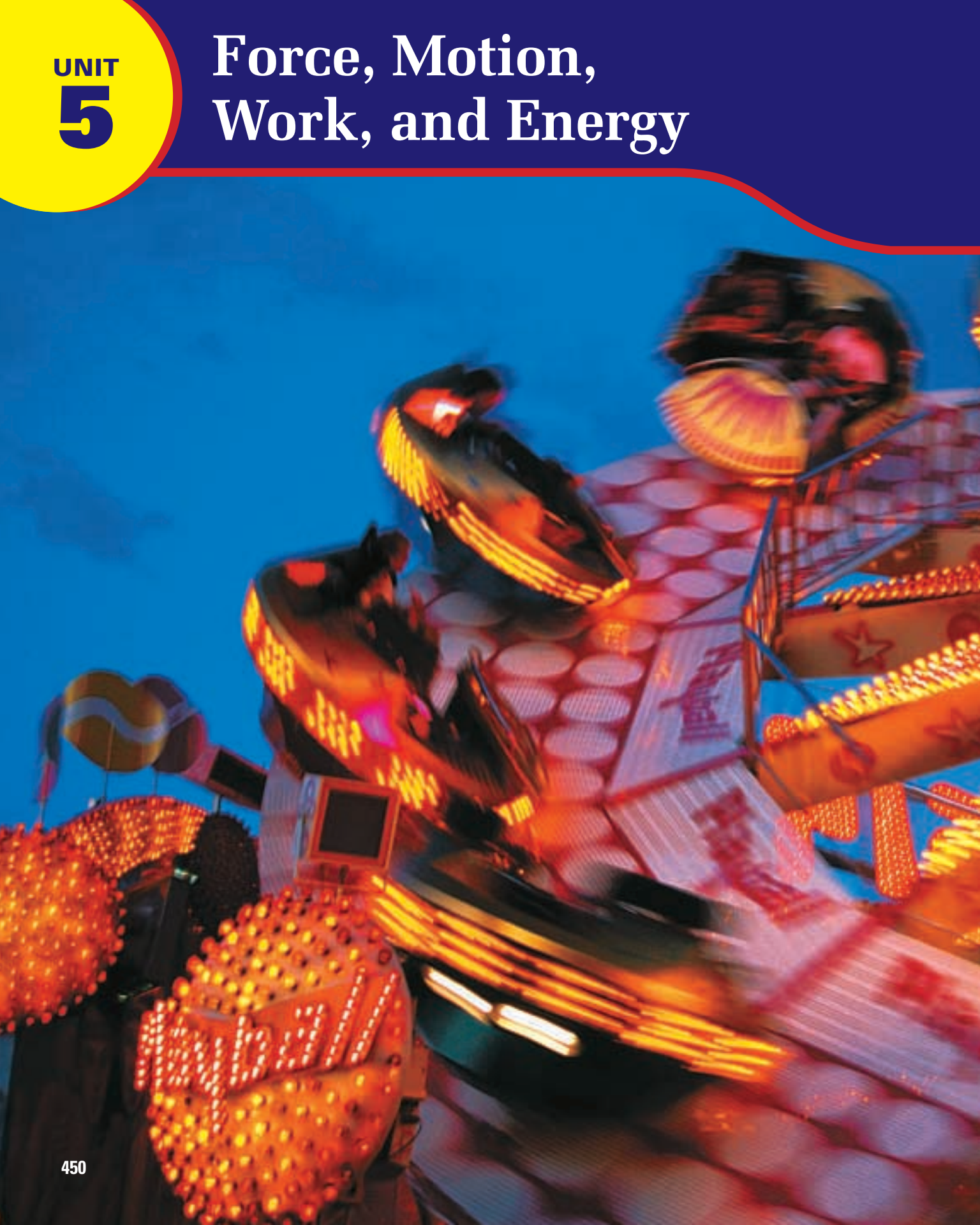
UNIT 5

Force, Motion, Work, and Energy



UNIT CONTENTS

Amusement parks make marvelous physics laboratories. Forces and accelerations are exaggerated to the point that they confuse the senses. Even rides such as a Ferris wheel, that appear rather gentle, can cause a strange feeling in your stomach when you go up over the top and begin to drop down. For the "strong at heart," there are rides that drop you with a motion that is close to free fall or catapult you high up into the air. Rides that swing you in rapid circles make you feel as though you are going to be flung off into the distance. Nevertheless, all of these rides obey the laws of physics. Newton's laws of physics have stood the test of time for over four centuries and will continue to do so for many centuries to come.

In this unit, you will extend your knowledge of forces and motion and study unique forms such as circular motion, projectile motion, and periodic motion under a linear restoring force. You will learn how the motion of planets in the solar system is similar to the motion of a car rounding a curve. You will learn how to predict whether a batted baseball will result in a home run. You will even discover how a pendulum helps a clock keep time. The universe will be your physics laboratory.

UNIT PROJECT PREP

At the end of this unit, you will have an opportunity to design and build a working catapult. Refer to your e-book for questions to keep in mind as you explore this unit, such as:

- What launching devices have you used, watched, or read about? How do they develop and control the force needed to propel an object?