as cream cheese, creamed cottage cheese, and most processed cheeses.

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group These foods are high in protein and B vitamins, and are also good sources of certain minerals. Foods from this group can be very high in fat and cholesterol. Good choices are the leanest possible cuts of any meat. Skinless poultry and fish are preferred selections over red meat. The new turkey-based products, such as turkey hot dogs, cold cuts, and sausages are the food industry’s way of providing foods with less fat than the pork or beef versions. The serving size for this group would be 2 to 3 ounces of cooked lean meat, poultry, or fish. One egg or 2 tablespoons of peanut butter count as 1 ounce of lean meat.

Foods to Limit: Select low-fat meats with no more than 2 grams of fat per ounce.

Role-Playing
Breaking the Burger Habit
Ask for volunteers to role-play a group of friends ordering dinner at a fast-food restaurant. One student should try to convince the others to change the standard order—burger, fries, and a soda. Other students should demonstrate peer pressure not to change. Have student observers comment on the realism of the dialogue and suggest additional arguments in favor of ordering more healthful food.

Game
Calorie Countdown
Create a number of food cards to represent typical breakfast, lunch, and dinner foods. Glue food pictures to one side of a 4 x 6 in. card. On the opposite side, write the number of calories and grams of fat per serving. Divide the class into teams, and tell them that the goal is to create a daily meal plan with 1600 calories and 53 or fewer grams of fat. One team should select foods without looking at the back of the cards, then count the total calories and fat in the day’s meals. Have other teams take their turns, and then compare the results. The team or teams that come closest to the goal are the winners.

Teaching Transparency 4A
Nutrients in Food
Use this transparency to relate the information in the food pyramid to the foods discussed here and the nutrients discussed in Section 4-2.
Background

What's for Dessert?—Sugar and Fat

Western societies consume a diet very high in sugar and fat. Sweet desserts combine these two nutrients in great amounts; for example, in chocolate products, sugar and fat typically account for 80 to 90 percent of total calories. The combination of sugar and fat makes them uniquely tasty, but studies show that this combination is also uniquely fattening. Data from nutritional studies indicate that eating sugar/fat mixtures leads to the deposit of more body fat than does eating an equal amount of sugar and fat at different times of the day.

Nutritional Labeling

The food pyramid is a giant step forward in "seeing" what makes a healthful diet. When the food pyramid was introduced, many changes were taking place in the ways government agencies were educating the public about food selection. Unlike other countries where deficiencies of protein and calories still exist, the United States has an abundance of food. The dietary deficiency diseases are rarely seen anymore in our country. But the United States has two primary nutritional problems affecting the health of its children, teens, and adults—consuming too many calories and not getting enough exercise.

One of the most significant changes aimed at educating the public has been the new food label. Figure 4-21 shows you an example of how the label's information can help you make smart food choices and follow the dietary guidelines.

Reading Labels

The new label gives information about the nutrients that make it easier to determine which foods fall within your guidelines for kinds of fat, complex carbohydrates, fiber, and sugar. Few foods are exempt from the labeling requirements. The labeling standards prevent misleading claims about foods advertised as "low fat," "low cholesterol," "reduced sugar," or "fat free."

Serving Size—The Basis of Comparison

If you eat more or less than the serving size, you'll need to adjust the amount of each nutrient to reflect your serving.

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Class Discussion

What's on a Food Label?

Have students use Figure 4-21 as a reference, and ask: What is the serving size? [about 3/4 cup, or 30 g] Assuming the person eating the cereal uses no milk, how many calories are in one serving? [120] How many of those calories are from fat? [15] What is the total fat content, and how much of that fat is saturated?

[2 g, none] What does the 3% Daily Value for fat mean? [One serving provides 3 percent of a person's fat requirement for one day, based on a 2,000 calorie diet.] Does this cereal contain any cholesterol? [no] How much of the carbohydrate content is fiber? [3 g out of 25 g] What percent of the Daily Value of iron does the cereal provide? [25 percent] How does eating the cereal with one-half cup skim milk change the nutritional value? [It increases the total calories and calories from fat; it adds additional cholesterol, sodium, potassium, carbohydrates, thiamin, riboflavin, phosphorus, zinc, and vitamins A, C, and D.]

Class Discussion

Rounding Out Breakfast

After students have analyzed the nutrition of the cereal shown in Figure 4-21, have them suggest other foods that could be added to make a well-rounded breakfast. (Suggestions may include skim milk, sliced fruit or fruit juice, and whole-wheat toast with margarine.)
Labeling about Calories
Excess calories is one reason for weight gain.

Terms You Should Know
Cal: Calorie fewer than 5 calories per serving.
Low calorie: 40 calories or less per serving.
Reduced or fewer calories: at least 25 percent fewer calories per serving than the reference food.

Labeling about Sugar
Sugar values on the label include naturally occurring sugars, such as milk sugar, and refined sugars added during processing. However, the nutrition label does not account for longer-chain sugars in the food. To keep your sugar intake at or below 10 percent of your day’s calories, you’ll need to read the ingredient list. Ingredients such as sucrose, fructose, maltose, lactose, honey, syrup, corn syrup, high-fructose corn syrup, molasses, and fruit juice concentrate indicate added sweeteners. If any of these ingredients appear first or second or if several of them appear in the list, the food is probably high in sugar.

Terms You Should Know
Sugar free: there is either no sugar in the food or less than 0.5 gram per serving.
No sugar added: Without added sugar; no sugars or ingredients that contain sugars have been added and processing does not increase the sugar content above the amount that is naturally found in the ingredients.
Reduced sugar: contains at least 25 percent less sugar per serving than the reference food.

Cooperative Learning
Reading Food Labels
Provide small groups of students with identical copies of a label from a food product. Assign each group one of the following areas to evaluate: calories, sugar, fat, fiber, or carbohydrates. Using the information on pages 88-90 as a guide, each group should comment on their topic. For example, if the product contains 3 g of fiber, that group might say, “This product contains 3 g of fiber per serving, which classifies it as a good source.” Groups should make their report to the entire class and can be challenged if another group disagrees with their assessment.

* * * TEACH continues on p. 90

ANALYZING YOUR NUTRITIONAL NEEDS
**Labeling About Fat** The label makes total fat and saturated fat values very visible, but reading the ingredients list will give you a more complete picture. The values listed on the label include all naturally saturated fats unless they are less than 0.5 g. If you want to limit your intake of saturated fat from both animal and vegetable sources, read the label and look for the words "hydrogenated" or "partially hydrogenated" used to describe a vegetable oil. Even though these vegetable oils are naturally unsaturated before hydrogenation, they will not be included as unsaturated fat.

**Know Your Fat Limit**

<table>
<thead>
<tr>
<th>Daily caloric level</th>
<th>1600</th>
<th>2000</th>
<th>2500</th>
<th>2800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fat (grams)</td>
<td>52</td>
<td>65</td>
<td>81</td>
<td>91</td>
</tr>
<tr>
<td>Saturated fat (grams)</td>
<td>18</td>
<td>20</td>
<td>25</td>
<td>31</td>
</tr>
</tbody>
</table>

**Labeling About Fiber** If the labeling claims that the product is high in fiber, either the food must be low in fat or the level of total fat must appear next to the high-fiber claim.

**Terms You Should Know**

- **High fiber**: 5 grams or more per serving
- **Good source of fiber**: between 2.5 and 4.9 grams per serving
- **More or added fiber**: at least 0.5 gram more per serving than the reference food

**Labeling about Carbohydrates** The label will provide values for the amount of dietary fiber, but it will make no distinction between fiber in the food that dissolves and does not dissolve. If you are trying to calculate the number of calories from carbohydrates, don’t include the grams of fiber in the calculation. Fiber does not provide calories.

**General Labels** Food manufacturers sometimes alter food in order to make it more appealing to the consumer, who may be concerned about the number of calories, the sodium level, or the fat content. Two of the terms, light and lite, are commonly used to

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**TEACH continued**

**Teaching Transparency 4B**

**Dietary Guidelines for Americans**

Use this transparency of Figure 4.13 to review the dietary guidelines, and discuss how the Guidelines for Improving Your Food Selections relate to them.

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**Class Discussion**

**Strategies for Lower Sugar and Fat Intake**

After students have read the guidelines for improving food selections, ask them to suggest realistic substitutes for soft drinks or sodas that are lower in sugar (club soda, fruit juice and fruit juice blends, milk, herbal tea, plain water or specialty waters). Then have them review the guidelines for reducing dietary fat. Ask the class to vote on their "top five"—the five guidelines for reducing fat intake that can be most realistically implemented.

**Debate the Issue**

**How Much Fast Food?**

Have students debate this issue: Teenagers should limit their fast-food meals to no more than three a week. Allow time for students to gather information about fast-food meals. Be certain that students consider factors such as the nutritional content of fast-
These altered foods with their reference foods and may mean one of two things:
- the altered product contains one-third fewer calories or half the fat of the reference food, or
- the sodium content of a low-calorie, low-fat food has been reduced to half of its original sodium content.

The American Diet
How does the American diet compare with recommended dietary guidelines? A meal that is fairly standard for teenagers consists of a hamburger, a large order of french-fried potatoes, and a cola drink. According to the Daily Reference Values for a 2000 calorie diet, 240 calories (10 percent) should come from protein. For a 2500 calorie diet, 300 calories (10 percent) should come from protein. In a day, no more than 30 percent of your total calories should come from fats, 10 percent from proteins, and 60 percent from carbohydrates. Figure 4.22 is a summary of the nutritional content of this fast food.

As you can see, this one meal provides more than 40 percent of the calorie intake of a 2000 calorie diet and more than 30 percent of a 2500 calorie diet. This meal contains an excessive amount of protein, but far too little fat and far too few complex carbohydrates.

Guidelines for Improving Your Food Selections
Now that you have read about basic nutrition principles, you can use the following points to guide you in making nutritious food selections.

1. Sugars
   - To reduce the amount of refined sugars in your diet you can
     - reduce the number of soft drinks you have each day.
     - eat fresh fruit for dessert instead of baked goods.
     - read food labels and reduce your intake of foods high in sugar.
     - reduce the amount of sugar you add to foods.

2. Complex Carbohydrates
   - To increase the percentage of complex carbohydrates in your diet you can
     - eat more fruits, vegetables, cereals, breads, and legumes at each meal.
     - eat fresh fruits as snacks.
     - increase the number of whole-grain products you eat (such as whole-wheat bread rather than white bread).
     - eat more pasta, noodles, and rice.

3. Fats
   - To reduce the amount of fat in your diet you can
     - substitute complex carbohydrates for foods high in fat.
     - reduce the amount of high-fat meats you eat (for example, regular hamburger, ribs, and hot dogs).
     - eat lean meats (for example, white chicken meat roasted without the skin).
     - increase the amount of fish in your diet as a substitute for meats.
     - reduce the amount of nuts, peanuts, and peanut butter in your diet.
     - trim fat from meat before cooking.
     - limit fried foods.
     - bake, broil, or cook meats so that fat will drain away from food as it is cooked.
     - substitute skim or low-fat milk for whole milk.
     - use low-fat salad dressings.
     - reduce the amount of butter or margarine you use.
     - reduce your use of eggs.

Role-Playing
Making a Shopping List
Have pairs of students take turns role-playing friends making a shopping list for one day’s menu. One student can criticize the other’s choice of breakfast, snack, or other food. The other must defend the choice by providing facts about the item’s nutritional value. Have the class comment about how convincing the actors are and whether their choices are healthful.

Reinforcement
More Than the Price Is Wrong
Processed foods not only are generally more expensive ounce-per-ounce than fresh foods, but also are likely to contain more saturated fats, sodium, and sugar. These ingredients are added to increase a product’s shelf life and enhance its taste. Encourage students to read labels on processed foods to become aware of the “hidden” calories from fats and sugars and the high sodium levels found in some of them.
Background

The Chinese Diet

Studies suggest that the traditional Chinese diet is much better for your health than the American standard. The Chinese consume a third of the fat Americans do and twice as much starch, and their plant-rich diet includes three times as much dietary fiber. Only 7 percent of protein in the Chinese diet comes from animal sources, whereas 70 percent of Americans' protein comes from animals. Unfortunately, most Chinese restaurants in the United States prepare their dishes to suit American tastes. As a result, the food often contains unacceptably high levels of sodium and fat. When ordering Chinese food, it's best to choose steamed dishes or ones that have been stir-fried in a small amount of oil.

Dietary Patterns and Food

Selection Tips

Although most Americans eat many of the same kinds of foods, people have some distinct dietary patterns based on their cultural backgrounds.

Jewish Foods

Jewish dietary laws originated as the "Rules of Kashruth," and all foods prepared according to these rules were called "kasher." Most of these laws today apply to methods of slaughter, preparation, and serving of meats, and to restrictions on the combination of meats, fish, and egg products. There are also special foods to commemorate or celebrate special occasions, such as challah (white bread), gefilte fish (chopped fish), matzoh (unleavened bread), and potato latkes (fried grated potatoes).

African-American Foods

The African-American diet includes nutritious items, such as collard greens, sweet potatoes, corn bread, rice, black-eyed peas, lima beans, kidney beans, navy beans, and pinto beans. This selection of foods provides good sources of vitamins A and C, protein, and complex carbohydrates. Fish and chicken are commonly used instead of red meat. Salt, butter, fatback, and salt pork are used in flavoring foods. Limiting items high in salt and fat provides an African-American diet with the nutrients for good health.

Mexican Foods

Today's Mexican food customs represent a blend of the food habits of early Spanish settlers in this country and Native-American tribes of the southwest. With this mixing of customs, three foods emerged as important: dried beans, chiles (chili peppers), and corn. Corn is the basic grain for breads and cereals. masa is a dough made from dried corn that is soaked in water and lime, boiled, then ground into a paste-like dough. This dough is made into tortillas.

Puerto Rican Foods

Although Puerto Rico shares a common heritage with Mexico, Puerto Rican foods include many fruits and vegetables not available in Mexico, such as viandas (starchy fruits and vegetables: yams, sweet potatoes, green bananas, and cassava). A typical day's menu might include coffee for breakfast, viandas and codfish for lunch, and rice, beans, and viandas for dinner.

Cooperative Learning

Cooking Up Good Health—International Style

Assemble a collection of cookbooks of other countries—library offerings may
Chinese Foods  Chinese cooking is based on enhancing the natural flavor of foods and preserving their color and texture. Chinese prefer to cook fresh foods quickly, stir-frying them. Vegetables are cooked slightly to retain crispness, flavor, and vitamins.

Japanese Foods  The Japanese diet contains far more seafood, particularly raw fish, than does the Chinese diet. A traditional Japanese meal might begin with unsweetened tea, followed by tofu or soybean cake served with raw fish (sashimi) or radish (konmon), followed by broiled fish, vegetables, steamed rice, fruits, soup, and more tea.

Selecting Foods from Other Cultures

Italian  Pasta is a good choice for carbohydrates. Select vegetable sauces without cream, and dishes without a lot of high-fat cheese and meat. Italian lettuce is good, low-calorie choices for desserts.

Choose steamed, broiled, or stir-fried dishes rather than deep-fried. Limit your use of soy sauce, which is high in sodium. Select noodle dishes with soft noodles rather than hard needles, which are fried. Dishes with tofu are high in protein and low in calories.

French  Avoid foods with rich sauces like hollandaise and bechamel that are very high in fat and cholesterol. Select foods prepared in wine sauces and ask how the sauce is prepared, to assure that it is low in fat and calories. Foods from southern France are generally prepared with olive oil and with lots of vegetables, which would provide more nutrition with fewer calories.

Greek  Select Greek salads, but use the cheese, anchovies, and olives sparingly, as they are high in fat and sodium. Select fish dishes or broiled shish kebab. Avoid dishes with phyllo dough because they are generally made with lots of butter.

Eastern Indian  Foods from this culture are generally low in saturated fat and cholesterol. Look for seekh kabab, marinated lamb or chicken, and fish cooked in clay pots. Avoid foods cooked in coconut milk or cream, as they are high in saturated fat.

Mexican  Limit tortillas that are fried with lard. Select shrimp or chicken tostadas made with corn tortillas that are baked. Look for dishes without cheese or ask for the cheese on the side. Rice and beans are good choices because they are low in fat and provide complete protein. Limit refried beans as they are often cooked in lard.

Middle Eastern  Select dishes made with vegetables, grains, and spices, like couscous or steamed bulgur, topped with vegetables or chicken. Shish kebab is also a good choice as long as it is not basted in butter. Fresh fruits such as melons, figs, and grapes are excellent choices for dessert.

Southeast Asian  Limit deep-fried foods and cream soups. Select stir-fried dishes with fresh vegetables and small portions of meat or fish. Grilled meat dishes and hot-and-sour soup are also good low-fat choices.

be supplemented by books brought from home. Set up a small group to represent each cuisine. Within each group, allow students time to explore the ingredients and preparation methods for typical foods of the culture. Their goal is to prepare a 3 to 5 minute presentation describing the healthfulness and balance of ingredients of several recipes.

TEACH continues on p. 94
Life SKILLS

Review the directions for logging in foods and beverages. Be certain that students understand what constitutes a serving. Students can copy the log form or use Life Skills Worksheet 4A to record their eating habits.

Background

Common Vegetables and Amino Acids

Researchers have found that 11 different vegetable juices contain the types of free amino acids necessary for protein building. Careful blending of the juices from various fruits, vegetables, and seeds can produce a drink that contains all 20 of the essential amino acids. There is no such juice on the market right now, but with additional research, it could become one of the foods of the twenty-first century.

Checking Your Diet Against the Food Pyramid

The first step toward developing healthful eating habits is to identify how you're currently eating. Keep a food and beverage diary for three days. Stick to these guidelines when making entries in your diary. For each day...

1. Write down everything you eat and drink at each meal, record all snacks, write down the time you eat as well.

2. Be specific when you identify the food at each meal and snack. Is it whole wheat bread or white bread? Is it low-fat yogurt or fat-free yogurt? Instead of writing "hamburger," specify 1 burger bun, 3 ounces of meat, 1 slice of tomato, 1 tablespoon of mayonnaise.

3. Be precise when you record the amounts of food. For instance, write 1 cup of cereal instead of a bowl. You may need to measure to be sure of the exact amount you are eating.

4. Record how the food was prepared. Was it baked, broiled, fried, fresh, or frozen?

Next, make a list of how many servings you should be eating daily from each group in the food pyramid, and compare each day of your log to the list.

How did you do?
Is there one group that is especially high or low?
How could you improve that one group?

<table>
<thead>
<tr>
<th>Food group</th>
<th>Recommended number of servings</th>
<th>My servings for the day</th>
<th>Number over or under (+ or -)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread and cereal group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable group</td>
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<td>Fruit group</td>
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<td>Dairy products group</td>
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<td>Protein foods group</td>
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<tr>
<td>Fat and sugar group</td>
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Cooperative Learning

Ranking Advertised Products

Ask students to bring in the packaging from a food product they see advertised. Divide the class into small groups to study the ingredients list on one or two of the labels, and classify the ingredients in them according to the food pyramid groupings. Most products will contain nutrients from more than one group. As a class, rank the products according to their nutritional values and decide which are healthful choices and which should be eaten in moderation.

Class Discussion

What's the Motivation?

Ask: What do you think it would take to convince teens to switch from unhealthful snack foods to healthful snack foods? [Responses may include education about food choices, a desire to be healthier, a conviction that some snack items really do harm their health, and the better advertising of health-enhancing snacks, and better availability of such snacks.]

Journal 4D

Plan for Improving Your Diet

Have students write in their Journal plan for improving their food selections. Students should choose seven...
Snacks

Snacks are an important part of your diet. The items shown are examples of low-sugar, low-fat snacks.

Section 4.3

Background

Vegetarian Diets and Health

Recent studies of people on vegetarian diets have documented some clearcut benefits of vegetarianism, including the following:

- A 40 percent lower death rate from cardiovascular disease than the average American
- A 41 percent fewer deaths from cancer
- A reduced risk of adult-onset diabetes

Doctors still recommend caution. Other factors, such as exercise and abstaining from smoking, could be partly responsible for the observed benefits. Some health experts say that it may not be necessary to eliminate meat completely. Diets that include small portions of lean meat or fish may be just as healthy. In addition, there is probably little or no benefit from a meatless diet that includes large portions of high-fat dairy products and fried foods.

Snacks

Snacking, in and of itself, is not a bad habit. Some nutritionists actually recommend small meals and snacks rather than three large meals per day. Most weight loss programs include snacks as part of the meal plan. What are nutritious snacks? Where do they fit into your overall diet?

Fruits

Fresh fruits, dried fruits, or canned fruits without added sugars provide vitamins and are a quick energy source. Fruit ices and sorbets make good low-calorie substitutes for ice cream.

Vegetables

Fresh vegetables are low in fat and low in calories.

Grains

Baked tortilla chips, low-fat snack chips (read the labels), pretzels, unbuttered popcorn, whole-grain homemade baked goods (using low-fat ingredients), ginger snaps, newtons, and angel food cake can be low in fat and calories.

Milk products

Low-fat or nonfat yogurts and cheeses make excellent snacks.

Foods to Limit: The following are high in sugar or fat and provide little nutrition: all types of candy, store-bought cookies, pies, cakes, coconut, deep-fried chips, desserts with cream or cream cheese, specialty ice cream, and milk shakes made with whole milk and ice cream.

Suggestions from the Dietary Guidelines for Americans or the Guidelines for Improving Your Food Selections and explain how they will implement the suggestions in their own diet. Suggest that students review their progress on each suggestion during the next few weeks.

- TEACH continues on p. 96
Selecting Foods When Eating Out

There are healthful choices in almost any restaurant. If you take the time to look and give some thought to your choices. Remember the nutritional principles that guide your choices in other settings. Order your meal by selecting a variety of foods from several food groups in the pyramid, and try not to overeat. If you watch what you eat for most of the week, one meal—even one that is high in calories, fat, and sodium—will not cause a problem if you are a healthy person. Rather than avoiding certain things when you eat out, take positive steps.

- If you want salad dressings, toppings, gravies, or other high-fat additions to food, ask for them to be brought “on the side,” and use only small amounts.
- When possible, choose low-fat alternatives, such as fish, pasta with vegetables, chicken with its skin removed, low-fat milks or cheese, and baked potatoes instead of fried potatoes.
- Even most fast-food restaurants now offer alternative menus. When possible, choose broiled or baked foods rather than fried foods.
- Choose whole-grain breads or bagels rather than biscuits.

Teenage Nutritional Needs

The onset of puberty brings many bodily changes. During the teenage years maturation speeds up, creating greater demands on body processes. The hormonal changes that control the development of sex characteristics have an important influence on growth and development.

Both boys and girls experience increased demands for energy, protein, vitamins, and minerals to deal with developmental changes. When you snack to get energy, select snacks with nutritional value, rather than candy bars or high-fat desserts. You really need protein for muscle growth along with calcium and iron for other developmental changes. Teens tend to start drinking milk as they get older. Carbonated beverages do not provide the calcium needed to increase your bone density. Girls must take care to select foods high in iron since they begin to lose iron when menstruation begins. This iron loss results in fatigue and iron-deficiency anemia. Select foods high in vitamins and minerals.

To summarize, the most common dietary deficiencies seen among teenagers involve a lack of vitamins and minerals such as B, C, A, iron, and calcium.

Nutritional Needs of Pregnant Women

As with the teenage years, pregnancy carries with it increased demands for nutrients. The development of the fetus is a period of rapid physical growth from the fertilized egg to a full-term baby. Good nutrition during this time is a major factor in determining the baby’s overall health. Pregnant women need to increase the number of calories they consume to meet energy demands and to increase the amount of protein to make tissues. For example, protein is necessary for growth of the placenta, growth of breast and uterine tissue, formation of amniotic fluid, and increased blood volume, all of which provide the right environment for the growing fetus.

Getting adequate nutrition with excessive weight gain is a challenge for pregnant mothers. Eating from all but the top group in the food pyramid will help both the mother and the developing infant.

Vegetarian Diets

Vegetarians choose not to eat meat and its products. Some also avoid dairy products. The number of vegetarians in this country...

Class Discussion

Special Nutritional Needs and Risks

Stress the risks teens take when they fail to eat a balanced diet, especially pregnant teens. A diagram such as the one shown on the right might be placed on the chalkboard as students provide causes of poor teen nutrition and list possible results.
Nutrition and Athletes

Teens who are athletes need a slightly greater amount of protein than teens who are not athletes. Under ordinary conditions, proteins are not used for fuel like carbohydrates and fats are, but in endurance events some amino acids are actually used for fuel. To use fuel rapidly, an increase in protective nutrients called antioxidants is needed. Vegetables are a good source of antioxidants and should be included in every athlete’s diet.

Athletes must be well hydrated if they are to perform their best. For activities lasting under two hours, water can adequately replace any fluid that has been lost. In events lasting longer than two hours, however, both water and electrolytes must be replaced. Sports drinks that are low in sugar are recommended for use during prolonged endurance events. Some newer drinks now include dextrose, carbohydrates that are readily digested and available to the body for immediate use.

Section 4.3

Review Answers
1. Answers will vary, but students should explain something they have learned about each of the seven guidelines.
2. a. Bread, cereal, rice and pasta group
   b. Bread, cereal, rice and pasta group
   c. Vegetable group
   d. Fats, oils, sweets group
   e. Fats, oils, sweets group
   f. Meat, poultry, fish, dry beans, eggs and nuts group
   g. Vegetable group
   h. Bread, cereal, rice and pasta; depending on the recipe, it may contain something from the fats, oils, sweets group
3. a. 60 mg
   b. 10 percent
   4. 21 g of fat at 9 calories per gram equals 189 calories from fat. Divide this by 430 total calories, and it equals approximately 0.44. Multiply this by 100, and it equals 44 percent fat. Because the total percentage of calories from fat should not exceed 30 percent, this is far too much fat from one source. (Dividing the burrito’s total weight, 296 g, by 21 g of fat tells what percent of the total weight is fat. It does not address the calorie issue.)

Extension
Food and Advertising
Have students keep a log of television commercials about food for one weekend. They should analyze the types of food promoted and make a graph to show where these foods fit on the food pyramid. Students should then write a critique of the ads from a nutritionist’s point of view.

ASSESS
Section Review
Have students answer the Section Review questions.

Alternative Assessment
Using the Food Pyramid
Have students draw a food pyramid with the food groups represented and write a healthful day’s menu around it, drawing arrows from each item to its food group and totaling the numbers of servings for each group for the day.

Closure
Evaluating Food Labels
Provide each student with a food label to study. Ask that students write a paragraph evaluating the food’s fat, sugar, and sodium contents, calories per serving, and percentages of the Daily Reference Values.