

# Endless Options

Grade 4

## ▶ Next Generation Science Standard: 3-5-ETS1-2

Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

**Application:** Product developers use innovative ingredients so that people with special dietary needs such as gluten intolerance, diabetes, or high cholesterol have flavorful food options to choose from. With this activity students will learn about the challenges presented by special diets and the options available today.

### Materials for the class:

- variety of food labels
- Internet access
- scenario card for each group

### Teacher preparation:

Ask students to bring in food labels. Make sure the boxes/cans/wrappers represent various dietary needs. Specifically look for packages labeled as:

- gluten-free
- low in sugar
- foods that use low-calorie sweeteners
- low in carbohydrates
- containing no lactose, milk, milk powder, whey, whey solids, and so forth
- low in sodium
- containing no peanuts



### Introducing the lesson:

Farmers around the world grow the food we enjoy every day. There are three basic steps to get food from the farm to the dinner table:

- ▶ *Production* involves growing the food on a farm.
- ▶ *Processing* is what happens to the food once it is ready to be picked. This could involve packaging, freezing, or drying it. This is when the food is properly packaged and labeled for sale.
- ▶ *Transportation* involves taking the food to the store.

### Lesson:

1. Following a special diet or having a food allergy used to mean having limited food choices. Today people with special dietary needs or food allergies have many more choices. **Ask students:**
  - What is a food allergy? *A food allergy is a disorder with the body's immune system in response to a specific food protein. Some people's symptoms are mild; others' are life-threatening. Actual food allergies must be diagnosed by a doctor; sensitivity to a particular food is not necessarily the same as an allergy.*
  - What are the eight major food allergens? *Wheat, soy, milk, eggs, fish, shellfish, peanuts, and tree nuts. All of these must be labeled.*
  - What are some special diets that people may have to follow? *Dairy free, low fat, low sugar/low carb, high fiber, gluten free, low sodium, low cholesterol, etc.*
  - What are some reasons that people may have to follow a special diet? *Allergies, lactose intolerance, diabetes, high cholesterol, high blood pressure, gluten intolerance, to lose weight, digestive problems, etc.*
  - Is diet the only factor that affects these conditions? *No. Heredity and lifestyle have an impact, too.*

**Did you know?** According to the American Academy of Pediatrics, about 8% of children have food allergies. People with allergies have a wider range of food choices than ever before, with a variety of foods reformulated to meet their needs, without sacrificing taste.



2. Point out that processed food must list the food's ingredients and nutritional information on the label and the eight major allergens are labeled separately. Give students a chance to look at various food labels. **Ask students:**
  - How is a food label valuable to someone with special dietary needs? *It helps them avoid foods that they could have an allergic reaction to, helps them locate foods that fit a special diet, etc.*
3. Display the food labels on a table. Break the class into four groups. Provide each group with a special diet scenario card. Ask the students to use the food labels and the Internet to create a grocery list that matches each person's needs.
4. After groups have finished their lists, allow students to share how food labels help them locate foods that meet specific dietary restrictions. Discuss the options available to people today and the choices they have. As a finale, do a taste test with a food item that has reduced sodium, fat, or sugar and the comparable regular product. Do students feel that people with dietary restrictions have good-tasting alternatives?

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## Scenario Card 1

### Andy has diabetes.

**Scenario:** Andy needs to control his diet. What foods can Andy eat that are lower in sugar, use low-calorie sweeteners, or are low in carbohydrates? He needs to stay around 1,600 calories a day. About half of those calories should come from carbohydrates, so Andy can have about 200–220 grams of carbohydrates a day.

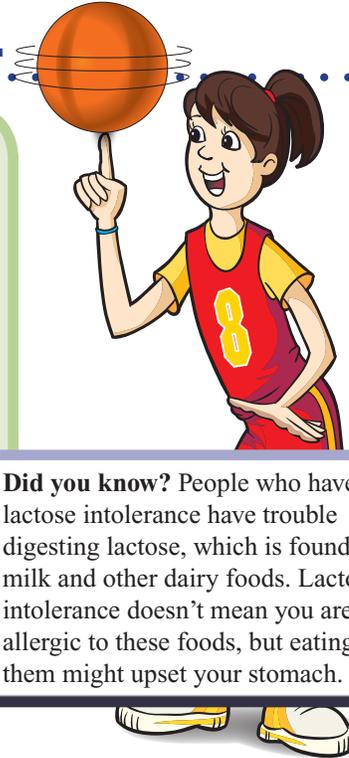
Use the food labels to help you make a shopping list for Andy.



**Did you know?** When someone has diabetes, their body doesn't use glucose properly. Glucose is the main source of energy for the body.

## Scenario Card 2

### Lilly has lactose intolerance.



**Scenario:** Lilly would love to have a cold glass of milk, but she can't drink milk because she is lactose intolerant. This means that her dairy consumption needs to be limited because dairy products make her tummy upset. She has to avoid all foods that contain these and other ingredients:

lactose	milk solids	butter
milk	nonfat milk solids	cheese
milk powder	cream	whey

Sometimes Lilly gets lucky and finds a product that says "lactose free" on the label. Use the food labels to help you make a shopping list for Lilly.

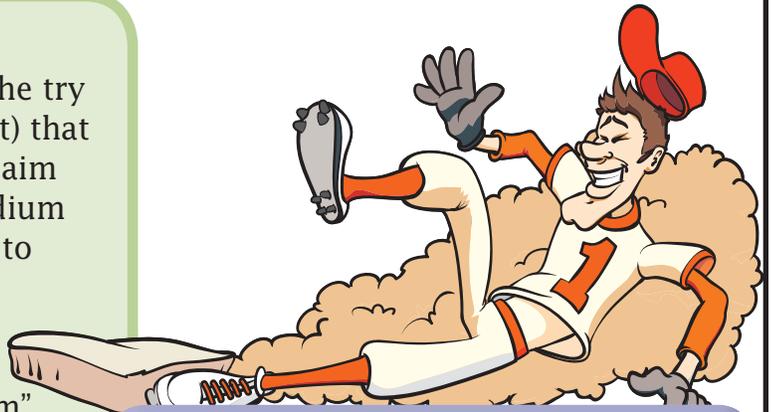
**Did you know?** People who have lactose intolerance have trouble digesting lactose, which is found in milk and other dairy foods. Lactose intolerance doesn't mean you are allergic to these foods, but eating them might upset your stomach.

## Scenario Card 3

### Mr. Brown has high blood pressure.

**Scenario:** Mr. Brown has high blood pressure. His doctor suggested that he try to reduce the amount of sodium (salt) that he eats every day. Mr. Brown should aim for less than 2,300 milligrams of sodium each day. He has to read food labels to help keep his sodium intake low.

Sometimes Mr. Brown gets lucky and finds a product that says "low sodium" on the label. Use the food labels to help you make a shopping list for Mr. Brown.



**Did you know?** Blood pressure measures the force of blood pushing against the walls of your blood vessels. A variety of factors contribute to high blood pressure, including being overweight, smoking, lack of exercise, stress, diet, and family history.

## Scenario Card 4

### Brigitte has a peanut allergy.

**Scenario:** Brigitte has been diagnosed with a very serious peanut allergy. She has to avoid all foods that contain these ingredients and others that may contain traces of peanuts:

peanuts	nut meat
beer nuts	peanut oil
ground nuts	peanut butter
mixed nuts	peanut flour
nut pieces	

Remember that Brigitte cannot even have a food that was processed in a factory that contained peanuts or else she may have to go to the hospital. Use the food labels to help you make a shopping list for Brigitte.

**Did you know?** Peanut allergies are the most common food allergy. People with peanut allergies must always know exactly where their food comes from and what the food might have come into contact with. For example, taking peanuts off the top of an ice cream sundae does not make it safe to eat because peanut residues may still be present.

