

# Nutrients

PH2.1: Identify the three classes of nutrients



## What's in a Meal?

You come home from school famished and put together a plate of food consisting of two donuts, a hamburger, some chips and a chocolate-coated energy bar. Answer the questions below based on these food choices.



1. Which of the foods on the plate would you consider "healthy"? Which are "unhealthy?" Why?
2. Think about the ingredients that make up these foods. List as many as you can below (you can guess!).
3. How do you think you will feel after consuming this meal?
4. Your mother comes home and sees your plate of food and comments, "You really should eat healthier!" If you were to try to follow her advice, what foods would you put on your plate the following day?

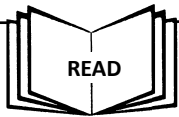
## DISCUSS

Share your answers. Then share with one another what your ACTUAL eating habits look like, on average. What influences your food choices?



Three classes of nutrients make up all the food we eat: carbohydrates, lipids (fats), and protein. The phrase, “You are what you eat,” refers to the fact that these building blocks are transformed from the food we eat into the cells that make up every tissue and organ in our bodies. It is truly an amazing process if you think about it!

Read about each class of nutrient, marking the text as you go. Answer the challenging questions that follow each section after you read. *(Text adapted from kidshealth.org)*



## CARBOHYDRATES

**Simple carbohydrates:** (Also called simple sugars) Simple sugars are found in refined sugars, like the white sugar you'd find in a sugar bowl. If you have a lollipop, you're eating simple carbs. But you'll also find simple sugars in more nutritious foods, such as fruit and milk.

**Complex carbohydrates:** (Also called starches) Starches include grain products, such as bread, crackers, pasta, and rice. As with simple sugars, some complex carbohydrate foods are better choices than others. Refined grains, such as white flour and white rice, have been processed, which removes nutrients and fiber. But unrefined grains still contain these vitamins and minerals. Unrefined grains also are rich in fiber, which helps your digestive system work well.

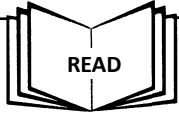
### How the Body Uses Carbohydrates

When you eat carbs, your body breaks them down into simple sugars, which are absorbed into the bloodstream. As the sugar level rises in your body, the pancreas releases a hormone called insulin. Insulin is needed to move sugar from the blood into the cells, where the sugar can be used as a source of energy. When this process goes fast — as with simple sugars — you're more likely to feel hungry again soon. When it occurs more slowly, as with a whole-grain food, you'll be satisfied longer.



Answer the questions below. You may refer back to the reading for help if needed.

1. Why is it better to get your simple sugars from foods like fruit and milk, rather than foods like lollipops?
2. Why does a bowl of oatmeal fill you up better than sugary candy with the same amount of calories as the oatmeal?



## FATS

Some foods, including most fruits and vegetables, have almost no fat. Other foods have plenty of fat. They include nuts, oils, butter, and meats like beef. The name — fat — may make it sound like something you shouldn't eat. But fat is an important part of a healthy diet. And little kids, especially, need a certain amount of fat in their diets so the brain and nervous system develop correctly. Fats fuel the body and help absorb some vitamins. They also are the building blocks of hormones and they insulate nervous system tissue in the body.

### Types of Fat

You might see ads for foods that say they're "low-fat" or "fat-free." Lower-fat diets have been recommended for health and to help people lose weight. But nutrition experts are finding that fats are more complicated and that some kinds of fat are actually good for your health. As a bonus, fat in food helps people feel satisfied, so they don't eat as much. But that doesn't mean a high-fat diet will be good for you. And some fats are better than others. Here are the three major types:

**Unsaturated fats:** These are found in plant foods and fish. These may be good for heart health. The best of the unsaturated fats are found in olive oil, peanut oil, canola oil, albacore tuna, and salmon.

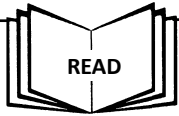
**Saturated fats:** These fats are found in meat and other animal products, such as butter, cheese, and all milk except skim. Saturated fats are also in palm and coconut oils, which are often used in commercial baked goods (the kind you buy at the store). Eating too much saturated fat can raise blood cholesterol levels and increase the risk of heart disease.

**Trans fats:** These fats are found in margarine, especially the sticks. Trans fats are also found in certain foods that you buy at the store or in a restaurant, such as snack foods, baked goods, and fried foods. When you see "hydrogenated" or "partially hydrogenated" oils on an ingredient list, the food contains trans fats. Trans fats are also listed on the food label. Like saturated fats, trans fats can raise cholesterol and increase the risk of heart disease.



Answer the questions below. You may refer back to the reading for help if needed.

3. What are the health benefits and health dangers of fats?
4. Which types of fats are healthy and what types of food contain them?



## PROTEIN

You probably know you need to eat protein, but what is it? Many foods contain protein, but the best sources are beef, poultry, fish, eggs, dairy products, nuts, seeds, and legumes like black beans and lentils. Protein builds, maintains, and replaces the tissues in your body. Your muscles, organs, & immune system are made up mostly of protein. Your body uses the protein you eat to make lots of specialized protein molecules that have specific jobs. For instance, your body uses protein to make hemoglobin, the part of red blood cells that carries oxygen to every part of your body. Other proteins are used to build cardiac muscle. In fact, whether you're running or just hanging out, protein is doing important work like moving your legs, moving your lungs, and protecting you from disease.

### All About Amino Acids

When you eat foods that contain protein, the digestive juices in your stomach and intestine go to work. They break down the protein in food into basic units, called amino acids. The amino acids then can be reused to make the proteins your body needs to maintain muscles, bones, blood, and body organs. Proteins are sometimes described as long necklaces with differently shaped beads. Each bead is a small amino acid. These amino acids can join together to make thousands of different proteins. Scientists have found many different amino acids in protein, but 22 of them are very important to human health. Of those 22 amino acids, your body can make 13 of them without you ever thinking about it. Your body can't make the other nine amino acids, but you can get them by eating protein-rich foods. They are called essential amino acids because it's **essential** that you get them from the foods you eat.

### Different Kinds of Protein

Protein from animal sources, such as meat and milk, is called complete, because it contains all nine of the essential amino acids. Most vegetable protein is considered incomplete because it lacks one or more of the essential amino acids. This can be a concern for someone who doesn't eat meat or milk products. But people who eat a vegetarian diet can still get all their essential amino acids by eating a wide variety of protein-rich vegetable foods.



Answer the questions below. You may refer back to the reading for help if needed.

5. What do proteins do in the body?
6. Who might be at risk of protein deficiencies in their diet? Why?



Use the following questions to check your understanding:

1. What are the 3 nutrients that provide the body with energy?
  - a. Calories, vitamins, and minerals
  - b. Fats, proteins, and carbohydrates
  - c. Fats, proteins, calories
  - d. Vitamins, carbohydrates, minerals
2. What are the building blocks of protein?
  - a. Calories
  - b. Carbohydrates
  - c. Starches
  - d. Amino Acids
3. Carbohydrates are divided into what 2 types?
  - a. Saturated and Unsaturated
  - b. Partially Hydrogenated and Hydrogenated
  - c. Essential and Non-Essential
  - d. Complex and Simple
4. What type of fat is healthy?
  - a. Unsaturated
  - b. Saturated
  - c. Complex
  - d. Essential



**Keep a food log for 24-hours (1 full day), recording everything you consume (both food and drink) using the chart on the next page. You may estimate the amount and number of calories if it is not listed on a food label. Once you finish the log, answer the questions below on a separate sheet of paper:**

- 1) Was this an average day of eating for you, or did you eat differently for any particular reason?
- 2) Approximately how many calories did you consume on this day?
- 3) Which foods that you ate were least healthy? Most healthy?
- 4) What influenced your food consumption on this particular day?
- 5) Reflect on the process of keeping the food log? What did you learn?

## 24-HOUR FOOD LOG

Date: \_\_\_\_\_

Time	Food Item	Amount Consumed	# calories	Other Notes
<b>TOTAL NUMBER OF CALORIES:</b>				