



ACTIVITY #6

VITAMINS AND MINERALS

Vitamins and minerals are important

Vitamins and **minerals**, or **micronutrients**, are important if we want to live healthy, long lives. When compared to macronutrients (carbohydrate, protein, or fat molecules), micronutrients are quite a bit smaller. This means that, though we must have them to survive, they do not give us energy like macronutrients. Although they do not give us energy, micronutrients are needed in various systems and reactions that occur in our bodies. For example, did you know that Vitamin D and Calcium work together to keep our bones healthy? Or that Vitamin C is called an antioxidant, which can help out our immune system? It is important that we have the correct amounts of each vitamin and mineral. The **recommended dietary allowance (RDA)** is the level of nutrient recommended to keep each of us healthy. Your RDA for each nutrient varies depending on your age and gender.

Vitamins are compounds made of **organic** (or living) **material** such as plants and animals. Minerals are elements made from **inorganic** (never living) **material**. Some examples of vitamins include A, D, E, and K. Some examples of minerals are calcium, phosphorus, potassium, and iron. Vitamins and minerals are measured in units of *micrograms* (μg) and *milligrams* (mg). We get vitamins and minerals from the foods that we eat, and we need certain amounts of each for our bodies to function properly so that we can stay in good health. If you have too little of any vitamin or mineral, your health will decline, and you could even be hospitalized.

There are two types of vitamins found in foods: fat-soluble and water-soluble. **Fat-soluble vitamins** are found in foods that have fat in them, like nuts and meat, and are stored in our bodies. Some examples of fat-soluble vitamins are Vitamins A and D, which can be toxic if too heavily consumed. **Water-soluble vitamins** mix with water and are usually found in foods with a lot of water in them, like fruits and vegetables. Some examples of water-soluble vitamins are Vitamins B and C. These vitamins are not stored for very long, so they quickly pass through our bodies. It is important to know the difference between fat-soluble and water-soluble vitamins so we can understand which foods are good vitamin sources.

The best way to get the vitamins and minerals you need is to eat a healthy, balanced diet of fruits, vegetables, grains, proteins, and “healthy fats” (like nuts). However, some people are unable to get all the vitamins and minerals their bodies need, so a healthcare provider may prescribe or recommend a multivitamin or a specific vitamin or mineral supplement to make sure their nutritional needs are being met. The good news is that if you eat a healthy diet you won’t need to take supplements to add vitamins and minerals to what you eat. Vitamins come in many different forms, and it can be confusing to have to think about so many choices. Be sure to talk with your healthcare provider before taking vitamin and mineral supplements.

CHECK YOUR THINKING

Use the reading to find and support your answers.

1. _____ are made from organic material and _____ are made from inorganic material.
2. Who should you talk to if you think you need to take multivitamins?
3. Draw a picture of something organic. Next, draw a picture of something inorganic.
4. Underline the difference between macronutrients and micronutrients.

LET'S TRY IT TOGETHER

Vitamins and Minerals

Here's the Story

Savannah is at the snack bar before her Saturday soccer game. Her mom has given her money to buy something to eat before the game. There are several choices, but Savannah wants to be sure to eat something healthy that will give her energy. She knows that string cheese has calcium, a mineral, which is healthy for her because it will help her bones grow and remain strong. Can you help her figure out how much calcium there is in string cheese?

Directions

First, review the chart of recommended daily allowances for the following minerals.

Recommended Daily Allowances (RDA)			
Age Group	Calcium mg	Iron mg	Potassium mg
Males			
14-18 y	1300	11	4700
Females			
14-18 y	1300	15	4700

Next, let's review the total milligrams of calcium in string cheese.

String Cheese	Total milligrams
Calcium	208 mg

Last, let's calculate the percentage of Savannah's RDA of calcium that she can get from eating one serving of string cheese. Use the charts above to help you figure out the values.

$$\frac{\text{Total amount of nutrient}}{\text{RDA}} \times 100 = \text{Percentage of RDA Fulfilled}$$

By eating the string cheese, what percentage of Savannah’s RDA for calcium can be fulfilled?
(Round to the nearest whole number)

Calcium: (208 mg Calcium ÷ 1300 mg RDA Calcium) x 100 = 16 %

FUN FACT:

Antioxidants are chemicals found in fruits and vegetables. They reduce damage in the body which may cause deterioration in muscles, organs, and fat. Unlike what we know about vitamins and minerals, there is no specific RDA for the amount of antioxidants we need for our bodies to function.

TRY IT ON YOUR OWN

James is having a sleepover with two of his best friends. He has picked out all sorts of snacks and drinks for them to eat throughout the night. One of the snacks James has selected is cheese puffs. Can you figure how much Vitamin A, a fat-soluble vitamin, there is in cheese puffs?

Directions

First, let’s review the chart below, so that James understands the RDA he needs of Vitamins A, C, and D.

Recommended Daily Allowances (RDA)			
Age Group	Vitamin A µg	Vitamin C mg	Vitamin D IU
Males			
14-18 y	900	75	600
Females			
14-18 y	700	65	600

Next, let's review the total micrograms of Vitamin A found in cheese puffs.

Cheese Puffs	Total micrograms
Vitamin A	11 µg

Last, let's calculate the percentage of RDA fulfilled for Vitamin A found in cheese puffs. (**Round to the nearest whole number**)

$$\text{Total amount of nutrient} \div \text{RDA} \times 100 = \text{Percent of RDA fulfilled}$$

Summarize it

Vitamin	Total micrograms in cheese puffs	% RDA fulfilled
Vitamin A		

Thinking More Deeply

Foods that fulfill 20% of a person's RDA for Vitamin A are considered good sources. Are cheese puffs a good source of Vitamin A? What snack options are rich in Vitamin A?

TAKE IT HOME: HOW ABOUT YOU?

Directions

Use the tables on the following page to calculate the percent of RDA fulfilled for Vitamin C and Potassium if **you** ate one plain, baked potato.

Recommended Daily Allowances (RDA)		
Age Group	Vitamin C mg	Potassium mg
Males		
14-18 y	75	4700
Females		
14-18 y	65	4700

1 plain, baked potato	mg
Vitamin C	20
Potassium	610

First, identify the number of micrograms of Vitamin C and Potassium in a plain, baked potato.

Next, to determine the amount of Vitamin C in a plain, baked potato, use the formula to calculate the percentage of RDA fulfilled.

Last, to determine the amount of Potassium in a plain, baked potato, use the formula to calculate the percentage of RDA fulfilled.

Summarize it

Mineral	Total milligrams in a plain, baked potato	% RDA fulfilled
Vitamin C		
Potassium		

Thinking More Deeply

To be considered a good source of Vitamin C and Potassium, a food should fulfill at least 20% of your RDA. Is a plain, baked potato a good source of Vitamin C and Potassium?