

**1** Listen and read. TR: 4.9

# Up, Down, *and All Around!*

You are going on a roller-coaster ride. Sit in the car and pull down the safety bar. Are you ready? Let's go!

First, you go up a steep hill. The roller coaster goes slow. Suddenly, when you reach the top, the roller coaster goes down the hill very quickly. Gravity pulls you down. Whooooosh! You feel very light!

Next, you reach a big circle, called the "loop-the-loop." This part is many people's favorite. First, you go up the circle, and you feel heavy. Gravity is pulling you down. Then you reach the top. You're high in the sky and you're hanging upside down! So why don't you fall out of your seat? Your body wants to fly off, but the speed of the car and a force called *centripetal force* keep you moving in a circle, and keep you in your seat!

The roller coaster uses friction to stop. If it stops quickly, your body wants to continue moving. But the safety bar keeps you in place! Roller coasters are the best!

**Paragraph 1:** What do you pull down when you get into a roller-coaster car?

**Paragraph 2:** What force pulls a roller coaster down a hill?

**Paragraph 3:** What force keeps people in their seats when the roller coaster is upside down?

**Paragraph 4:** What force stops the roller coaster?

## READING

### 1 Listen and read. TR: 4.6

# The Science of Skateboarding

Skateboards are much more than just four wheels and a piece of wood. There are three important parts of the skateboard: the deck, the truck, and the wheels.

The *deck* is the board. It is usually made of strong wood that can also bend. Skateboard decks have curves at the "nose" (the front) and the "tail" (the back). After you push and the wheels start turning, you should put your feet near the curves. They help you balance. The *truck*, connected to the wheels and the deck, helps you control the direction. When you lean right, the truck makes the deck turn right. When you lean left, the skateboard turns left. What about the *wheels*? The wheels move the board forward and backward. They also control the speed.

If you want to have fun, check that all three parts work before you go skateboarding. And don't forget your helmet, knee pads, and elbow pads!



A dog named Tillman can skateboard. He moves 100 meters (328 feet) in just 19.68 seconds and always chews the tires before he begins.



### 2 Read and write. Label the parts of a skateboard.

