

## GRADE 5: LESSON PLAN 2

### NUTRITION: WHY ARE VITAMINS AND MINERALS IMPORTANT?

#### Goals

Students will understand the role vitamins and minerals play in maintaining a healthy body and a strong heart.

#### Instructional objectives

Students will be able to

1. Differentiate between vitamins and minerals.
2. Understand the function of each type of vitamin and mineral.
3. Choose vitamin- and mineral-rich foods.

#### Background Information

The body needs 6 essential nutrients to grow and function: carbohydrates, protein, fat, water, vitamins, and minerals. Grade 4 Nutrition focused on the macronutrients: carbohydrates, protein, fat, and water. This lesson focuses on the micronutrients, the vitamins and minerals necessary for growth and maintenance of the body. Micro, a prefix meaning small, tells us the body only needs a small amount of each of the micronutrients to function.

#### Vitamins

Vitamins are micronutrients that contain carbon and come from living things. The body needs them for growth and metabolism (maintenance of body functions). Vitamins are either water soluble (dissolve in water) or fat soluble (dissolve in fat). The water-soluble vitamins, B and C, must be replaced each day because excess is flushed out of the body in the urine. There is only one vitamin C, but actually 8 different vitamin Bs, collectively known as the B vitamins or the B complex.

1. Vitamin B1 Thiamine
2. Vitamin B2 Riboflavin
3. Vitamin B3 Niacin
4. Vitamin B5 Pantothenic acid
5. Vitamin B6 Pyridoxine
6. Vitamin B9 Folic acid
7. Vitamin B12 Cobalamin or Cyanocobalamin
8. Vitamin H Biotin, considered a part of the B complex

The fat-soluble vitamins, A, D, E, and K, can be stored in the body and so do not need to be replenished every day.

#### Minerals

Minerals are inorganic substances that do not contain carbon as vitamins do, and they do not come from living organisms. Minerals are present in the earth, on the moon, and even on Mars (or other planets). Minerals, like vitamins, are considered micronutrients because the body only needs a small amount of each one to function properly. Minerals are categorized as either macrominerals or microminerals (also called trace minerals). The body needs larger amounts of the macrominerals than the microminerals. This lesson first addresses the macrominerals: calcium, phosphorus, magnesium, sodium and potassium. And then the microminerals or trace minerals: fluoride, iodine, iron, and zinc.

## Project Heart

Activities for the Classroom

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### Materials

1. Classroom and/or individual computer with Internet access:
  - MyPlate for kids: [www.choosemyplate.gov/kids/](http://www.choosemyplate.gov/kids/)
  - Internet resources for learning the vitamins and minerals
2. Student Resource: My Vitamin Dictionary
3. Student Resource: My Mineral Dictionary
4. Food labels
5. Worksheet: “Action Hero Flash Cards” (Activity 5–C)
6. Index cards (unlined)
7. Worksheet: “24-hour Nutrient Diary”/“Heart-Smart Student” certificate (Activity 5–D)
8. Worksheet: “Vitamin Fill-in-the-Blank” (Activity 5–E)
9. Worksheet: “Mineral Fill-in-the-Blank” (Activity 5–F)
10. Worksheet: “Vitamin Crossword Puzzle” (Activity 5–G)
11. Worksheet: “Mineral Crossword Puzzle” (Activity 5–H)
12. Teacher Resource: Answer Key

### Introduction

Begin a class discussion of the teamwork concept. For example, choose a favorite local football or soccer team for reference. Explain that each member of the team has a very specific job. When each member performs his or her job at the right time, and in the right way, the team functions at an optimal level and is successful. Ask students to name the various players and their positions/roles on the team. Explain that some players on the team are big and powerful, while others are small and fast, but they all play equally important roles. Each member of the team has a particular athletic skill, but they need the right foods and physical conditioning to keep them at their peak. The same concepts apply in our bodies. If we have the right amount and balance of vitamin and minerals on our team, we function and grow. Each vitamin and mineral has a specific job to do to keep the body functioning properly. Just as with the sports team, vitamins and minerals must work together and with other nutrients to help the body achieve health and fitness.

### Lesson procedures/activities

Human beings are very complicated and our bodies need a variety of nutrients to meet all nutritional demands. Good nutrition and a healthy lifestyle assist the body in using

each nutrient efficiently.

Explain to students the differences between vitamins and minerals. Vitamins are carbon-based, organic compounds that come from living things, and minerals are noncarbon-based, inorganic compounds that come from the earth.

Using the *My Vitamin Dictionary* and *My Mineral Dictionary* charts provided, and the *MyPlate* website, discuss each vitamin and mineral, why the body needs every one and what foods can supply them. Pay special attention to how vitamins and minerals support the heart (cardiovascular system, circulatory system, cardiac muscle, conduction system, the blood, and so on). Discuss the definitions of the terms enriched, fortified, RDA, and antioxidant.

Students can participate in the lesson by helping to locate or draw pictures of foods to associate each food with the vitamins and minerals it provides, and to identify its primary role in the body (for example: carrots, vitamin A, eyesight). Have a variety of food labels available to use as reference, but also include plenty of fresh foods in the discussion. (See References in the dictionaries for websites that list foods and their nutrients including vitamins and minerals.)

### Guided Practice

Direct students in making flash cards of vitamin or mineral action heroes. (Refer to the worksheet for a template.) On the front of the card, students can draw the figure, and the hero's nickname (for example, “The Excellent Dr. C”). On the back of the card, list or draw pictures of foods that are good sources of the nutrient, the proper name and letter designation of the vitamin or mineral, and its function in the body. When students have finished making several flash cards, have them present the information to the class, exchange (trade) the cards, or use them as flash cards to prepare for the interactive resources or other worksheets. Make this activity a fun way to help students learn the vitamins and minerals. Since students often find the B complex vitamins especially confusing, the flash cards may help by providing visual clues.

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### Independent practice

Choose one nutrient from each of the following groups:

- fat-soluble vitamins
- water-soluble vitamins
- macrominerals
- microminerals

Ask students to keep a 24-hour food diary to track each of their chosen nutrients. In class the next day, discuss the nutrient levels on their food diaries. Determine whether they got the right amount of each vitamin or mineral they were tracking by comparing the diary to the appropriate dictionary entry for "How much do I need daily?" Ask them to explain which vitamin or mineral was the most heart-healthy and why. Have them suggest alternative foods that they would like to eat if their diet is lacking a particular vitamin or mineral.

Discuss how learning about the vitamins and minerals relates to good health and how that knowledge affects their ability to meet their bodies' needs as they grow into adulthood.

### Extension

Conduct an internet search or visit the NASA website ([www.nasa.gov/externalflash/constellation\\_front/](http://www.nasa.gov/externalflash/constellation_front/)) and search for minerals found on the moon and/or other planets such as Mars. Are any of these minerals ones that are needed by the human body? Write a report or produce a PowerPoint presentation for the class discussing the topic.

### Adaptations

Students who have difficulty writing or drawing may have their assignments adapted by allowing them to verbalize their responses or work with other students during guided and independent practice. Since the concept of teamwork is central to this lesson, adaptations should follow the same pattern.

### Enrichment – Classroom Activity

Use the fill-in-the-blanks and crossword puzzle worksheets for vitamins and minerals as enrichment activities.

### Assessment

Students' understanding of the lesson objectives can be measured by observing them in group activities and by assessing their independent practice work.

Objective	Demonstrated lesson objective	Partially demonstrated lesson objective	Did not demonstrate understanding of the objective
Differentiate between vitamins and minerals	X		
Understand the function of each type of vitamin and mineral		X	
Choose vitamin- and mineral-rich foods	X		