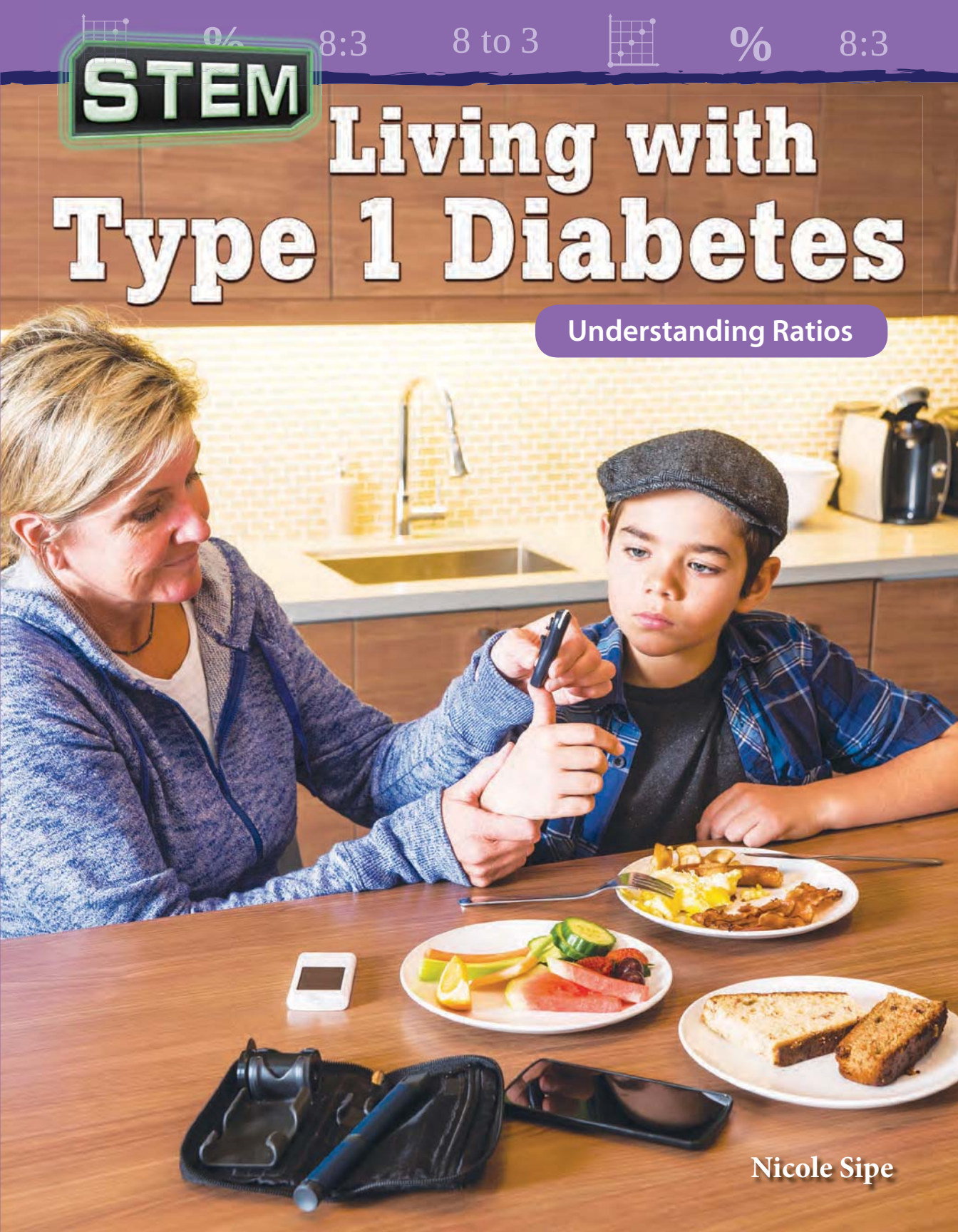
STEM

Living with Type 1 Diabetes

Understanding Ratios



Nicole Sipe

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A Different Normal

It's lunchtime at school and you're starving. Today is pizza day in the cafeteria—your favorite day! The spicy smell wafts down the hall and makes your mouth water. Your stomach grumbles, and you can almost swear it's saying, "Feed me now!" You can't wait to take a bite of a hot, cheesy, pepperoni-studded slice.

You and your friends amble toward the cafeteria, and they make a left at the fork in the hall to go toward it. Ignoring your grumbling stomach for a moment, you make a right toward the nurse's office. A visit to the school nurse before lunch is a normal part of your lunchtime routine.

The nurse greets you like always and has your supplies ready. You've done this a hundred (probably a thousand, feels like a million) times before. She knows the drill and so do you.

Before you found out you had Type 1 diabetes, you used to be afraid of needles. The thought of someone poking and prodding you sent a cold chill down your spine. Now, giving yourself injections of life-saving **insulin** at mealtimes has become a commonplace task. It is something you do every day, multiple times a day, and it is part of your life. It's normal for you. A *different* normal, yes—but it's *your* normal.





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Let's Explore Math

At lunchtime, 3 students visit the nurse to have their blood sugar levels checked, and 9 students visit the nurse to have their temperatures checked.

1. Choose all the correct ratios of students getting their blood sugar levels checked to students having their temperatures checked.

   A. 3:9

   B. 9:3

   C. 3:1

   D. 1:3

2. After helping the students, the nurse records $\frac{3}{12}$ in the daily report. What does this mean?

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What Is Type 1 Diabetes?

Type 1 diabetes is an **autoimmune disease** that prevents the body from getting energy from food. Behind your stomach, sits a gland called the **pancreas** (PAN-kree-uhs). This flat gland is in charge of making a **hormone** called insulin. Insulin is what helps turn sugar and other food into energy. People's bodies naturally release insulin when they eat. Insulin helps sugars from food enter the body's cells to be used for energy.

When someone has Type 1 diabetes, their immune system has destroyed insulin-producing cells in the pancreas. Sugar is not processed in the body like it should. This sugar is called *glucose*. It is the body's main energy source. In a person with diabetes, glucose stays in the blood and can't be turned into energy. A person with a lot of glucose in their blood is said to have high blood sugar. Having a lot of glucose in your blood is dangerous and can make you very sick.

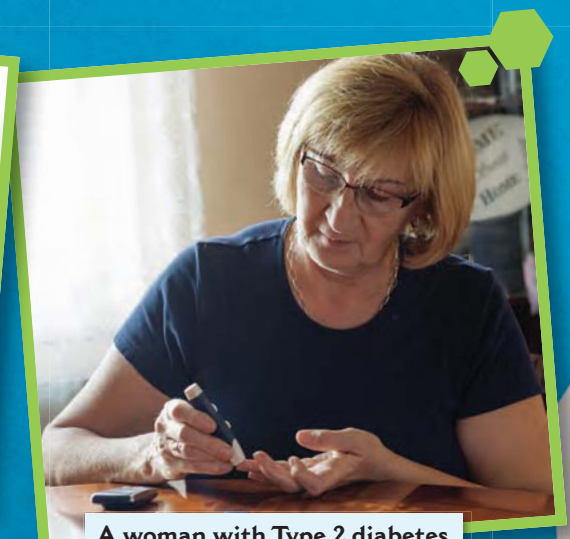
Types of Diabetes

There are three main types of diabetes. Type 1 diabetes occurs when a person's pancreas no longer makes insulin. Type 2 diabetes occurs when a person's body makes insulin, but it cannot properly use that insulin. Gestational diabetes occurs in some women when they are pregnant.

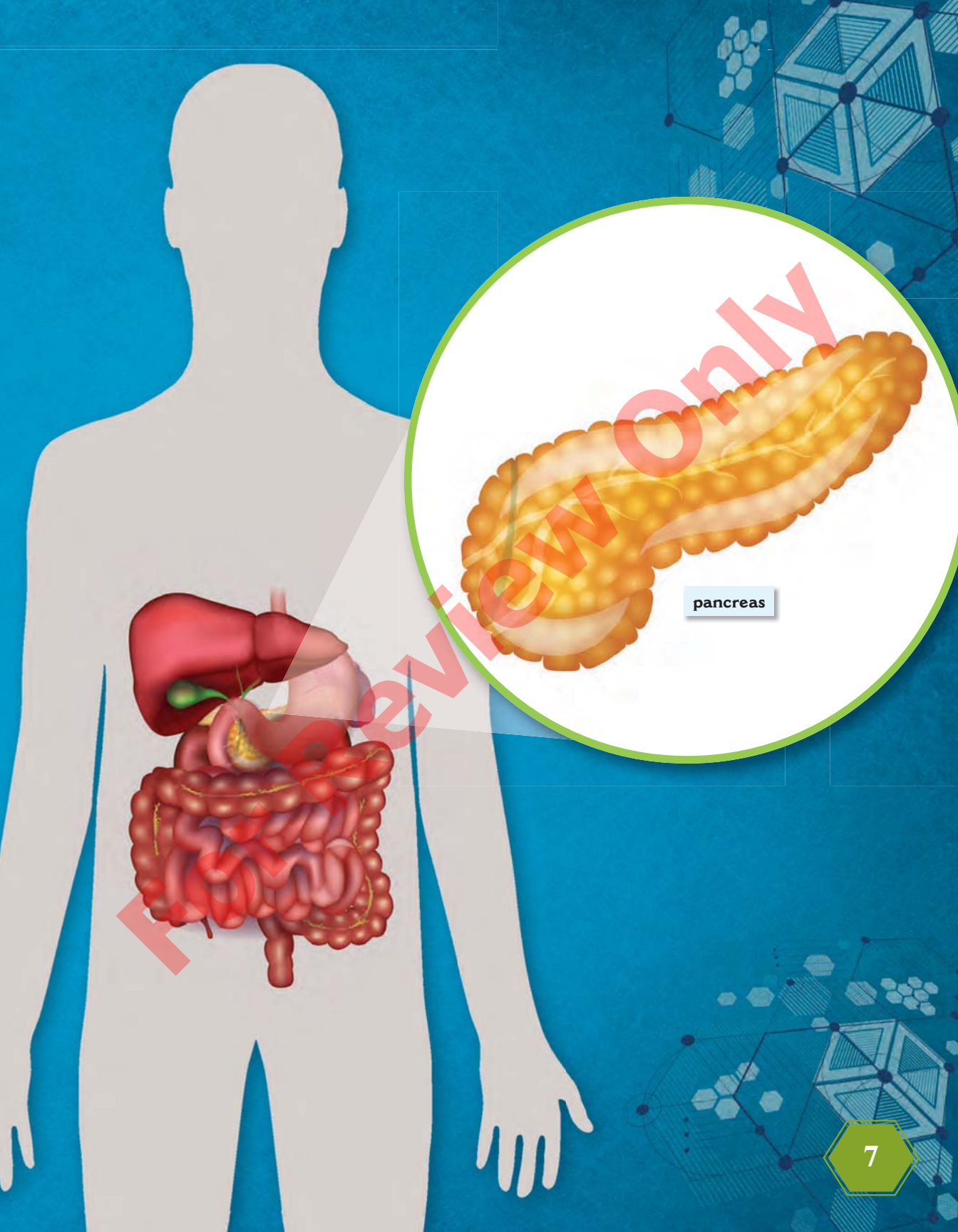
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A doctor tests a pregnant woman's blood for gestational diabetes.



A woman with Type 2 diabetes checks her blood sugar level.



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What Causes Diabetes?

Researchers are not exactly sure what causes Type 1 diabetes. They are still trying to figure out why this disease affects so many people worldwide. Nearly 3 million people in the United States have Type 1 diabetes. Researchers have some ideas, though. Studies have shown that Type 1 diabetes can be caused by **genetic** factors. People that have certain genes are more likely to have Type 1 diabetes. These genes cause the body to make **antibodies** that destroy cells in the pancreas. Studies have also shown that people who don't have these genes can still develop diabetes from **viruses** or environmental factors.

Regardless of why someone gets Type 1 diabetes, there are three things that are always true:

1. *You cannot "catch" diabetes.* It is not like the common cold. You can't pass it on from one person to the next!
2. *You do not get Type 1 diabetes from eating a lot of sweets.* What a person eats or drinks does not affect whether they get Type 1 diabetes.
3. *Children are not the only ones who get Type 1 diabetes.* Type 1 diabetes used to be called "**juvenile** diabetes" because it mostly affects young children. But people of any age can get this disease.



Certain genes in DNA increase the risk of developing Type 1 diabetes.

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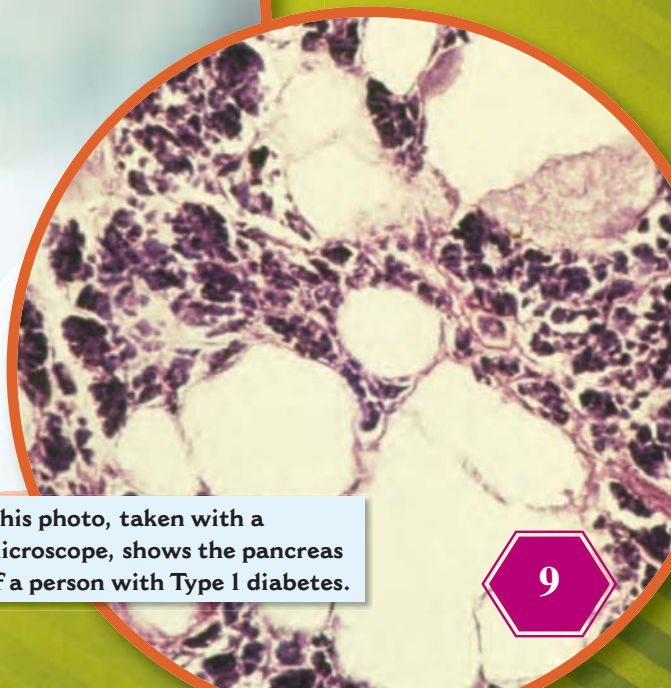
Let's Explore Math

In the United States, about 3,000,000 people have Type 1 diabetes. The total population of the country is about 323,000,000. Label each statement *true* or *false*. Then, change each false statement to make it true.

1. About 3 out of 323 people have Type 1 diabetes.
2. For every 3 people with Type 1 diabetes, there are 320 without it.
3. For every 323 people without Type 1 diabetes, there are 3 with it.
4. The ratio of people with Type 1 diabetes to people without it is 3 to 323.
5. The ratio of people with Type 1 diabetes to people without it is 3 to 320.







This photo, taken with a microscope, shows the pancreas of a person with Type 1 diabetes.

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