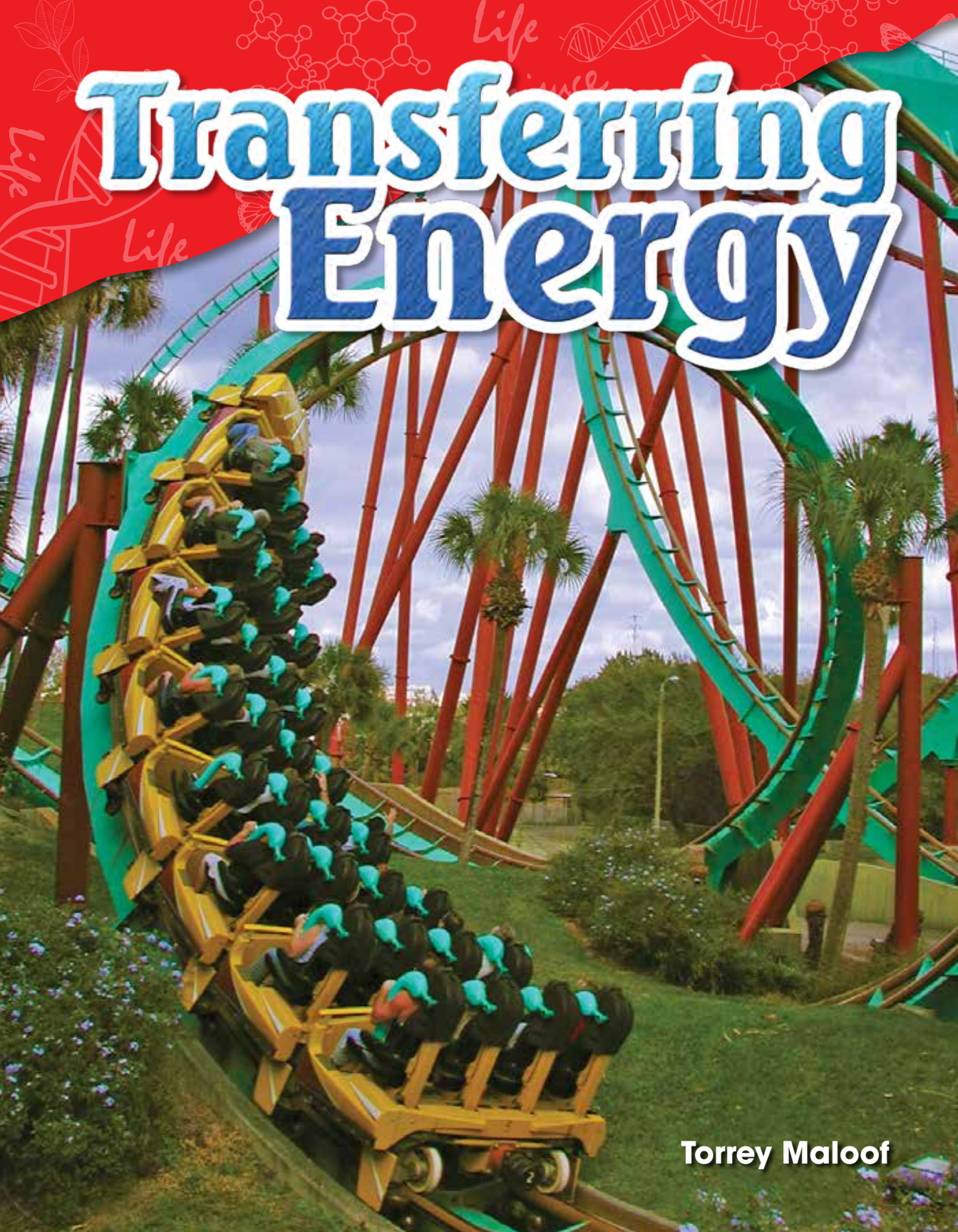
Transferring Energy



Torrey Maloof

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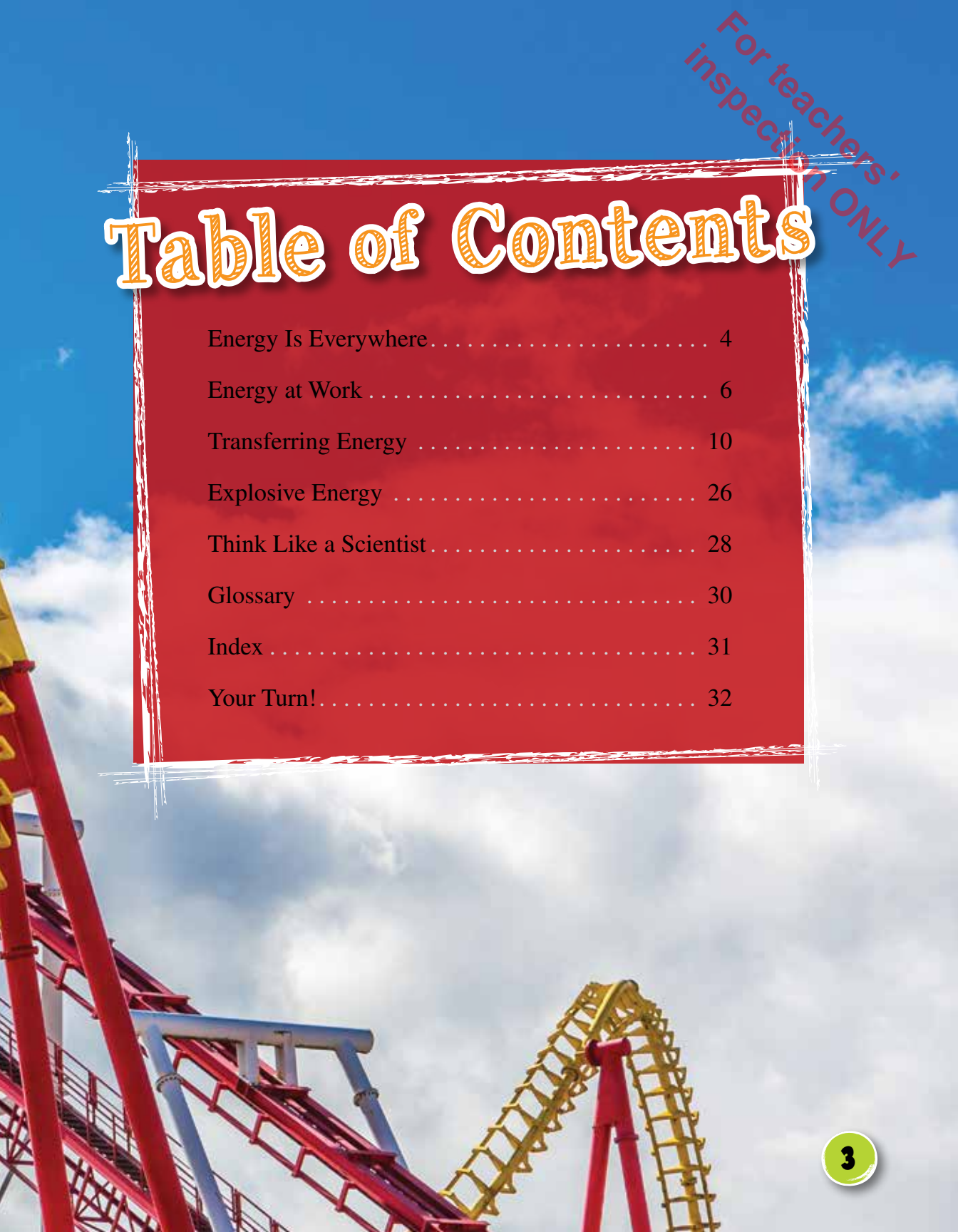
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Energy Is Everywhere

It's a chilly winter morning. The heater in your home kicks on just as your alarm clock begins to sound. With your eyes still closed, you fumble in the dark, feeling along the wall for the light switch. Flip! With one easy motion, your room is flooded with light. You silence your alarm, take a deep breath, and slowly open your eyes. You're ready to start your day. The heater in your home, the alarm clock by your bed, and the lights in your room all run on **energy**. You run on energy, too! Energy is everywhere!

You use energy to get out of bed, get dressed, and brush your teeth. Energy powers the bike you ride to school, keeps airplanes in the sky, and runs the cars that drive past you on the road. Everywhere you look, energy is at work. But what exactly is energy?



Caveman Style

The oldest source of energy that humans use is fire. We didn't begin using other sources, such as wind, until about 5,000 years ago. The first power plant wasn't even built until 1882.

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Energy powers a dirt bike.

The average American family spends about $2,000 a year on energy bills.

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Energy at Work

Energy is the power or ability to do some type of **work**. When scientists use the word *work*, they mean "movement." They are referring to the motion of atoms, molecules, and larger objects. In other words, energy sets things in motion!

Pretend you're rowing a boat on a lake. You push the oars forward. Then, you pull the oars back. This pushing and pulling propels, or moves, the boat. You're using force to move something. You're using energy to do work!



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There are two types of energy: stored and active. Active energy is known as **kinetic energy**. It's the energy of motion. It's working energy. Stored energy is called **potential energy**. It's energy that can be used later. Now, imagine a book sitting on a table. The book has potential energy. If you use your hand to push the book off the table, you're using kinetic energy. When the book falls, its potential energy changes to kinetic energy.

If you double the speed of an object, its kinetic energy increases by four times.

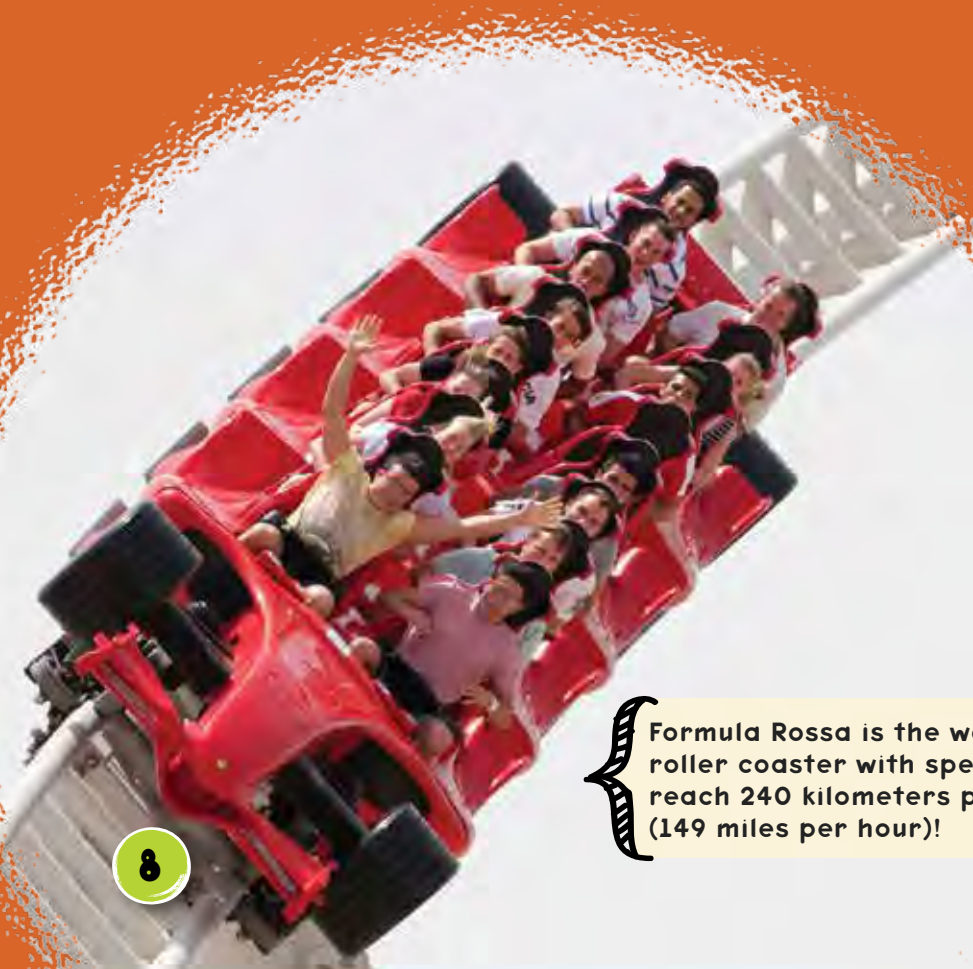


Powerful Potential

The heavier an object is and the higher off the ground it is, the more potential energy it has. *Harry Potter and the Order of the Phoenix* is over 800 pages! That book sitting on a high table sure has a lot of potential energy!

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A great example of kinetic and potential energy is a roller coaster. Machines in the track pull the car up to the top of the first hill. The machines' energy is stored in the car as potential energy. The car climbs higher and higher. It gains more potential energy. When it reaches the top of the hill, it has a lot of potential energy. The machines stop pulling the car. The car begins to roll down the hill. All that potential energy is finally released as the car zooms down the track. The potential energy has turned into kinetic energy. Riders scream as the car picks up speed. You won't hear the machines working anymore because the car is gliding on its own. Next time you ride a roller coaster, pay attention to the way the car moves before and after a drop.



Formula Rossa is the world's fastest roller coaster with speeds that reach 240 kilometers per hour (149 miles per hour)!



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Think Like a Scientist

How does solar energy work? Experiment and find out!

What to Get

- 2 latex balloons
- 2 plastic 2-liter bottles
- paint brush
- paint (black and white)

