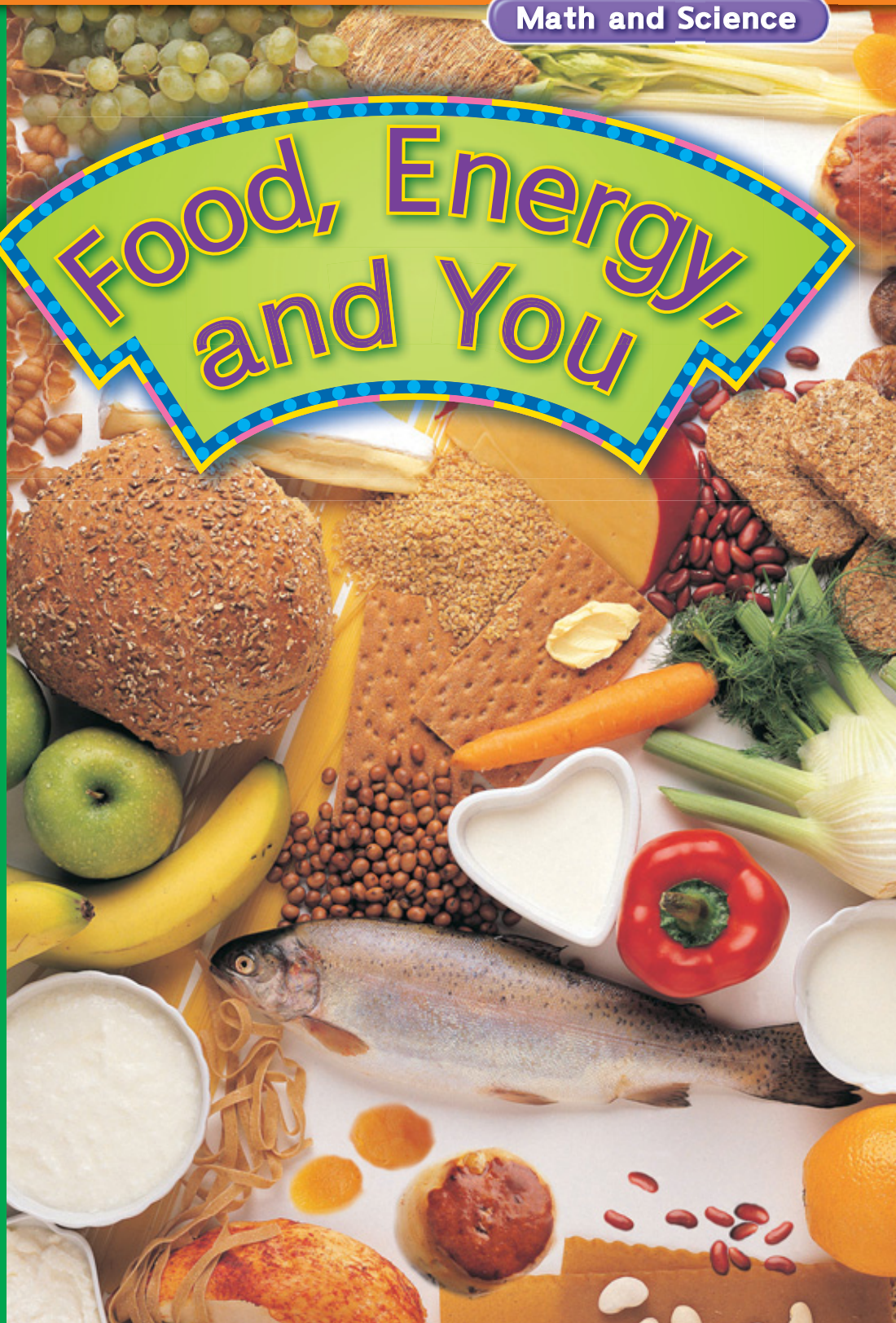


Real-World Problem Solving

Math and Science

Food, Energy, and You



About the Cover

What kinds of measurements could you take of the items on the cover?

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Send all inquiries to:
McGraw-Hill Education
8787 Orion Place
Columbus, OH 43240-4027

ISBN: 978-0-02-101053-0
MHID: 0-02-101053-6

Printed in the United States of America.

9 10 DOC 20 19 18 17 16 15 14



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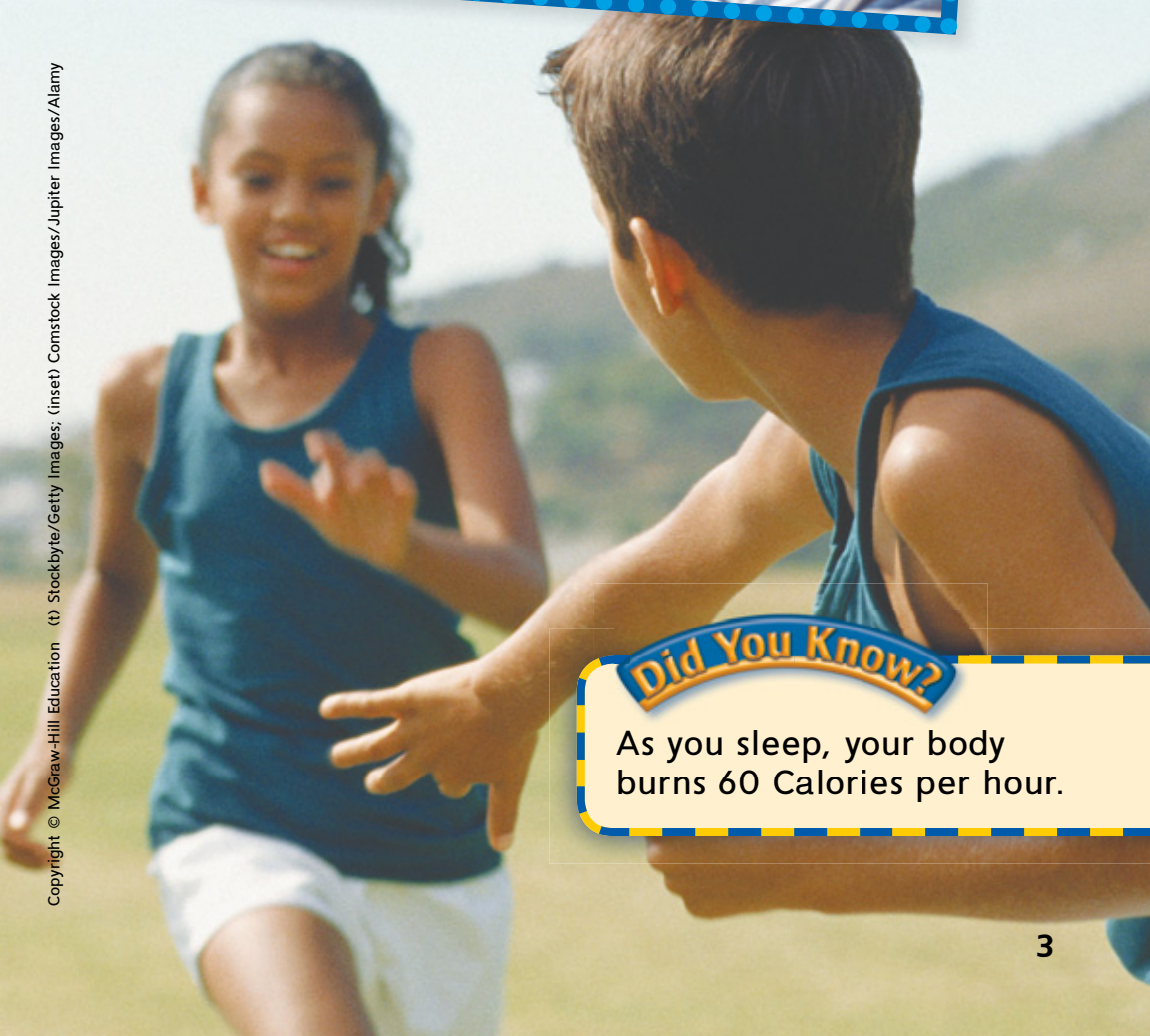
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Food as Fuel

Do you ever run laps around your neighborhood or swim laps at the pool? These activities require a lot of energy. You also need energy for less intense activities, such as sleeping, reading, and eating. The food that you eat supplies the energy you need every day.





Did You Know?

As you sleep, your body burns 60 Calories per hour.

Creating Energy

You need food to maintain energy. Just as cars need fuel to run, our bodies need food for energy. However, some kinds of food provide more energy than other kinds.





When you are hungry, try eating a bowl of pasta or a handful of carrots. These foods contain a high level of **carbohydrates**. Carbohydrates produce energy and are found in potatoes, pasta, breads, grains, and vegetables.

A baked potato has about 34 grams of carbohydrates.



TALK ABOUT IT

There are two servings in a baked potato. About how many grams of carbohydrates are in one serving? Explain your reasoning.



You have learned that carbohydrates produce a lot of energy. How do carbohydrates convert to energy? First, your body breaks down the carbohydrates into a sugar called **glucose**. Next, your blood transfers the glucose and **oxygen** to every cell in your body. Glucose and oxygen meet inside each cell and release energy.



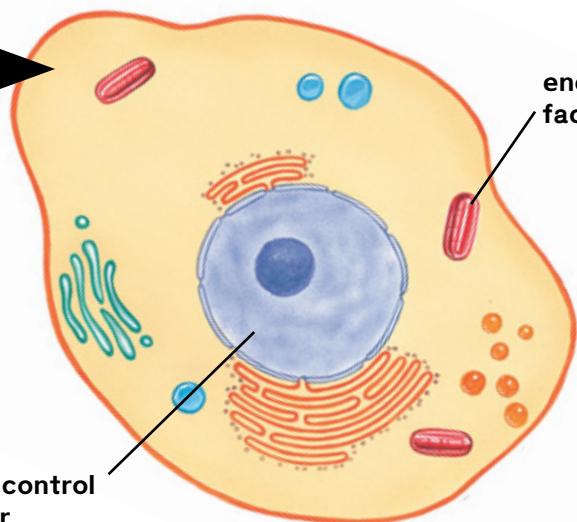
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This is the energy that each cell uses to do its work. Without glucose and oxygen, cells cannot function properly. You will feel weak and have little energy.

Energy is released inside a cell.

oxygen
glucose



energy
factory

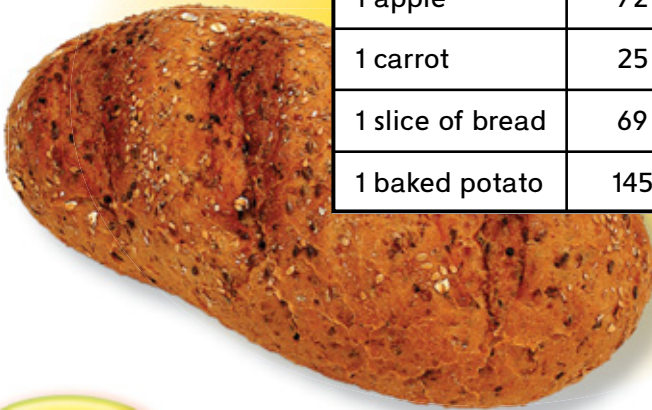
cell's control
center

Did You Know?

Our bodies want blood glucose levels to stay between 70 and 110. (These numbers are the milligrams of glucose in 100 milliliters of blood.)

Measuring Calories

The energy in food is measured in units called **Calories**. The more Calories in a food, the more energy it will provide for your body. When you do not use these Calories, they are stored inside your body as fat. You can review the nutrition label on a food package to determine how many Calories are in one serving.



Food	Calories
1 apple	72
1 carrot	25
1 slice of bread	69
1 baked potato	145

TALK ABOUT IT

Explain how you would measure the total number of Calories in two servings of food.

Nutrition Facts

Serving Size 1 cup (55 g)

Servings Per Container about 13

Amount Per Serving

Calories 200 Calories from Fat 10

% Daily Value*

Total Fat 1g **2%**

Saturated Fat 0g **0%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 0mg **0%**

Potassium 180mg **5%**

Total Carbohydrate 42g **14%**

Dietary Fiber 5g **20%**

Sugars 12g

Protein 5g

Vitamin A 0% Vitamin C 0%

Foods contain different amounts of Calories.



You can also skim a food label to determine the amounts of other **nutrients** that are in the foods you eat. A food label lists each nutrient by its mass in grams or milligrams (one thousandth of a gram). Below are the nutrition facts for one cup of lowfat milk.

How many grams of carbohydrates does one cup of milk contain?

Nutrition Facts	
Valeur nutritive	
Per 1 cup (250 mL) / par 1 tasse (250 mL)	
Amount Teneur	% Daily Value % valeur quotidienne
Calories / Calories 80	
Fat / Lipides 0 g	0 %
Saturated / saturés 0 g + Trans / trans 0 g	0 %
Cholesterol / Cholestérol 0 mg	
Sodium / Sodium 115 mg	5 %
Carbohydrate / Glucides 13 g	4 %
Fibre / Fibres 0 g	0 %
Sugars / Sucres 11 g	
Protein / Protéines 10 g	
Vitamin A / Vitamine A	15 %
Vitamin C / Vitamine C	0 %
Calcium / Calcium	30 %
Iron / Fer	0 %
Vitamin D / Vitamine D	45 %





The amount of Calories a person needs depends on his or her age, gender, height, weight, and activity level. People who are active need more Calories than people who are inactive.



Keeping Your Body Fueled

Two different kinds of carbohydrates exist in the foods we eat. One kind is called complex carbohydrates. Foods that contain complex carbohydrates break down glucose slowly. You receive a constant energy supply because the glucose goes into your blood at a slower pace.





Whole-grain foods, beans, fruits, and vegetables are examples of foods that contain complex carbohydrates. They also usually contain more nutrients and fiber than other foods.



Activity	Calories
Reading	65
Eating	70
Walking	246
Swimming	384
Running	576

This chart shows the number of Calories you would use doing each activity for an hour.

TALK ABOUT IT

Explain how to find the number of Calories needed to run for 15 minutes.



Simple carbohydrates are the other kind of carbohydrate. They provide instant energy because they break down blood glucose quickly. Simple carbohydrates are found in foods such as cookies and cakes. They do not provide lasting energy like foods that contain complex carbohydrates. Your blood sugar will rise and fall quickly, making you feel nervous and tired.

100-Calorie Snacks

- 1 cup applesauce
- 3 cups light popcorn
- 1 orange
- 2 graham crackers

These 100-Calorie snacks will give you lasting energy.





If you choose foods that provide the lasting energy you need, then you will have the fuel to do the activities you want to do.



Glossary

carbohydrates

Part of food that gives energy. *(page 5)*

glucose

Sugar in the blood. *(page 6)*

oxygen

A gas that is found in air that helps the body work.
(page 6)

Calories

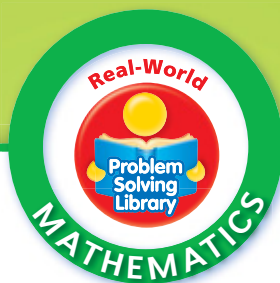
A unit of measure for energy. *(page 8)*

nutrients

Healthy parts of food that the body needs. *(page 10)*

Real-World Problem Solving

1. Look at page 3. How many Calories would be burned during 8 hours of sleep? [Introduction]
2. Look at pages 8 and 13. Suppose you ate a baked potato, two carrots, and an apple. Would walking for an hour use all of the Calories eaten? If not, how many Calories would not be used?
[Chapters 2 and 3]
3. Look at pages 8 and 14. Which has more Calories, an apple or a cup of applesauce? What is the difference? [Chapters 2 and 3]
4. Look at page 13. Estimate how many Calories you burn each day from reading. Explain your reasoning. [Chapter 3]
5. Plan two meals. Estimate the difference in Calories. Research how many Calories are in each meal. How close was your estimate?
[Chapters 2 and 3]
6. Look at page 13. Which burns more Calories, running for a half hour or walking for an hour? Explain how you found your answer. [Chapter 3]

**Math and Science**

Animal Habitats
Ecosystems All Around
Think About It!
Populations on the Rise
Water in Our World
Food, Energy, and You
Light, Sight, and Colors
So Bright
Moon Gazing

Math and Social Studies

Making a Budget
Craft Store Supplies
The Places We Live
Understanding Our
Government
Money Around the World
Appalachian Journey
Students at Work

