Choose fat-free or low-fat!

Calcium-fortified

University of Nevada Cooperative Extension

SECONDARY SCHOOL CURRICULUM

www.unce.unr.edu
http://www.unce.unr.edu/blogs/southernarea
http://www.youtube.com/UNRExtension

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A nutrition curriculum for teenagers to increase their awareness of the importance of calcium in the prevention of osteoporosis. This five-lesson curriculum encourages students to incorporate calcium-rich food in their diets and participate in weight-bearing activities.

Developed by

Robin Collins, M.Ed.

Mary Wilson, M.S., R.D.

2013
“Calcium, It’s not JUST milk”

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CALCIUM, IT’S NOT JUST MILK
CURRICULUM INTRODUCTION
“Calcium, It’s not JUST milk”

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Tips for Administering the “Calcium, It’s not JUST milk.” Curriculum in Your Class

- The curriculum is set up so that you can go through each day sequentially as it is written. The first page lists the objectives for that day’s lesson.

- The material may be used as written but try to ask questions to gauge the students’ understanding of the concepts.

- Try to read through the curriculum one day in advance and call Cooperative Extension* if you have any questions about the curriculum content.

- Please check to make sure the PowerPoint presentation is compatible with your computer and call if you need assistance.

- Important vocabulary words will be underlined throughout the lessons, and definitions will be listed in the appendix. These can also be good side topics for discussion.

- Note cards for the PowerPoint presentation are to be used in conjunction with the presentation. The PowerPoint slide will be pictured on the front of the card with important talking points listed on the back.

- Three of the lessons incorporate food tastings in the classroom, which will be brought to you in a cooler with ice packs each day.

- Have fun, and again, call with any questions or comments. Each lesson should account for one entire class period based on your lecture time, the students’ understanding, and time for activities and food tastings.

*University of Nevada Cooperative Extension contacts:

Robin Collins (702) 257-5543
Augusta Washington (702) 948-5977
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Update! 2010 Dietary Guidelines for Americans and MyPlate

On January 31, 2011, U.S. Department of Agriculture (USDA) Secretary Tom Vilsack and Secretary of the Department of Health and Human Services Kathleen Sebelius announced the release of the 2010 Dietary Guidelines for Americans, the federal government’s evidence-based nutrition guidance to promote health, reduce the risk of chronic diseases, and reduce the prevalence of overweight and obesity through improved nutrition and physical activity.

MyPlate was introduced on June 2, 2011 by First Lady Michelle Obama and Vilsack as the government’s primary food group symbol to help consumers adopt healthy eating habits consistent with the 2010 Dietary Guidelines for Americans. The new MyPlate icon shows the fruit, vegetable, grains, protein and dairy food groups.

The 2010 Dietary Guidelines and MyPlate highlight these selected messages for consumers:

Balance Calories
- Enjoy your food, but eat less.
- Avoid oversized portions.

Foods to Increase
- Make half your plate fruits and vegetables.
- Make at least half your grains whole grains.
- Switch to fat-free or low-fat (1%) milk.

Foods to Reduce
- Compare sodium in foods such as soup, bread and frozen meals, and choose foods with lower numbers.
- Drink water instead of sugary drinks.

The focus of the Calcium, It’s not JUST milk Program is on improving students’ awareness and knowledge regarding the importance of consuming adequate calcium as well as increasing their consumption of calcium-rich foods, the 2010 Dietary Guidelines for Americans emphasize the importance of consuming fat-free or low-fat milk and milk products, such as milk, yogurt, cheese or fortified soy beverages in Americans’ diets. The guidelines further encourage us to choose foods that provide more potassium, dietary fiber, calcium and vitamin D, which are nutrients of concern in the American diet.

For information on the 2010 Dietary Guidelines for Americans: [www.cnpp.usda.gov/dietaryguidelines.htm](http://www.cnpp.usda.gov/dietaryguidelines.htm)

For information on MyPlate: [www.ChooseMyPlate.gov](http://www.ChooseMyPlate.gov)
Adolescence is the best time to build strong bones. Weak bones break easily and can lead to osteoporosis. Developing peak bone mass early in life is the best protection against osteoporosis, a disease process that starts in childhood, but people often don’t feel or see the results until they are older.

Our bodies need the mineral calcium to build and maintain strong bones and teeth. It also helps in muscle movement, blood clotting, functioning of the nerves, and regulating blood pressure and heartbeats. Research shows that calcium intake plays a role in decreasing risk for high blood pressure, premenstrual symptoms and possibly colon cancer. Calcium has been shown to be a key nutrient in bone health, and therefore we need calcium throughout our lives.

Osteoporosis is a painful condition, which is characterized by decreased bone mass, deterioration of bone tissue, and an increased susceptibility to fractures. About 25 million people in the United States are affected by osteoporosis each year. Fractures in people with osteoporosis can lead to immobilization, institutionalization, curvature of the spine from vertebral collapse and death.

Although more prevalent in women, osteoporosis also occurs in older men. Women lose bone mass rapidly during the first few years of menopause, however by age 65 or 70, women and men lose bone mass at the same rate. About 20 percent of all osteoporotic fractures occur in men.

Peak bone mass, the maximum amount of bone one can develop by the end of their individual skeletal maturation, is, in part, genetically determined, and tends to be higher in African-Americans and Hispanics than in Caucasians and Asians. Environmental factors such as calcium intake and weight-bearing physical activity play an important role in bone development. Adolescence is a critical time in terms of both the amount of bone formed and the rate at which it is formed. About 45 percent of the body’s total skeletal mass is formed during adolescence. The rate at which bone is built is also highest during adolescence, peaking around age 13 for females and 14 1/2 for males.
We can think of our bones as a calcium bank. The more calcium you put in the bank as a teen and young adult means the longer it will last when you start taking it out. Current data indicates that nine out of 10 teenage girls and seven out of 10 teenage boys do not meet the recommended intake of 1,300 mg calcium per day.

Some of the best sources of calcium are milk and dairy products. We can also find calcium in foods such as broccoli, salmon, tofu processed with calcium sulfate, dried beans, lime-treated tortillas, fudge bars and calcium-fortified foods. An 8-ounce glass of milk provides 300 mg of calcium and one cup of flavored low-fat yogurt provides 380 mg. **The focus of this curriculum is for teenagers to increase their awareness of the importance of calcium-rich foods and to incorporate these foods into their diets.**

---

### Adequate Intake for Calcium and Mean Daily Calcium Intake for Males and Females in the US, Grouped by Age and Gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Males &amp; Females</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-13 Years</td>
<td>1,100</td>
<td>1,000</td>
<td>900</td>
</tr>
<tr>
<td>14-18 Years</td>
<td>1,200</td>
<td>1,100</td>
<td>950</td>
</tr>
</tbody>
</table>

---

**Canned Salmon**
Curriculum Content Standards

The “Calcium, It’s not JUST milk,” Curriculum for health classes has been developed to provide the following knowledge and skills (as mandated in the Nevada State Standards for Health).

<table>
<thead>
<tr>
<th>Grade</th>
<th>Standard</th>
<th>Knowledge/Skill</th>
<th>Lesson(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Core Concepts 1.8.1</td>
<td>Analyze the relationship between health behaviors and personal health.</td>
<td>Lessons 1,2</td>
</tr>
<tr>
<td>8</td>
<td>1.8.2</td>
<td>Identify personal behaviors that affect the development and functioning of the body systems.</td>
<td>Lessons 1,2</td>
</tr>
<tr>
<td>8</td>
<td>1.8.4</td>
<td>Describe how age, gender, physical activity, lifestyle and heredity affect nutrient needs.</td>
<td>Lesson 1</td>
</tr>
<tr>
<td>8</td>
<td>1.8.10</td>
<td>Discuss how personal health behaviors can impact risk for illness/disease.</td>
<td>Lesson 2</td>
</tr>
<tr>
<td>8</td>
<td>Analyze Influence 2.8.3</td>
<td>Examine how various sources influence your personal food choices.</td>
<td>Lesson 4</td>
</tr>
<tr>
<td>8</td>
<td>Decision Making 5.81</td>
<td>Defend healthy alternatives over unhealthy alternatives when making a decision.</td>
<td>Lesson 3</td>
</tr>
<tr>
<td>8</td>
<td>5.83</td>
<td>Compare the short-and long-term impacts of health decisions.</td>
<td>Lesson 1</td>
</tr>
<tr>
<td>8</td>
<td>Goal Setting 6.82</td>
<td>Analyze how personal health goals may need to be revised throughout your life.</td>
<td>Lesson 1</td>
</tr>
<tr>
<td>8</td>
<td>Self Management 7.81</td>
<td>Explain the importance of assuming responsibility for personal health behaviors.</td>
<td>Lesson 1</td>
</tr>
<tr>
<td>8</td>
<td>Influencing Others 8.81</td>
<td>Demonstrate ways to influence and support others to make positive health choices</td>
<td>Lessons 4,5</td>
</tr>
</tbody>
</table>
## CURRICULUM INTRODUCTION

<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
<th>Activity</th>
<th>Teaching Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It’s All About Them Bones</td>
<td>Students will complete a 20-question pretest.</td>
<td>Conduct Calcium Pretest Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students will be updated on the 2010 Dietary Guidelines for Americans.</td>
<td>PowerPoint Day 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students will learn why calcium is so important and what it does for their bodies.</td>
<td>Student Workbook 1-4</td>
</tr>
<tr>
<td>2</td>
<td>Get Over The Hump</td>
<td>Students will discuss the consequences of not having enough calcium in their bodies. They will also learn how much calcium people need at different ages.</td>
<td>PowerPoint Day 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cups of Calcium Demonstration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Student Workbook 5-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yogurt Sampling</td>
</tr>
<tr>
<td>3</td>
<td>Know Your Facts</td>
<td>Students will use Nutrition Fact Labels to determine the amount of calcium in food and the criteria for excellent and good sources of calcium.</td>
<td>PowerPoint Day 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Student Workbook 13-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>String Cheese Sampling</td>
</tr>
<tr>
<td>4</td>
<td>Nutrition on a Mission</td>
<td>Students will set a goal to increase calcium in their diet and discuss the amount of calcium in various beverages to determine if they are an excellent, good or low sources of calcium. Students will use the take-home handout to share calcium knowledge with a parent/guardian.</td>
<td>PowerPoint Day 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Student Workbook 19-22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcium-fortified Orange Juice Sampling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Distribute Take-Home Handout</td>
</tr>
<tr>
<td>5</td>
<td>Don’t Leave Your Health in Jeopardy</td>
<td>Students will learn how advertisers persuade consumers to buy their products as a way to persuade and motivate others to increase calcium in their diets. Students will also participate in a summary lesson through use of a Jeopardy game.</td>
<td>PowerPoint Day 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Student Workbook 23-26</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Distribute t-shirts (optional)</td>
</tr>
<tr>
<td>6</td>
<td>Calcium Assessment</td>
<td>A 23-question post-test will be scheduled after the curriculum is completed.</td>
<td>Post-test will be scheduled with the Classroom Teacher and Cooperative Extension Staff</td>
</tr>
</tbody>
</table>
IT’S ALL ABOUT THEM BONES!

DAY ONE:
Welcome to the “Calcium, It’s not JUST milk” Program

I’m a big deal! When you see me, the information that follows is IMPORTANT!

We are going to learn...
- About the 2010 Dietary Guidelines recommendations for calcium.
- What calcium does in the body.
- Why it is important for teens to eat plenty of foods with calcium.

Why is calcium important?
- Builds strong bones and teeth.
- Regulates blood pressure.
- Ensures proper functioning of nerves.
- Prevents a painful condition called osteoporosis.

Where is calcium found in your body?
- Bones
- Teeth
- Muscles
- Blood
- Nerves

Bones are like a piggy bank for calcium.
Your body uses bone as a way to store calcium so that it can use it anytime.
When you are 9 to 19 years old, eating foods with calcium will help you grow the strongest bones possible.

The best time to make deposits to your bone bank is RIGHT NOW — during your teen growth spurt.

Growth Spurt

Two Major Growth Spurts
- First Three Years of Life
- Adolescent Years

Adolescent Growth Spurt:
Increase in growth rate during the teen years when a child matures and physically develops into an adult.
IT’S ALL ABOUT THEM BONES!

To have the strongest bones we have to look at two things . . .

- **Genetics**
- **Lifestyle and Prevention**
  - Eating calcium-rich foods every day
  - Doing weight-bearing physical activities

---

In fact, you can form up to 45 percent of your adult skeleton in your teens!

---

**Peak Bone Mass**

- **What is it?**
  - The highest amount of bone you can build up by the end of your bone growth.

- **What is the age range?**
  - Most reach their peak bone mass when they are **15-30** years old. The best time to build bone is **9-19** years old. After the age of 30, it is harder for the body to build more bone.

- **Boys vs. Girls?**
  - Some girls reach **90%** of their peak bone mass before they are **17** years old!

---

**EXAMPLES OF WEIGHT-BEARING PHYSICAL ACTIVITIES**

- Running
- Jumping rope
- Biking
- Swimming
- Soccer
- Football

---

Doing weight-bearing physical activity strengthens your bones.

Weight-bearing physical activity causes more calcium to be stored in your bones, and that makes them stronger.
Summary

★ The 2010 Dietary Guidelines recommendations:
  - Increase your intake of fat-free and low-fat milk and milk products, such as yogurt, cheese, or fortified soy beverages.
  - Choose foods that provide Calcium, potassium, dietary fiber, and vitamin D.

★ Calcium is a major mineral found in the bones, teeth, muscles, blood and nerves of the human body and is important for building strong bones and preventing a painful disease called osteoporosis.

★ You can think of your bones like a piggy bank for calcium, and the EASIEST time to build up your bones is RIGHT NOW as a teen.

★ Eating calcium-rich foods now will help you reach your highest potential peak bone mass.

★ Engaging in weight-bearing physical activities every day will strengthen your bones.
Using the curriculum information and PowerPoint slides, explain to the students that we are going to analyze one nutrient that is especially important to their age group....calcium.

**Slide 2: Day One**

**Calcium** is a major mineral in the human body. We are going to spend time learning:
- What calcium does in the body
- Why it’s important for teens to eat plenty of foods that are good sources of calcium
- What happens to your body when it doesn’t get enough calcium
- How much calcium people need at different ages
- How to figure out the amount of calcium in food
- What you can do to make sure you are getting enough calcium in your diet

**Slide 3: Objectives**

Today we are going to learn....

About the 2010 Dietary Guidelines for calcium, what calcium does in the body and why it’s important for teens to eat plenty of foods with calcium.

**Slide 4: Dietary Guidelines**

Recently, the U.S. government updated the Dietary Guidelines for Americans. Among the recommendations, getting enough calcium continues to be a key recommendation. In the key recommendation “Foods and Nutrients to Increase,” Americans are encouraged to increase their intake of fat-free (non-fat) or low-fat (1%) milk and milk products, such as milk, yogurt, cheese or fortified soy beverages. We are also encouraged to choose foods that provide calcium, as well as potassium, dietary fiber and vitamin D, which are all nutrients consumed at below recommended levels in the American diet. The new *MyPlate* icon was also recently released supporting the recommendations of the Dietary Guidelines and emphasizing the fruit, vegetable, grains, protein and dairy food groups. As we spend these next five days learning more about why calcium is essential in our diets and how we can get more of it by choosing foods that are good sources of calcium, keep in mind that this information is up-to-date with the current scientific literature and is a key recommendation in the current Dietary Guidelines for Americans and *MyPlate*.
Slide 5: Why Calcium is important

**Calcium** is important for building strong bones and teeth, regulating blood pressure, and proper functioning of the nerves. It is also important in preventing a painful condition known as *osteoarthritis*. Calcium is found in the bones, teeth, muscles, blood and nerves.

Slide 6: Piggy Bank

Calcium is necessary for life. The body uses bone as a place to store calcium, and therefore whenever the body needs calcium, it takes it from your bones. To understand what happens to your bones, think of your bones as a piggy bank for calcium.

What happens if you do not put very much money in your piggy bank but you keep taking money out of it? Your savings get smaller and smaller. The same is true with the calcium in your body. If you don’t get enough calcium in your diet every day, if you don’t put very much calcium in your bone bank or, if your body takes more calcium out of your bone bank than you put in, your bone bank will also decrease.

When you are 9-19 years old, eating foods with calcium will help you grow the strongest bones possible.

Slide 7: Growth Spurt

Notice how some of your friends grew taller - almost all of a sudden? This **growth spurt** is just one of the changes that happen in your teens. Why?

Most children have two major growth spurts. The first happens in the first three years of life and the second comes during adolescence (in your teens).

**Adolescent Growth Spurt**: Increase in growth rate during the teen years when a child matures and physically develops into an adult.

Slide 8: Calcium Now

The best time for your body to put calcium in your bone bank is during the adolescent growth spurt.

Starting in your early teens, your bones grow longer and they do not stop growing until you reach your adult height.
Slide 9: 45% of Adult Skeleton

In adolescence, bone doesn’t just grow in length, it also gets thicker and heavier, because your skeleton needs to be strong enough to carry your adult body weight. About 45 percent of the adult skeleton you will need for the rest of your life develops during your teen growth spurt.

Slide 10: Peak Bone Mass

Peak bone mass is the highest amount of bone you can build up by the end of your bone growth. Most people reach their peak bone mass when they are 15-30 years old. In fact, some girls form 90 percent of their total bone mass before they are 17 years old! If your body needs calcium, it cannot just take the calcium out of bone; it has to break bone down to get the calcium it needs. Sometimes the body can’t build back all the bone that it broke down. When this happens, the body ends up with less and less bone. The adolescent growth spurt for boys usually starts later and lasts longer than it does for girls so, most adolescent boys enter adulthood with more total bone mass than girls, and peak bone mass for a man is generally greater than for women.

Slide 11: Genetics & Lifestyle

So what do you need to do to make sure that you have the strongest bones? First, we need to realize that genetics and lifestyle determine how much bone we have.

Genetics are things you are born with and therefore things you cannot change such as race and ethnicity, gender and hormones. Peak bone mass tends to be higher in African-Americans and Hispanics than in Caucasians and Asians, and women generally have less total bone mass than men do.

Things you can change have to do with your lifestyle (the way you live your life). To build the strongest bones, you need to eat foods with calcium and engage in weight-bearing physical activity. Weight-bearing physical activity causes new bone tissue to form, which makes bones stronger.

What are the two things you need to do to have the strongest bones?

- Eat calcium-rich foods
- Engage in weight-bearing activities
**Slide 12: Weight-Bearing Physical Activities**  
*Refer to Page 2 in your workbook*

Weight-bearing physical activity is any activity in which the body works against gravity, so that the feet, legs or arms are supporting or carrying the body’s weight. Jogging, walking, stair climbing, dancing and soccer are all examples. Some activities do not provide weight-bearing benefits. Remember, doing these two simple things, eating calcium-rich foods and doing weight-bearing exercise, every day, especially during your adolescent growth spurt can help you reach your peak bone mass.

**Slide 13: Weight-Bearing Physical Activities (cont.)**

Swimming or riding a bike or scooter are good for cardiovascular fitness and overall health, but the water, bike or scooter actually bears the weight so the bones are not getting the impact of the activity. Remember that doing weight-bearing physical activities strengthens your bones.
SUMMARY

★ The 2010 Dietary Guidelines recommendations:

⇒ Increase your intake of fat-free and low-fat milk and milk products, such as yogurt, cheese, or fortified soy beverages.

⇒ Choose foods that provide Calcium, potassium, dietary fiber, and vitamin D.

★ Calcium is a major mineral found in the bones, teeth, muscles, blood and nerves of the human body and is important for building strong bones and preventing a painful disease called osteoporosis.

★ You can think of your bones like a piggy bank for calcium, and the EASIEST time to build up your bones is RIGHT NOW as a teen.

★ Eating calcium-rich foods now will help you reach your highest potential peak bone mass.
IT’S ALL ABOUT THEM BONES!

UNSCRAMBLE

THE SCRAMBLE

1. albkteslab

2. cdainng

3. gojgnig

4. igwethfilt

5. ihikgn

6. arakte

7. creocs

8. entisn

9. hpsu-pus

10. gwnailk

11. leyablollv

12. pmjungi proe
CALCIUM, IT’S NOT JUST MILK
LESSON ONE - MIDDLE SCHOOL CURRICULUM

IT’S ALL ABOUT THEM BONES!

UNSCRAMBLE

THE SCRAMBLE

1. albkteslab
   BASKETBALL

2. cdainng
   DANCING

3. gojgnig
   JOGGING

4. igwethfiight
   WEIGHT LIFTING

5. ihikgn
   HIKING

6. arakte
   KARATE

7. creoes
   SOCCER

8. entisn
   TENNIS

9. hpsu-pus
   PUSH-UPS

10. gwnailk
    walking

11. leyablollv
    VOLLEYBALL

12. pmjungi proe
    JUMPING ROPE
GET OVER THE HUMP

SLIDE 15

DAY TWO: OSTEOPOROSIS AND ADEQUATE INTAKE

SLIDE 16

Yesterday we learned . . .

- About the 2010 Dietary Guidelines recommendations for calcium.
- What calcium does in the body.
- Why it is important for teens to eat plenty of foods with calcium.

Today we are going to learn . . .

- What happens to your body without enough calcium.
- How much calcium people need at different ages.
- What are excellent and good sources of calcium.
- How to convert percent daily value to milligrams.
- Simple ways to increase calcium.

SLIDE 17

What is osteoporosis?

- A painful disease caused by a lack of calcium in the bones. Bones become weak and develop fractures which can crush the vertebrae and press on the spinal cord.
- Your body needs calcium for your bones and blood. If there is not enough calcium in your blood, your body will break down your calcium stores (bone) to get the calcium it needs causing weak bones.
- Prevention is very important!
- You want to save up in your piggy bank!

SLIDE 18

What does osteoporosis look like?

Micrographs of Biopsy Specimens of Normal and Osteoporotic Bone

SLIDE 19

Biopsy of bone from a 47-year-old woman with osteoporosis

The arrow is pointing to a place where the bone loss is so severe that parts of the bone no longer connect to each other.

SLIDE 20

Why is osteoporosis so painful?

The person with osteoporosis has many breaks and cracks (fractures) in their bones. The crushed vertebra press on the spinal cord, and all of this is painful.

Getting the calcium you need during your teens can reduce your risk of fractures and having osteoporosis when you are older.
GET OVER THE HUMP

SLIDE 21

Normal Spine

Osteoporotic Spine (with vertebral fractures)

The black lines represent fractures in the vertebra. These weaken the bone until the bones crush from the weight of the body. This causes the spine to curve.

SLIDE 22

Although osteoporotic fractures eventually heal, the vertebrae never return to their original shape. They end up flattened or wedge-shaped causing the spine to curve and leading to a loss of height.

 İn this drawing, the woman on the right is about 6 inches shorter than she would have been if she did not have osteoporosis.

SLIDE 24

Calcium Content Chart

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Skeletal Calcium (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>400</td>
</tr>
<tr>
<td>15</td>
<td>900 !</td>
</tr>
<tr>
<td>30</td>
<td>1100</td>
</tr>
<tr>
<td>Adult w/loss</td>
<td>650</td>
</tr>
</tbody>
</table>

SLIDE 25

Adequate Intake for Calcium and Mean Daily Calcium Intakes for Males and Females in the US, Grouped by Age and Gender

Most teens do not consume (eat or drink) enough calcium, as shown by the graph above.

SLIDE 23

People with osteoporosis

Dowager’s Hump

SLIDE 26

Think about this

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Calcium Needed Each Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-8 years</td>
<td>800 mg</td>
</tr>
<tr>
<td>9-19 years</td>
<td>1,300 mg</td>
</tr>
<tr>
<td>20-50 years</td>
<td>1,000 mg</td>
</tr>
<tr>
<td>above 50</td>
<td>1,200 mg</td>
</tr>
</tbody>
</table>

- Do you get enough calcium?
- Why do you think teens aren’t getting enough calcium?

Teens need MORE calcium than young children or infants.
GET OVER THE HUMP

SLIDE 27

Which food group do you think provides the MOST calcium-rich foods?

DAIRY GROUP!

In order to keep your bones and body healthy, you should get the amount of calcium found in at least FOUR EXCELLENT sources of calcium EVERY DAY!

There are many other foods not in the dairy group that give you a good amount of calcium.

SLIDE 28

Searching for Calcium

Excellent Sources of Calcium

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Calcium Content (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup milk</td>
<td>280</td>
</tr>
<tr>
<td>1 cup yogurt</td>
<td>240</td>
</tr>
<tr>
<td>1 cup cheese</td>
<td>230</td>
</tr>
<tr>
<td>1 cup broccoli</td>
<td>230</td>
</tr>
<tr>
<td>1 cup collard greens</td>
<td>230</td>
</tr>
<tr>
<td>1 cup oranges</td>
<td>230</td>
</tr>
<tr>
<td>1 cup spinach</td>
<td>230</td>
</tr>
<tr>
<td>1 cup cheddar cheese</td>
<td>230</td>
</tr>
</tbody>
</table>

SLIDE 29

Simple Ways to Increase Your Calcium Intake:

- Milk: Make a smoothie with low-fat yogurt and fruit for a cool treat.
- Cheese: Add cheese to your sandwiches or burgers.
- Leafy greens: Eat leafy greens in salads or soups.

SLIDE 30

Summary

- Osteoporosis is a painful disease caused by a lack of calcium in bones. Bones become weak and develop fractures which can crush the vertebrae and press on the spinal cord.
- As teens, you need MORE calcium than an infant. 1300 milligrams per day.
- Excellent Sources: 20% Daily Value (DV) or 200 milligrams (mg) or more. Good Sources: 10-19% Daily Value (DV) or 100-199 milligrams (mg).
- To convert the % Daily Value of calcium to milligrams: Simply remove the % sign and add a “zero.”

Milk and dairy are the best sources of calcium and there are simple ways to increase your calcium intake.

Complete calcium is important page 10 and The Search is On! Page 11 in workbook.

SLIDE 31

Converting the % Daily Value of Calcium to Milligrams

To convert the % Daily Value to milligrams, simply remove the percent sign (%) and add a “zero.”

Example: 1% RDA = 100 mg

Note: This conversion is based on the assumption that a woman’s calcium needs are greater than a man’s, but is only an estimate. There may be instances where the needs of a woman’s calcium needs are less than a man’s. Further research is needed to confirm these differences. 

CALCIUM, IT’S NOT JUST MILK
LESSON TWO - MIDDLE SCHOOL CURRICULUM
Using the following information and PowerPoint slides, explain to the students that we are going to continue to discuss the importance of calcium and the consequences of what happens to our bones and our bodies without enough calcium. We will also learn how much calcium people need at different ages.

Slide 15: Day Two

It is important to get enough calcium in our diets. The foods you eat now make a big difference in determining how strong your bones will be for the rest of your life. Up until about age 30, bones continue to become denser and stronger especially for people who get enough calcium and have active lifestyles.

Remember, your body needs calcium for your bones and your blood. If there is not enough calcium in your blood, your body will break down your bones to get the calcium it needs and this can cause your bones to become weak. Weak bones break easily and can lead to a disease called osteoporosis.

Slide 16: Objectives

Today we are going to learn...

What happens to your body without enough calcium, how much calcium people need at different ages, what are excellent and good sources of calcium, and simple ways to increase calcium.

Slide 17: What is osteoporosis?

Osteoporosis usually starts in childhood, but people often do not feel or see the results until they are older.

Your body is always breaking down old bone and building new bone, and because so much bone is made out of calcium, it seems as if the calcium in your body is also going in and out of your bones.

Although we may think of bone as being solid, it is not.

The honeycomb-like structure of bone helps bone to stay strong without being heavy. If the bone in your skeleton were solid (like a block of steel), your skeleton would be too heavy for you to carry or move.

When bone is being built, your body has to have enough calcium so it can put it back into the bone.
Osteoporosis is a very painful condition because:

◊ The person with osteoporosis has many cracks and breaks (fractures) in their bones. The fractures then weaken the bone, and the crushed vertebra press on the spinal cord. All of this is painful.

Getting the calcium you need during your teens can reduce your risk of having osteoporosis when you are older.
Slide 24: Calcium Content Chart

Let’s look at the amount of calcium in bones at different ages.

Complete Calcium Demonstration on Pages 2.8-2.9.

Slide 25: Adequate Intake

This graph compares the recommended amounts of calcium, called Adequate Intake and the average daily calcium intakes for males and females in the U.S. at different ages.

Adequate Intake is the amount of a nutrient taken from the average intake of a population and believed to be the amount necessary to maintain nutritional status or provide for growth. In other words, the amount indicated on the graph shows how much calcium you should have in your diet.

Most teens do not consume (eat or drink) enough calcium as shown on the graph.

Slide 26: Think About This

Children 9-18 need 1,300 mg of calcium, which is 500 more than young children. However, most males and females take in less than the recommended amounts.

Why do teens need more calcium than young children?

Teens need calcium for the growth spurt that takes place during adolescence. They need to store enough calcium to last them throughout their adulthood and enough to help reach their peak bone mass.

Remember 45% of the bone mass you will need for the rest of your life develops during your teen years.

How are we going to make sure we get enough calcium?

Which food group do you think we should eat from to get the most calcium-rich foods? (Milk Group)
Diets rich in milk and milk products help build and maintain bone mass throughout the lifecycle, which may reduce the risk of osteoporosis. It is important to get our calcium from food sources because we can obtain other nutrients that will help our bone health. It is also important to note that, while dairy can be an excellent source of calcium, it can also be high in fat and saturated fat. Remember the new dietary guidelines emphasize increasing fat-free and low-fat versions of milk, cheese, yogurt and soy-fortified beverages which have the same amount of nutrients as whole-fat versions.

What foods are in the milk group? (yogurt, cheese, milk, etc.)

There are also foods that are not in the milk group that can give us a good amount of calcium.

On Pages 6-7 in your workbook is a listing of calcium-rich foods that are excellent or good sources of calcium. If a food has a daily value of 20% or more it is considered an excellent source. If a food has a daily value of 10-19% it is considered a good source of calcium.

In order to keep your bones and body healthy, you should get the amount of calcium found in at least four excellent sources of calcium every day.

Because the Daily Value for calcium is based on the Dietary Reference Intake of 1,000 milligrams, it’s easy to convert the Percent Daily Value to number of milligrams of calcium, which will help us track the 1,300 mg of calcium we need every day. The bottom of Page 7 indicates the steps for the conversion.

What are some ways that we can include calcium in our diets every day? Page 8 in the student workbook shows simple ways to increase calcium.
CUPS OF CALCIUM DEMONSTRATION (Provided)

Objective:
To demonstrate the amount of calcium in the body at various ages.

Gather these materials:
- 10 pounds white flour

Complete these steps:
1. Measure flour into bags according to the chart below.
2. Label bags by age group.

Calcium Content Chart*

<table>
<thead>
<tr>
<th>Amount of Flour</th>
<th>Stage of Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼ cup</td>
<td>Newborn skeleton</td>
</tr>
<tr>
<td>4 cups</td>
<td>10 -year old</td>
</tr>
<tr>
<td>9 cups</td>
<td>15 -year old</td>
</tr>
<tr>
<td>11 cups</td>
<td>30 -year old adult</td>
</tr>
<tr>
<td>6 ½ cups</td>
<td>Adult with osteoporosis (30-40% of bone loss)</td>
</tr>
</tbody>
</table>

Cups of Calcium Demonstration

Have students refer to Slide 24 to answer the following questions.

1. Show students the bag of flour for the newborn.
   How much calcium is in the skeleton of a newborn? 25 g
   Why does a newborn’s skeleton have such a small amount of calcium? At birth, the skeleton is small and is not well mineralized. (There is not a lot of calcium in the bones).

2. Show the bag of flour for the 10-year-old.
   How much is the average skeletal calcium for a 10-year-old? 400 g
   During childhood, the skeleton grows and mineralization increases (the amount of calcium in bone increases) bones grow longer and stronger.

3. Show the bag of flour for the 15-year-old.
   How much is the average skeletal calcium for a 15-year-old? 900 g
   To help students visualize the increase in bone mass during adolescence, hold up the bags of flour for a 10-year-old and 15-year-old at the same time and explain that a 15-year-old adolescent has more than twice the amount of calcium than a 10-year old child has (900 g compared to 400 g).

4. Show the bag of flour for the adult.
   Is the amount of skeletal calcium for the adult greater than for the 15-year old? Why? (Accept all responses.) Be sure answers include: humans continue to build bone up to age 30.

5. Show the bag of flour for the adult with osteoporosis.
   Why is the amount of skeletal calcium less? The bones are weak and have cracks and breaks.

Remember, during the teen years, 45 percent or more of the body’s total skeletal mass is formed. The higher your peak bone mass, the more bone you have "in the bank" and the less likely you are to develop osteoporosis as you age. Not getting enough vitamin D (which helps us absorb calcium) and calcium in your diet may lead to a lower peak bone mass and accelerated bone loss later.
Refer to Page 9 in workbook

**SUMMARY**

★ Osteoporosis is a painful disease caused by a lack of calcium in bones. Bones become weak and develop fractures, which can crush the vertebrae and press on the spinal cord.

★ As teens, you need **MORE** calcium than an infant, **1,300 milligrams** per day!

★ Excellent Sources = **20% Daily Value (DV)** or 200 milligrams (mg) or more. Good Sources = 10-19% Daily Value (DV) or 100-190 milligrams (mg).

★ Excellent Sources = **20% Daily Value (DV)** or 200 milligrams (mg) or more. Good Sources = 10-19% Daily Value (DV) or 100-190 milligrams (mg).

★ Milk and dairy are the best sources of calcium, and there are simple ways to increase your calcium intake.

★ After the age of 30, it is harder to build bone. That is why the best time to build strong bones is **RIGHT NOW!**
Calciuim is important!

Calciuim, it's not just milk
Lesson Two-Middle School Curriculum

Answer:

GET OVER THE HUMP

1 12 18 13 15 17 1 21
14 13 15 18 12 13 15 13
7 10 15 13 17 12 16

Calcium

Calcium, it’s not just milk
Lesson Two - Middle School Curriculum

ANSWER

7 10 15 13 17 12 16
Calcium is important!

Get Over The Hump

DUE TO

OSTEOPOROSIS

PAINFUL CONDITION

ANSWER

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| 10 | 24 | 14 | 18 | 8 | 17 | 15 | 16 | 2 | 6 | 13 | 21 | 7 | 4 | 1 | 12 | 14 | 21 | 13 | 18 | 15 | 1 | 15 | 11 | 21 | 13 | 18 | 12 | 8 | 1 | 21 | 13 | 18 | 15 | 1 | 15 | 11 | 21 | 13 | 18 | 12 | 8 | 1 |
GET OVER THE HUMP

THE SEARCH IS ON!

ADOLESCENT
ALMOND
BASKETBALL
BLOOD
BONES
CALCIUM
GENETICS
LOWFAT
MILK
MINERAL
MUSCLES
NUTRIENT
OATMEAL
OSTEOPOROSIS
PEAK BONE MASS
PIGGY BANK
SKELETON
SOCCER
STRING CHEESE
WALKING
YOGURT

Calcium, It's Not Just Milk
Lesson Two - Middle School Curriculum
KNOW YOUR FACTS

DAY THREE:
NUTRITION LABELING

Yesterday we learned...
- Osteoporosis is a painful disease caused by the loss of calcium from bone, which causes the bones to become weak.
- Teens need 1,300 mg of calcium every day to develop strong bones.
- Dairy is not the only source of calcium, but it is the best source.
- After the age of 30 it is harder to build bone. That is why the easiest time to build strong bones is RIGHT NOW!

Today we are going to learn...
- How to determine the amount of calcium in food using the Nutrition Facts label.
- The criteria for excellent and good sources of calcium.
- Review the conversion from % Daily Value (DV) to milligrams (mg).
- Compare different milks to determine the healthiest options.

1. Start here
2. Check calories
3. Limit these nutrients
4. Get enough of these nutrients

Nutrition Facts
Serving Size 1 cup (230g)
Servings per container 2

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size: 1 cup (230g)</td>
</tr>
<tr>
<td>Servings per container: 2</td>
</tr>
</tbody>
</table>

Yesterday we learned...
Try to get less of these nutrients:
- % Daily Value or lower is best
  - Total fat
  - Saturated fat
  - Trans fat
  - Cholesterol
  - Sodium
  - Sugar

Today we are going to learn...
Try to get more of these nutrients:
- 20% Daily Value or higher is best
  - Fiber
  - Vitamins A & C
  - Calcium
  - Potassium
  - Iron

Rate the facts!
To make sure you have an adequate intake of calcium, use the Percent Daily Value (%DV) on the Nutrition Facts panel to compare foods.

Choose EXCELLENT sources of calcium most “often” (5% or less is Low, 20% or more is High)

Choose GOOD sources of calcium “frequently” (10-19%) Daily Value)

Page 14 in Workbook
**Know Your Facts**

### Slide 38

**When milk is your drink choice, choose fat-free or low-fat milk**
- Fat-free and low-fat milk are the healthiest choices for everyone over the age of 2 years.
- Fat-free and low-fat milk provide key nutrients and little or no fat or saturated fat.
- In taste tests, most people cannot taste the difference between 2% milk. (1%) milk and fat-free milk, so why not switch to a lower-fat version?

Refer to pg 15 in the workbook.

### Slide 39

**Which would you choose?**

<table>
<thead>
<tr>
<th>Milk Comparison (1 cup serving)</th>
<th>Whole Milk</th>
<th>Reduced-Fat (2%)</th>
<th>Low-Fat</th>
<th>Fat-Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>150</td>
<td>120</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Total Fat (grams)</td>
<td>8</td>
<td>5</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>Saturated Fat (grams)</td>
<td>5</td>
<td>3</td>
<td>1.5</td>
<td>0</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>

Refer to pg 15 in the workbook.

### Slide 40

**Summary**

- Nutrition Facts labels are found on food packages and can help us determine which foods are excellent or good sources of calcium. They can also help us identify foods that are fat-free or low-fat.

- ★ To convert the % Daily Value of calcium to milligrams:
  - Step 1: multiply the % Daily Value by 100
  - Step 2: add a “g” or “mg”

- ★ To get the calcium you need every day, aim for four servings of foods that are excellent sources of calcium.
  - Excellent Sources = 20% Daily Value or more
  - Good Sources = 10-19% Daily Value

- ★ When milk is your drink choice, choose fat-free or low-fat milk and remember fat-free milk is always the healthiest option.

Refer to page 18 in the workbook.
 KNOW YOUR FACTS

Using the curriculum and PowerPoint slides, explain to the students that today we are going to use the Nutrition Facts Label to determine the amount of calcium in food and the criteria for excellent, good or poor sources of calcium.

Slide 32: Day Three

In order to get the calcium we need, we need to eat calcium-rich foods. Using the Nutrition Facts Labels that are found on foods will help us determine what foods are excellent, good, or poor sources of calcium and also help us identify foods that are low-fat or fat-free choices.

Slide 33: Objectives

Today we are going to learn. . .

How to determine the amount of calcium in food and the criteria for excellent and good sources of calcium and review the conversion of percent DV to mg.

Slide 34: Nutrition Facts Label Overview

The Nutrition Facts Label contains similar information for all food products. On smaller packages, the Nutrition Facts Label may not look the same, but it still has the same information. All of the information that is shown here is mandatory, meaning it is required by law.

The Nutrition Facts Label has six sections, but we are going to focus on four of these. section 1: serving size - Serving sizes are more consistent among similar foods and are listed in common household and metric measures. All of the nutrition information is based on this serving size, and eating more or less than the serving size will change the nutritional value of what you eat. All of the information on the Nutrition Facts Label is based on the serving size listed. For example, if you eat both servings listed on the label you will double the nutritional value of the foods.

Section 3 and Section 4: The Nutrients - All of the nutrients shown on the example Nutrition Facts Label are mandatory, meaning they are required by law. These nutrients were selected because they are the key nutrients that impact our health.

Section 3: Limit These Nutrients - The nutrients in Section 3 are those that we need to limit in our diets: total fat, saturated fat, trans fat, cholesterol and sodium.

Section 4: Get Enough of These Nutrients - These nutrients are those that we want to get enough of: potassium, fiber, vitamin A, vitamin C, calcium and iron.

Section 5: Percent Daily Value (%DV) - Calcium is listed on the Nutrition Facts Label as a percentage, called the Percent Daily Value. The % Daily Value is a general guide to the nutrients in one serving of food. For example, if the label lists 20 percent for calcium, it means that one serving provides 20 percent of the calcium you need each day.
Slide 35: 5% or Less

The Daily Value can help you determine if a food is high or low in a nutrient - 5 percent or less is low. We want to select more often foods that have 5 percent or less saturated fat, trans fat, trans fat, cholesterol, sodium and sugar.

Slide 36: 20% or more

20 percent or more is a high amount of a nutrient. We want to select more foods that have 20 percent or more of fiber, vitamin A, vitamin C, calcium, potassium and iron.

Slide 37: Rate the Facts  Page 14 in workbook

Remember, if a food has a daily value of 20 percent or more, it is considered an excellent source.

If a food has a daily value of 10 to 19 percent it is considered a good source of calcium.

Slide 38: Choose Fat-free or Low-fat

We should choose fat-free or low-fat milk when milk is our beverage choice. These milks are the healthiest, because they have little or no fat, and since they all taste the same, why not?
Let’s look at the fat, saturated fat and milligrams of calcium in different types of milk.

This label on whole milk shows that the fat is 8 grams not high or low, but the saturated fat is 4.5 grams, meaning whole milk is high in saturated fat.

How does 2%, also known as reduced-fat, milk rate? The label shows that 2% milk has 5 grams of fat and 3 grams of saturated fat. This is lower in both than whole milk but still not considered low in either fat or saturated fat.

Let’s look at 1% milk, also called low-fat milk. The label shows that 1% milk has 2.5 grams of fat and 1.5 grams of saturated fat. 1% milk would be considered low in fat but still contains a moderate amount of saturated fat.

Now, let’s look at fat-free or non-fat milk. The label shows that fat-free milk has 0 grams of fat and 0 grams of saturated fat.

All of the milk choices are excellent sources of calcium, but drinking fat-free milk is the healthiest option.
## Nutrition Facts

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount Per Serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calories</strong></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Total Fat</td>
<td>12g</td>
<td>18%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>3g</td>
<td>15%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>3g</td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>30 mg</td>
<td>10%</td>
</tr>
<tr>
<td>Sodium</td>
<td>470 mg</td>
<td>20%</td>
</tr>
<tr>
<td>Potassium</td>
<td>700 mg</td>
<td>20%</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>31 g</td>
<td>10%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td>Sugars</td>
<td>5g</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>5g</td>
<td></td>
</tr>
<tr>
<td>Vitamin A</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

<table>
<thead>
<tr>
<th>Calories per gram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat 9 · Carbohydrate 4 · Protein 4</td>
</tr>
</tbody>
</table>

1. Start Here
2. Check Calories
3. Limit These Nutrients
4. Get Enough of These Nutrients

**Footnote**

**Quick Guide to Percent Daily Value (%DV)**

5% (or less) is low

20% (or more) is high
SUMMARY

★ Nutrition Facts labels are found on food packages and can help us determine which foods are excellent or good sources of calcium. They can also help us identify foods that are fat-free or low-fat.

★ To convert the % Daily Value of calcium to milligrams:

   **Step 1:** simply remove the % sign  Ex. 20% = 20
   **Step 2:** add a “zero”  Ex. 200

   20% DV = 200 milligrams of calcium

★ To get the calcium you need every day, aim for **four servings** of foods that are excellent sources of calcium.

Excellent Sources = 20 % Daily Value or more
Good sources = 10-19 % Daily Value

★ When milk is your drink choice, choose fat-free or low-fat milk and remember fat-free milk is always the healthiest option.
### KNOW YOUR FACTS

#### Chocolate Milk
**Nutrition Facts**
- Serving Size: 8 fl oz (240ml)
- Servings Per Container: 1

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120</td>
<td>0g</td>
<td>0g</td>
<td>0g</td>
<td>0mg</td>
<td>0mg</td>
<td>29g</td>
<td>0g</td>
<td>28g</td>
<td>1g</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

#### Calcium Fortified Orange Juice
**Nutrition Facts**
- Serving Size: 8 fl oz (240ml)
- Servings Per Container: 1

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>110</td>
<td>0g</td>
<td>0g</td>
<td>0g</td>
<td>0mg</td>
<td>0mg</td>
<td>28g</td>
<td>0g</td>
<td>26g</td>
<td>1g</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

#### Orange Juice
**Nutrition Facts**
- Serving Size: 8 fl oz (240ml)
- Servings Per Container: 1

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150</td>
<td>0g</td>
<td>0g</td>
<td>0g</td>
<td>0mg</td>
<td>0mg</td>
<td>29g</td>
<td>0g</td>
<td>28g</td>
<td>1g</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

#### Cheese Pizza
**Nutrition Facts**
- Serving Size: 1 slice (95 g)
- Servings Per Container: 12

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>266</td>
<td>4.7g</td>
<td>30mg</td>
<td>11.8g</td>
<td>11.4g</td>
<td>23%</td>
<td>9%</td>
<td>22%</td>
<td>23%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

#### Honey Nut Cheerios
**Nutrition Facts**
- Serving Size: 3/4 cup (28 g)
- Servings Per Container: 12

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150</td>
<td>1.5g</td>
<td>0mg</td>
<td>0g</td>
<td>0mg</td>
<td>0mg</td>
<td>7g</td>
<td>8%</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

#### Takis Fuego
**Nutrition Facts**
- Serving Size: (30 g) About 13 pieces
- Servings Per Container About 1

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Total Fat</th>
<th>Saturated Fat</th>
<th>Trans Fat</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Total Carbohydrate</th>
<th>Dietary Fiber</th>
<th>Sugars</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150</td>
<td>8g</td>
<td>4mg</td>
<td>12%</td>
<td>13%</td>
<td>18%</td>
<td>6%</td>
<td>8%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000, 2,500.

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**C A L C I U M , I T ’ S N O T J U S T M I L K**
**LESSON THREE - MIDDLE SCHOOL CURRICULUM**

3 - 8
## Nutrition Facts Worksheet

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>% DV</th>
<th>mg of Calcium</th>
<th>Total Fat</th>
<th>Calcium (circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium-Fortified Orange Juice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Juice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheese Pizza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honey Nut Cheerios</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takis Fuego</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chocolate Milk**
1. How many mgs of calcium are in this product? ____________
2. What is the % DV for this product? _____________________
3. If you ate **two** servings, how many mgs would you eat? 140 280 560

**Cheese Pizza**
1. How many mgs of calcium are in this product? ____________
2. What is the % DV for this product? _____________________
3. If you ate **three** servings, how many mgs would you eat? 540 180 400

**Honey Nut Cheerios**
1. How many mgs of calcium are in this product? ____________
2. What is the %DV for this product? _____________________
3. If you ate **four** servings, how many mgs would you eat? 200 300 400
### Nutrition Facts Worksheet

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>% DV</th>
<th>mg of Calcium</th>
<th>Total Fat</th>
<th>Calcium (circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate Milk</td>
<td>8 fl oz</td>
<td>28%</td>
<td>280</td>
<td>3 g</td>
</tr>
<tr>
<td>Calcium-Fortified Orange Juice</td>
<td>8 fl oz</td>
<td>35%</td>
<td>350</td>
<td>0</td>
</tr>
<tr>
<td>Orange Juice</td>
<td>8 fl oz</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cheese Pizza</td>
<td>1 slice</td>
<td>18%</td>
<td>180</td>
<td>11.8 g</td>
</tr>
<tr>
<td>Honey Nut Cheerios</td>
<td>3/4 cup</td>
<td>10%</td>
<td>100</td>
<td>1.5 g</td>
</tr>
<tr>
<td>Takis Fuego</td>
<td>1 oz</td>
<td>0</td>
<td>0</td>
<td>11 g</td>
</tr>
</tbody>
</table>

#### Chocolate Milk
1. How many mgs of calcium are in this product? **280**
2. What is the %DV for this product? **28**
3. If you ate **two** servings, how many mgs would you eat? **140**
4. **560**

#### Cheese Pizza
1. How many mgs of calcium are in this product? **180**
2. What is the %DV for this product? **18**
3. If you ate **three** servings, how many mgs would you eat? **540**
4. **400**

#### Honey Nut Cheerios
1. How many mgs of calcium are in this product? **100**
2. What is the %DV for this product? **10**
3. If you ate **four** servings, how many mgs would you eat? **200**
4. **400**
NUTRITION ON A MISSION

DAY FOUR:
NUTRITION ON A MISSION

Yesterday we learned . . .

The nutrition facts labels are found on food packages and can help us determine which foods are excellent or good sources of calcium. They can also help us identify foods that are fat-free or low-fat.

- To convert the % Daily Value of calcium to milligrams, just take the % sign and replace it with a zero.
  - 20% DV = 200 mg
- Aim for 4 servings of excellent sources of calcium per day.
  - Excellent source = 20% DV or more
  - Good source = 10-19% DV

Today we are going to learn . . .

- Which drinks are the best sources of calcium.
- What you can do to make sure you are getting enough calcium every day.

THINK YOUR DRINK

1. Choose a drink and note its calcium content.
2. Convert the % Daily Value to milligrams.
3. Determine if the drink is a good or excellent source of calcium.
4. List at least three specific steps you are going to take to add more calcium into your life.

Nutrition on a Mission

1. Choose a drink and note its calcium content.
2. Convert the % Daily Value to milligrams.
3. Determine if the drink is a good or excellent source of calcium.
4. List at least three specific steps you are going to take to add more calcium into your life.
Calcium Health Alert !!!

Prevention is key

Calcium is found throughout body - in our bones, teeth, blood, muscles, and nerves. To prevent painful conditions like osteoporosis, we keep our bones strong by eating foods rich in calcium and doing weight-bearing activities daily.

Calcium Rich Foods

 Aim for 4 excellent sources of calcium each day.

Get the Facts:

Calcium is a vital nutrient needed for strong bones and teeth, and for muscle and nerve function.

Weight-bearing physical activity

Engaging in weight-bearing activities everyday will help strengthen your bones. Walk, bike, jog, dance, jump rope, and many more!

Outcomes of

Outcomes are epidemics condition caused by the lack of calcium in the bones. Women suffer 40% of their bone mass during ages 35 years old.

ChooseMyPlate.gov

Refer to page 22 in the workbook

Summary

★ Choosing drinks that are excellent sources of calcium can help you get enough calcium every day.

★ Setting goals to increase the amount of calcium in your diet is a good way to achieve the 1,300 milligrams you need everyday.

★ Remember, to get the calcium you need everyday, aim for 4 servings of food and drink that are excellent sources of calcium.
Slide 41: Day Four

We know that it is important to eat foods with calcium. Whether people get the calcium they need every day, depends on:

- How much calcium is in the foods they eat
- How often they eat foods with calcium
- How many servings of calcium-rich foods they eat

Remember the easiest way to be sure you get the 1,300 mg of calcium you need every day is to have four **excellent** choices of calcium-rich foods.

Slide 42: Objectives

Today we are going to learn...

Which drinks are the best sources of calcium and what you can do to make sure you are getting enough calcium every day.

Slide 43: Think Your Drink  Page 20 in workbook

When it comes to nutrition, not all drinks are created equal. Distribute to students one beverage Nutrition Facts Label and fill in the information in Step 1. Have students answer the questions in Step 2 and Step 3 to see if their drinks are excellent, good or low sources of calcium.

Slide 44: Think Your Drink Visual Answers

As you click through the answers on the PowerPoint, have students raise their hands when their particular beverages are presented. Have students state if their drinks are excellent, good or low sources of calcium.
Slide 45: Think Your Drink Visual Answers (cont.)

As you click through the answers on the PowerPoint, have students raise their hands when their particular beverages are presented. Have students state if their drinks are excellent, good or low sources of calcium.

Slide 46: Nutrition on a Mission Page 21 in workbook

Have each student set a realistic goal of what they are going to do to increase calcium in their diets.

Tell the students to be honest with themselves and set a goal for something that they can really do. They should start with ONE step that they can do to add one food with calcium to their meal plans everyday for the next two weeks. Have them write down this step on their goal-setting sheets.

Have a few students share their goals and their game plans to accomplish their goals.

Slide 47: Parent Handout

Inform the students that they will have the opportunity to share what they have learned this week about calcium with a parent or someone in their household. Ask the students to return the perforated form on or before the day the post-test survey is administered.

Food Activity: Calcium-fortified Orange Juice

"The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by Cooperative Extension is implied."
Summary

★ Choosing drinks that are excellent sources of calcium can help you get enough calcium every day.

★ Setting goals to increase the amount of calcium in your diet is a good way to achieve the 1,300 mg you need everyday.

★ Remember, to get the calcium you need everyday, aim for four servings of food and drink that are excellent sources of calcium.
THINK YOUR DRINK

**STEP 1:**
MY DRINK
Grab a drink and fill in the Nutrition Facts Label with information from your container.

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size:</td>
</tr>
<tr>
<td>Serving Per Container:</td>
</tr>
<tr>
<td>Amount Per Serving:</td>
</tr>
<tr>
<td>Calories:</td>
</tr>
<tr>
<td>Calories from Fat:</td>
</tr>
<tr>
<td>Daily Value:</td>
</tr>
<tr>
<td>Total Fat:</td>
</tr>
<tr>
<td>Saturated Fat:</td>
</tr>
<tr>
<td>Trans Fat:</td>
</tr>
<tr>
<td>Cholesterol:</td>
</tr>
<tr>
<td>Sodium:</td>
</tr>
<tr>
<td>Total Carbohydrate:</td>
</tr>
<tr>
<td>Dietary Fiber:</td>
</tr>
<tr>
<td>Sugars:</td>
</tr>
<tr>
<td>Protein:</td>
</tr>
<tr>
<td>Vitamin A:</td>
</tr>
<tr>
<td>Vitamin C:</td>
</tr>
<tr>
<td>Vitamin D:</td>
</tr>
<tr>
<td>Calcium:</td>
</tr>
<tr>
<td>Iron:</td>
</tr>
</tbody>
</table>

**STEP 2:**
Answer the following questions to determine if your drink is an excellent, good or low source of calcium.

Serving size: ______________

Servings per container: ______________

Calcium ______ % Daily Value (for one serving)
Calcium ______ milligrams (for one serving)

If you drink the entire container, how much calcium have you consumed? (Fill in the blanks below for the answer.)
________________ servngs per container

X __________ milligrams of calcium

= total milligrams of calcium

**STEP 3:**
Is this entire drink an excellent, good or a low source of calcium? __________

**STEP 4:**
Using the PowerPoint presentation on the board, write the percentage of calcium found in each drink on the line and then circle the drinks that are excellent sources of calcium.

---

*The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by Cooperative Extension is implied.*
Is Your Drink an Excellent, Good or Low Source of Calcium?
Is Your Drink an Excellent, Good or Low Source of Calcium?

#8

#9

#10

#11

#12

3% 

low
List at least 3 SPECIFIC goals you are going to set to add more calcium into your diet:

Example: I will choose fat-free or low-fat milk or chocolate milk instead of soda when I eat in a restaurant.

1. 

2. 

3. 

4. 

5. 

For more ideas see page 8
DAY FIVE: DON'T LEAVE YOUR HEALTH IN JEOPARDY

Yesterday we learned . . .
- Not all drinks are created equal in terms of their calcium content.
- What you can do to make sure you are getting enough calcium every day.
- Setting goals to increase the amount of calcium in your diet is a good way to achieve the 1,300 mg you need every day.

Today we are going to learn . . .
- How advertisers persuade us to purchase their products and we will review what we have learned this week about calcium.

TEST YOUR KNOWLEDGE

DON'T LEAVE YOUR HEALTH IN JEOPARDY
- Divide students into three teams.
- Each student will have a turn to represent their team.
- Test your calcium knowledge and be crowned Calcium Champion!
Summary

★ As consumers, there are many factors that influence what we eat.
★ Developing strategies and setting goals can help you reach 1,300 mg of calcium every day.
★ There are many good reasons to eat more calcium-rich foods.
★ Getting enough calcium and doing weight-bearing activity during your teens is the best way to prevent osteoporosis and to have the strongest bones possible now and when you get older.
★ Remember—1,300 milligrams every day.
Using the curriculum and PowerPoint slides, explain to students that today we are going to review all of the information we have learned and we will begin to think about how to persuade and motivate others to increase calcium in their diets.

Slide 49: Day Five

All week long, we have been talking about calcium. We have learned what calcium does in the body and why it is important for teens to eat plenty of foods with calcium. We know what happens to your body without enough calcium and how much calcium people need at different ages. In addition, we have learned how to determine the amount of calcium in foods, and what you can do to make sure you are getting enough calcium in your diet every day.

Slide 50: Objectives

Today we are going to learn...

How advertisers persuade us to purchase their products, and we will review what we have learned this week about calcium.

Slide 51: Test Your Knowledge

Turn to page 27 in your workbook and complete the Test Your Knowledge worksheet before the post test is administered.

Slide 52: Tricks of Advertising

Many times, we buy items because of some advertising that we have seen on television. Advertisers have many methods to try to get you to buy their products. Usually, the advertiser portrays a lifestyle or image they think you want. Advertisers then use certain types of commercials to convince you that their product is the one you need to have to have that lifestyle or image.
Slide 53: Enjoy the Videos

Enjoy viewing three different types of advertising, can you identify them?

Slide 54: Don’t Leave Your Health in Jeopardy

The Jeopardy game uses three teams. There are six categories with five questions, for a total of 30 questions. All equipment is provided, and the game is conducted by the classroom teacher or the Cooperative Extension staff.
Summary

★ As consumers, there are many factors that influence what we eat.

★ Developing strategies and setting goals can help you reach 1,300 mg of calcium every day.

★ There are many good reasons to eat more calcium-rich foods.

★ Getting enough calcium and doing weight-bearing activity during your teens is the best way to prevent osteoporosis and to have the strongest bones possible now and when you get older.

★ Remember~ 1,300 milligrams every day.
Tricks of Advertising

**EXAGGERATION**
The advertiser exaggerates one aspect of the commercial in order to make it funny or to get the point across.

**SILENT POWER**
The name of the product is never mentioned but the product is shown in a positive way again and again.

**World Peace**
This product brings people from all over the world together. Who doesn’t want world peace?

**Bandwagon**
I want to be like.....just fill in the blank. If you buy this product you can be just like them.

**SLOGAN**
The catch phrase of the commercial becomes so popular that people are saying it even if it has nothing to do with the product.
Appendix

Glossary of Vocabulary Words

**Adequate Intake**  
Amount of a nutrient taken from the average intake of a population and believed to be necessary to maintain nutritional status and provide for growth.

**Adolescence**  
Also known as the teen years, when a child matures and physically develops into an adult.

**Calcium**  
A major mineral in the human body that is essential for bone and teeth health, regulating blood pressure and maintaining proper nerve function.

**Cardiovascular fitness**  
Type of activity that involves and improves the health of the heart and blood vessels.

**Genetics**  
Involving, resulting from, or relating to the genetic make-up people receive from their parents.

**Growth Spurt**  
Increase in growth rate during adolescence, usually at 10-12 years for girls and 12-14 years for boys, but can vary among individuals.

**Honeycomb-like**  
Mass of hexagonal cells similar to those built by honeybees.

**Lifestyle**  
The typical way of life for an individual, group, or culture. It is how you live your life.

**Mandatory**  
Needing to be done, followed, or complied with, usually because of an official requirement.

**Osteoporosis**  
Disease causing a decrease in bone mass and density, usually due to a lack of calcium during the development of one’s peak bone mass.

**Peak bone mass**  
Maximum amount of bone one can develop by the end of their individual skeletal maturation.

**Vitamin D**  
Fat-soluble vitamin, related to the steroid hormones, needed for the absorption of calcium in normal bone health.

**Weight-bearing**  
Any activity one performs that works the bones and muscles against gravity.

**% Daily Values or Reference Values**  
Percent of recommended levels of intakes based on a 2,000 calorie per day diet. This helps to determine if a serving of food is high or low in a specific nutrient.
REFERENCES

M230/0537 Curved spine due to osteoporosis, X-ray
ZEPHYR/SCIENCE PHOTO LIBRARY
Curved spine due to osteoporosis. Profile X-ray of the curved spine of an 80-year-old woman with osteoporosis. The curved spine, bending back-to-front rather than sideways, is known as kyphosis. Osteoporosis has reduced the bone density of the spine, leading to the vertebrae undergoing crush fractures. This has resulted in a hunched back. In the elderly, treatment is usually aimed at preventing or slowing further degeneration.

M230/0361 Collapsed spine in osteoporosis
SCIENCE PHOTO LIBRARY
Collapsed spine in osteoporosis. Elderly man with severe kyphoscoliosis (curvature of the spine) due to a collapsed vertebra due to osteoporosis (loss of bone mass). Kyphoscoliosis is both sideways and hunched curvature of the spine, though the hunched curvature is most clearly seen here. The vertebrae are the bones that make up the spine. The spine is the central supporting structure of the skeleton. It is thought that the osteoporosis in this case may have been induced by steroid drugs prescribed for the patient. Long-term steroid use is known to inhibit the formation of new bone.

M230/0140 Elderly woman with osteoporosis
DR P. MARAZZI/SCIENCE PHOTO LIBRARY
Osteoporosis causing kyphosis. Excessively curved spine, or kyphosis, seen on an 87-year-old woman suffering from osteoporosis crush fractures. Kyphosis usually affects the top of the spine and may result in a hunchback. Here, osteoporosis has reduced the bone density of the spine. The vertebrae are more brittle, resulting in crush fractures and kyphosis. Osteoporosis arises through an imbalance between formation and resorption of bone, most commonly occurring with increasing age. The incidence is greater in women and is attributed to a decline in hormone production following the menopause. Treatments include hormone replacement therapy.