**Student Learning Objectives:**

1. Identify general nutrients the body needs.
2. Identify calcium and vitamin D intake and physical activity as protectors from developing osteoporosis.
3. Choose a snack using specific criteria, such as fat, carbohydrate, fiber, calcium and calorie content.

**National Health Standards:**

- Core Concepts
- Core Concepts
- Self Management

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**Lesson Synopsis**

Introduce the nutrition unit. Identify the six nutrients the body needs daily and common food sources for each nutrient. Discuss the role of calcium and vitamin D in bone health and the prevention of osteoporosis. Identify snacks that are good sources of nutrients and one snack that provides calcium and vitamin D.

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<th>Materials Needed</th>
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<td>• Poster Set: “MyPlate: Healthy Food Choices,” Michigan Model for Health Clearinghouse</td>
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<td>Teacher Input</td>
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<td>Health Education Materials</td>
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<td>• Poster: “Nutrients: Carbohydrates, Fats,” Michigan Model for Health Clearinghouse</td>
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<td>• Activity Cards: “Food Labels,” Michigan Model for Health Clearinghouse, eight sets</td>
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<td>• Food Label Signs: “Note the Amount” and “Percent of Daily Value,” Michigan Model for Health Clearinghouse</td>
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<td>• Poster Set: “MyPlate: Healthy Food Choices,” Michigan Model for Health Clearinghouse</td>
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<td>Application or Skill Practice</td>
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<td>• Slide Master: “Nutrients: Vitamins, Minerals, Proteins” (Optional)</td>
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<td>• Slide Master: “Nutrients: Carbohydrates, Fats” (Optional)</td>
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<td>• Student Worksheet: “Nutrients”</td>
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<td>• Teacher Key: “Nutrients”</td>
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<td>• Pencils or pens</td>
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<td>• Food labels and packages including many snack foods</td>
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<td>• Self-adhesive notes, at least 4” x 6” (Suggestion)</td>
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<td>• Non-permanent, dry erase marker (Suggestion)</td>
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Supplied by the Teacher

- Pencils or pens
- Food labels and packages including many snack foods
- Slides (Optional)
- Projector (Optional)
- Self-adhesive notes, at least 4” x 6” (Suggestion)
- Non-permanent, dry erase marker (Suggestion)
- Computer with Internet access (Extension Activity)
Preparation

Prior to the Lesson:
• Several days before the start of this nutrition unit, ask students to bring to school at least three food labels or packages to use with the lessons in this unit. Encourage students to bring labels from favorite snack foods or beverages. Collect food labels for students who do not bring any.
• Decide if you will invite a member of your food service staff to come into the classroom to talk about the nutrients in foods served in the lunchroom.

For Introduction:
• Display the poster, “Fill Your Plate,” from the poster set, “MyPlate: Healthy Food Choices.” Create a space so the poster can be displayed throughout the next few health lessons.
• Have the “Food Group Signs” from the poster set, “MyPlate: Healthy Food Choices,” ready to post near the poster.

For Teacher Input:
• Display the poster, “Nutrients: Vitamins, Minerals, Proteins” and “Nutrients: Carbohydrates, Fats.” If wall space is limited, prepare the optional slides to use instead of the posters.
• Display the poster, “Using Food Labels to Guide Decisions.” Have the food label signs, “Note the Amount,” and “Percent of Daily Value,” ready to display around the poster. Create a space so they can be displayed throughout the next few health lessons.
• Display the rectangular physical activity sign from the poster set, “MyPlate: Healthy Food Choices.”
• Decide how to form six to eight small groups.
• Duplicate the student worksheet, “Nutrients,” for each student.

For Application or Skill Practice:
• Decide how to form small groups with three or four students in each group. You may want to use the previously formed groups.
• Duplicate the student worksheet, “Snacking for Health,” for each student.

For Closure:
• Duplicate the family resource sheet, “Healthy Snacking,” for each student to take home.

Time-Saver Tip: In the Application or Skill Practice portion of the lesson, students are asked to record three snacks. Two of the snacks must contain two or three nutrients. The third snack must contain calcium and vitamin D. Then, share their ideas in small groups of three or four. To save time, use the groups formed in the Teacher Input section of the lesson. Assign each small group member a different assignment. Two of them would find snacks with two or three nutrients and one or two group members would find a snack with calcium and vitamin D. Then, they can share ideas and complete their worksheets together.
**LESSON PROCEDURE**

**Introduction:** Review the food groups and introduce nutrients as the topic for this lesson.

Approximately 3 minutes

<table>
<thead>
<tr>
<th>Instructional Steps</th>
<th>Script &amp; Detailed Directions</th>
<th>Extensions &amp; Suggestions</th>
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</table>
| Introduce the unit: | *Think of your favorite snack. A snack is a small meal you eat between breakfast, lunch, and dinner.*  
 *We are beginning a unit that will help us know how to choose snacks that will keep us healthy and full of energy. We will learn about the special substances foods contain and how to tell if a food is a healthy choice. We’ll also have a chance to put our knowledge to work by planning nutritious snacks and meals.* |  |
| Review the names of the food groups.  
Display the poster, "Fill Your Plate," and add the "Food Group Signs" from the poster set, "MyPlate: Healthy Food Choices." | *Who remembers the name of one of the food groups?*  
Cell on students until all the food groups are named. Fill in the plate with the "Food Group Signs" as the groups are named. The following are the titles used by the United States Department of Agriculture.  
*Answers:*  
- fruits  
- vegetables  
- grains  
- dairy  
- protein foods  
Post the rectangular "Food Group Signs" around the poster.  
*Notice that the size of each section on the plate gives us a clue about how much we should eat from each food group. We’ll talk more about that later.*  
*Why do you think our government has identified these food groups and has stated that the healthiest choice is to eat a variety of foods from all of the food groups?*  
*Answer:* If we eat a variety of foods from all the food groups, we will get the nourishment our bodies need to be healthy.  
*Think about whether or not your favorite snack belongs in one of the food groups.* | *The food groups were taught or reviewed in the Michigan Moda® at grades 1, 2, 3, and 4.*  
*Encourage your food service partners to display posters in the cafeteria that describe the food groups. Check the United States Department of Agriculture website for resources.*  
*www.ChooseMyPlate.gov* |
| Introduce the topic for this lesson. | *Today we will learn about the substances contained in different foods that we need to grow and stay healthy. They are called nutrients.* |  |
Teacher Input: Introduce the six nutrients and identify food sources of different nutrients by examining food models.

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<tbody>
<tr>
<td>Identify the six nutrients.</td>
<td>There are six nutrients every person's body needs: vitamins, minerals, proteins, carbohydrates, fats, and water.</td>
<td>If students are familiar with nutrients, have them list the nutrients they remember.</td>
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<tr>
<td>Display the two posters, &quot;Nutrients: Vitamins, Minerals, Proteins&quot; and &quot;Nutrients: Carbohydrates, Fats,&quot; or use the slides.</td>
<td>Point out the five nutrients on the posters or slides and indicate that they will learn about the sixth nutrient in another lesson.</td>
<td>Invite a member of your food service staff to come into the classroom to talk about the foods served in the lunchroom and their nutrients. Have the students work with the food service staff to create labels to be displayed in the lunchroom indicating the various nutrients found in foods served.</td>
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<td>Divide the class into six to eight groups and distribute a set of food labels to each group, and a student worksheet, &quot;Nutrients,&quot; to each student.</td>
<td>If you eat a variety of foods from each food group, you will be more likely to get the nutrients your body needs.</td>
<td>If students have brought food labels or packages, be sure to include them with the pre-prepared labels.</td>
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<td>Explain where to find the nutrients listed using the poster, &quot;Using Food Labels to Guide Decisions.&quot;</td>
<td>Let's see which nutrients are found in commonly eaten foods.</td>
<td>You may want to use self-adhesive notes to record the students' ideas on the posters. If your posters are laminated, you can use a non-permanent, dry erase marker and record directly on the posters or on the slides.</td>
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<tr>
<td>Identify specific types of nutrients within each of the five nutrient categories. Use the teacher key, &quot;Nutrients,&quot; for ideas.</td>
<td>Divide the class into small groups. Assign a student in each group to be the leader and a second student to be the spokesperson.</td>
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<td>Give each group a set of the food labels and enough student worksheets so that each group member will have one. Explain the task.</td>
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<td>You will complete this task as a team. Your leader will divide the food labels among your group members so that each of you has a similar number of labels.</td>
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<td>Look at the food labels for the nutrients contained in the food. I'll show you where to look on this poster.</td>
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<td>Point out the nutrients on the poster.</td>
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<td>In your group, find two food sources for each of the five nutrients. We will explore the last nutrient, water, later. Write the sources on your worksheet.</td>
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<td>After five minutes, have each group's spokesperson report the findings for vitamins and minerals. Encourage students to add ideas to their worksheets if they wish.</td>
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<td>You can see from the information on your food labels that some nutrients, such as vitamins and minerals, have specific names.</td>
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<td>See if your group can name three specific vitamins and three specific minerals.</td>
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<td>Gather ideas from each group's spokesperson. Have students record the specific vitamins and minerals on their worksheets.</td>
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<td>We can also break proteins, carbohydrates and fats into smaller groups.</td>
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Protein is either a plant or an animal protein. Who can tell me a source of protein that is from a plant?

Answers: dry beans and nuts

Who can tell me a source of protein that is from an animal?

Answers: meats and poultry

Animal protein tends to be higher in fat, so eating low-fat, or lean protein foods is best.

Note if the sources of protein on your worksheet are from an animal or a plant.

Sugar, starch, and fiber are all carbohydrates.

What are some sources of carbohydrates?

Answers: breads, rice, pasta, bagels, cereal, etc.

There is also more than one kind of fat. There are saturated and unsaturated fats. Recently, we have heard more about another type of fat, trans fat. It is best to eat fewer saturated and trans fats.

What are some sources of fat?

Answers: butter, meats, ice cream, etc.

As you can see, the six nutrients become many different kinds of specific nutrients. The body needs different specific nutrients to stay healthy. That is why eating a variety of foods from each food group is important.

Find the serving size and percentage of nutrients on the food labels. Post the food label signs, "Note the Amount," and "Percent of Daily Value."

Look at a food label and find the serving size.

Print out the location on the poster and post the food label sign, "Note the Amount."

The serving size is how much of the food is typically eaten at one time. Packages of food often have more than one serving. Next, find the percentage of each nutrient contained in one serving. It will be in the column on the right. We'll use this information later.

Print out the location on the poster and post the food label sign, "Percent of Daily Value."

Identify calcium and vitamin D as essential nutrients for bone health and the prevention of osteoporosis later in life.

Now we're going to focus on one mineral and one vitamin that work together to make healthy bones.

Raise your hand if you have heard of the condition called osteoporosis.

The key concept is that prevention of osteoporosis begins in childhood and adolescence.
Write the word “osteoporosis” on the board.

**What do you know about this condition?**

Augment the students’ responses with the following explanation.

Osteoporosis is a disease in which bones become fragile and are more likely to break.

Osteoporosis usually begins to show up in people over fifty years old. People who have this condition may not have understood that the time to build strong bones is when you are young. You build strong bones, or bone density, until you are 20-30 years old. Then, you can work to maintain your bone strength, but you do not add to your bone density. So, it’s important to learn how to build strong bones now.

Building strong bones requires the mineral calcium and the vitamin D.

Calcium needs vitamin D to be converted into bone tissue and build bone density. Getting enough of these two nutrients when bones are being formed and are growing is very important.

Write the formula below on the board:

Calcium + Vitamin D _________ = Strong Bones

Leave a space between “Vitamin D” and the “=” sign. You will fill it in later.

Look through your food labels again and quickly name some good sources of calcium and vitamin D. See if you can find foods that contain both calcium and vitamin D.

Ask students to tell the class the foods they identify. Record them under the formula.

The body also makes vitamin D when it is exposed to the sun. How much vitamin D a person gets from the sun depends on where he or she is, how much time is spent outside, and the person’s use of sunscreen.

You need one more thing to prevent osteoporosis: physical activity. Physical activities where you are carrying your full weight are the best for building strong bones. These are called weight-bearing activities. Jumping rope, running, climbing stairs, and playing soccer and basketball are all examples of this type of physical activity.

Write “physical activity” in the space left in the formula.
Snacking for Health

Directions: List snacks you might eat during one day.
- Include two snacks that contain two or three nutrients.
- Include one snack that contains calcium and vitamin D.

Morning Snack: ____________________________
Serving Size: ______________________________

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<thead>
<tr>
<th>Nutrients Contained in This Snack</th>
<th>Percentage in Each Serving</th>
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Afternoon Snack: __________________________
Serving Size: ____________________________

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<th>Nutrients Contained in This Snack</th>
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Evening Snack: ____________________________
Serving Size: ____________________________

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<tr>
<th>Nutrients Contained in This Snack</th>
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Did you know...

- Many of our nation's children are overweight.
- The food and physical activity choices children make today will affect their health today, tomorrow and in the future.
- Snacks account for about 20% of the nutrients and calories a typical child consumes.
- Children can learn to eat healthy snacks that are low in fat and added sugar.

We have been learning about food and what to eat to stay healthy. Your child knows about the six essential nutrients. He or she also knows how important it is to choose snacks that contain nutrients. Fifth grade children are growing rapidly. They need nutrients to build new cells for growth, and they need extra energy for all their daily activities. Carefully chosen snacks can provide the energy and nutrients children need and are often lacking.

Six Essential Nutrients
- Vitamins
- Minerals
- Carbohydrates
- Fat
- Protein
- Water

Helping Your Child Select Healthy Snacks

Ask your child to make a snack list for your next trip to the grocery store. Remind your child of what he or she has learned about the importance of choosing nutritious snacks. There are many possible choices!

- Low-fat microwave popcorn
- Peanut butter sandwich on whole grain bread
- Low-fat cottage cheese with fruit
- Fresh fruit with low-fat yogurt for dipping
- Snack-size, low-fat pudding
- Fresh vegetables, like baby carrots, with low-fat salad dressing dip
- Unsweetened whole grain cereal with sliced fruit
- Lean meat and low-fat cheese sandwich on whole grain bread
- Baked chips with salsa
- Applesauce in a single serving container
- Animal crackers or graham crackers
- Whole fruit
- Box of raisins
- Trail mix with dried fruit
- Pretzels or rice cakes
- Whole grain crackers
- Fig bars
YOUR CHILD HAS A

BONE BANK ACCOUNT!

The human body is always making withdrawals and deposits in its "bone bank account." During childhood and the teenage years, more deposits are made into the bone account than withdrawals are taken out. The bone bank account gets larger and larger. Around age 20, the bone bank account is as large as it will ever get. After that, the body withdraws more from the bone account than it puts in. If the bone bank account isn’t large enough, the bones can become weak later in life. This is called osteoporosis. People with osteoporosis have fragile bones that break easily.

Now is the time for your child to make as many deposits into his or her bone bank account as possible!

HELP YOUR CHILD BUILD STRONG BONES

There are four easy things you and your child can do to build strong bones.

1. Get plenty of calcium.
2. Get plenty of vitamin D.
3. Get plenty of physical activity, especially weight-bearing activities, such as jumping rope, jogging, skating, playing soccer or tennis or basketball, stair-climbing, and walking.
4. Use good posture.

We have learned that snacks can help meet the calcium and vitamin D needs for building strong bones. Here are a few favorites:

- Low-fat or fat-free milk
- Low-fat yogurt, frozen yogurt, or ice milk
- Low-fat cheese on a bagel
- Broccoli
- Calcium- and vitamin D-fortified fruit juices
- Cereal fortified with calcium

Busy Lives and Smart Food Choices

It’s important to make smart food choices and watch portion sizes when you are at the grocery store, at work, in your favorite restaurant, or running errands.

Try these tips:

- At the store, plan ahead. Buy a variety of nutrient-rich foods for meals and snacks throughout the week.
- When grabbing lunch, have a sandwich on whole-grain bread. Choose low-fat or fat-free milk, water, or other drinks without added sugars.
- In a restaurant, choose steamed, grilled, or broiled dishes instead of fried or sautéed.
- If a restaurant serves large portions, share a meal or take some of it home.
- On a long commute or shopping trip, pack some fresh fruit, cut-up vegetables, string cheese sticks, or a handful of unsalted nuts. It will help you avoid impulsive, less healthful snack choices.
- Cut up fruit and vegetables and put them in the refrigerator. They’ll be easier to grab for a quick snack.