

LESSON 1: MAKING THE MOST OF YOUR MEAL



OVERVIEW

In this lesson, students learn about the essential nutrients for sustaining health and energy. Students identify key macronutrients and micronutrients the body needs and, using the [National Dairy Council Food Models](#), students identify the best choices to reach nutrient goals.

TIME

One to two 45-minute classes

OBJECTIVES

In this lesson, students will:

- Identify key nutrients;
- Describe ways in which key nutrients help the body;
- Identify sources of key nutrients; and
- compare the nutritive value of different foods.

STANDARDS

NGSS

MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

CDC NHES

1.8.1 Analyze the relationship between healthy behaviors and personal health.

1.8.3 Analyze how the environment affects personal health.

MATERIALS

In addition to common classroom materials and an Internet connection, students will need:

- [National Dairy Council Food Models](#) (see "Preparation" for instructions)
- **Nutrient Challenge Activity Sheet** (six copies)
- Scissors
- Glue Sticks

PREPARATION

1. Using the [National Dairy Council Food Models](#), select six cards from **each of the five food groups**, six from **Combination**, and six from **Others**, for a total of 42 cards.
2. Print and prepare the cards, affixing the nutritional information to the back of each food using one of the following options:
 - Prepare the cards yourself in advance of the class.
 - Have your students prepare the cards (cut them out, affix the information on the back) using scissors and glue sticks.
 - If you do not have access to a printer, you or your students can make flash cards, using the online food models as a guide.
3. Arrange students into groups of six.
4. Randomly divide the 42 cards into six piles, ensuring that each group has seven cards, one from each category.
5. Make six copies of the **Nutrient Challenge Activity Sheet**.
6. Ensure access to a projector to share the **Nutrient Tables**.

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INTRODUCTION

Ask the students about their familiarity with MyPlate and food groups. Accept all answers. Explain that you will be focusing on key nutrients and determining the best sources for those nutrients.

LESSON PROCEDURE

Step 1

Ask students to identify each of the food groups (dairy, protein, vegetable, fruit, grain, and others). Create a column for each group on a board or online whiteboard.

Step 2

Ask students to brainstorm their favorite foods. As they offer suggestions, have them add the food to the appropriate food group column. For each response, ask the remaining students to confirm the placement with a “thumbs-up.” If there are only a few confirmations, ask the student if they would like to change their choice or if they would like to ask another student where they would place it. Continue until each student has had at least one turn.

Step 3

Ask the students what the foods in each food group have in common. For example, grains all come from plants, dairy products contain animal milk, fruits grow on trees or bushes, etc. If no student suggests it, explain that foods in the same food group contain many of the same key nutrients. If you would like to give them a clue, you can ask them “What do all of the foods in the protein group have in common?”

Step 4

Explain to students that there are many different nutrients found in foods. Some are called **macronutrients** and others are called **micronutrients**. *Explain:*

- **Macronutrients** include protein, carbohydrates, and fats. Along with macronutrients, it’s important to make sure you have enough fiber in what you eat.

- **Micronutrients** include vitamins and minerals.

Show students the macronutrient table which explains what each macronutrient does in the body and which foods they’re commonly found in. Explain that macronutrients are very important to the body, and that everybody’s body needs them. However, it’s also important to remember to get the right amount of each macronutrient because having too much isn’t the best for your body.

Then, show students the micronutrient table which explains what each vitamin and mineral does in the body and which foods they’re commonly found in. Explain that micronutrients are also very important to the body, and that everybody’s body needs them. However, it’s also important to remember to get the right amount of each micronutrient because having too much isn’t the best for your body.

Step 5

Explain to students that they will be participating in a challenge. Distribute six cards to each group, food side up. Give each group a copy of the **Nutrient Challenge Activity Sheet**.

Step 6

Explain that they will work in rounds to quickly order their food cards from “Most” to “Least” for each nutrient. Explain that they should not look at the nutritional information on the back of each food. Instead, they are encouraged to discuss which foods are most likely to contain more of the nutrient than the others. As they work, they should list the foods in order on their student activity sheet. In order to encourage groups to focus on only one nutrient at a time, lead each “round” by

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naming the nutrient of the round. Remind students that the cards show one serving of that food.

Begin with macronutrients: **Protein, Carbohydrate, Fat, and Fiber.**

Then, move on to the micronutrients found on nutrition labels: **Vitamin D, Iron, Calcium, and Potassium.**

Finally, if your students are up for the challenge and time allows, ask them to order the foods by nutrients not found on nutrition labels: Vitamin A, Vitamin C, Vitamin E, B Vitamins, and Magnesium.

To keep students fully engaged, have students swap cards with another group at any point in the challenge.

Step 7

After students have completed all of the rounds, have students explore the [Interactive Nutrition Facts Label](#). The objective is for them to have a general understanding of how to find specific macronutrient or micronutrient information. If students do not have access to the Internet, share this image with them.

Step 8

Then, have each student review the nutrition facts on the back of each Food Model card and compare the facts to their own rankings for each nutrient from Most to Least.

If you had students order the nutrients **not** found on labels, have each student select one food from their group's assigned food. Explain that they will use [FoodData Central](#) to create a nutrition label for their selected food. Tell them to find all of the missing micronutrient values for Vitamin A, Vitamin C, Vitamin E, B Vitamins, and Magnesium. Remind them to be aware of the portion size.

Then, collectively order each food card from **Most** to **Least** for each nutrient, and have each group compare the full list to their own list to determine if they ordered them correctly.

Step 9

Discuss with the whole class:

- Are any foods very high in more than one nutrient?
- Why is it important to eat a variety of foods?
- Are any nutrients more challenging to get enough of than others?
- How do macronutrients and micronutrients affect human growth?
- Think of the body as many different interacting systems. How might a nutritional deficiency that affects one system also affect other systems?

New Label

| Nutrition Facts | |
|-------------------------------|----------------------|
| 8 servings per container | |
| Serving size | 2/3 cup (55g) |
| Amount per serving | |
| Calories | 230 |
| % Daily Value* | |
| Total Fat 8g | 10% |
| Saturated Fat 1g | 5% |
| Trans Fat 0g | |
| Cholesterol 0mg | 0% |
| Sodium 160mg | 7% |
| Total Carbohydrate 37g | 13% |
| Dietary Fiber 4g | 14% |
| Total Sugars 12g | |
| Includes 10g Added Sugars | 20% |
| Protein 3g | |
| Vitamin D 2mcg | 10% |
| Calcium 260mg | 20% |
| Iron 8mg | 45% |
| Potassium 235mg | 6% |

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

The serving size now appears in larger, bold font and some serving sizes have been updated.

Calories are now displayed in larger, bolder fonts.

Daily Values have been updated.

Added sugars, vitamin D, and potassium are now listed. Manufacturers must declare the amount in addition to percent Daily Value for vitamins and minerals.

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REFLECTION

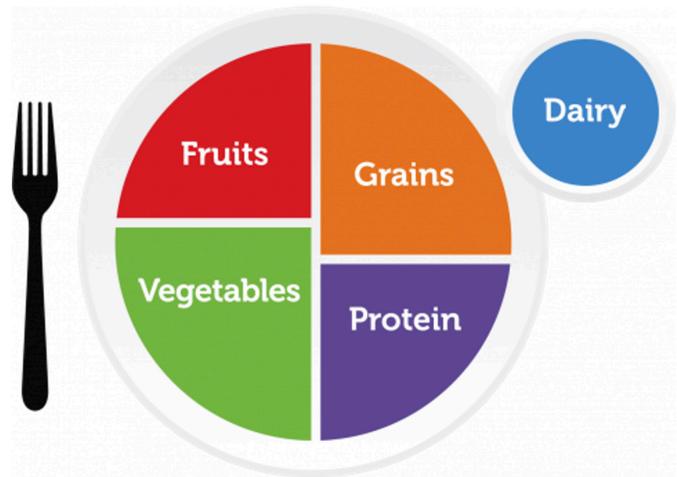
Show students the MyPlate graphic. Ask them to design a meal that has a good balance of nutrients, particularly macronutrients.

ASSESSMENT

Review their MyPlate meal designs to assess understanding of nutrients found in foods.

SPECIAL POPULATIONS

If you have students who are speakers of other languages, USDA produces the MyPlate graphics in 18 different languages.



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NUTRIENT TABLES

| MACRONUTRIENT TABLE | HOW IT HELPS YOUR BODY | FOODS |
|---------------------|---|---|
| Protein | Helps build maintain healthy muscles and gives your body energy | milk, yogurt, chicken, beef, nuts, egg, peanut butter, fish, cheese |
| Carbohydrate | Gives your body energy | pasta, cereal, bread, beans, popcorn, rice |
| Fats | Gives your body energy and helps your body absorb nutrients | whole milk, oil, avocado, full-fat cheese, salmon, beef, butter |
| Fiber** | Helps support digestion | apples, corn, whole grains, berries, avocado |

**Although Fiber is technically not considered a macronutrient, it's important to make sure that it's included in what you eat. *These nutrients are not found on nutrition labels.

| MICRONUTRIENT TABLE | HOW IT HELPS YOUR BODY | FOODS |
|---------------------|--------------------------------------|--|
| Vitamin A* | Helps keep eyes and skin healthy | eggs, milk, carrots, spinach, peppers, cereal, black-eyed peas |
| Vitamin C* | Helps heal cuts and bruises | oranges, bell peppers, tomatoes, kale, snow peas, kiwi |
| Vitamin D | Helps build strong bones and teeth | milk, salmon, cremini mushrooms, cereal, eggs |
| Vitamin E* | Helps protect cells | almonds, avocados, spinach, broccoli, shrimp, olive oil |
| B vitamins* | Helps cells function properly | tuna, milk, yogurt, cheese, beef, crab, cereal, beans, eggs |
| Iron | Helps keep your blood healthy | beef, shellfish, spinach, beans, quinoa, cereal, dried fruit |
| Calcium | Helps build strong bones and teeth | milk, yogurt, cheese, trout, squash, spinach, clams |
| Potassium | Helps nerves and muscles to function | salmon, beans, avocado, bananas, milk, mushrooms, tomato |
| Magnesium* | Helps the heart stay healthy | spinach, almonds, lima beans, tuna, brown rice |



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NUTRIENT CHALLENGE ACTIVITY SHEET

| ORDER THE FOODS... | ROUND 1 NUTRIENT: | ROUND 2 NUTRIENT: | ROUND 3 NUTRIENT: | ROUND 4 NUTRIENT: | ROUND 5 NUTRIENT: | ROUND 6 NUTRIENT: |
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| ROUND 7 NUTRIENT: | ROUND 8 NUTRIENT: | ROUND 9 NUTRIENT: | ROUND 10 NUTRIENT: | ROUND 11 NUTRIENT: | ROUND 12 NUTRIENT: | ROUND 13 NUTRIENT: |
|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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