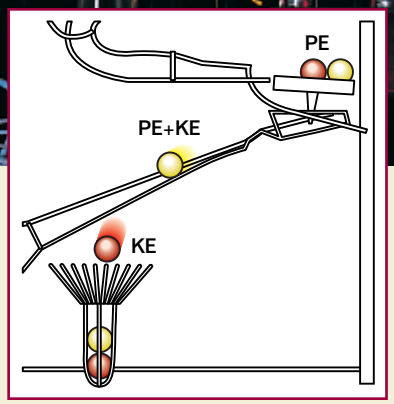
CHAPTER 5

Work and Energy



This whimsical piece of art is called an *audiokinetic sculpture*. Balls are raised to a high point on the curved blue track. As the balls move down the track, they turn levers, spin rotors, and bounce off elastic membranes. The energy that each ball has—whether associated with the ball's motion, the ball's position above the ground, or the ball's loss of mechanical energy due to friction—varies in a way that keeps the total energy of the system constant.

WHAT TO EXPECT

In this chapter, you will learn about work and different types of energy that are relevant to mechanics. Kinetic energy, which is associated with motion, and potential energy, which is related to an object's position, are two forms of energy that you will study.

Why it Matters

Work, energy, and power are related to one another. Everyday machines such as motors are usually described by the amount of work that they are capable of doing or by the amount of power that they produce.

CHAPTER PREVIEW

1 Work
Definition of Work

2 Energy
Kinetic Energy
Potential Energy

3 Conservation of Energy
Conserved Quantities
Mechanical Energy

4 Power
Rate of Energy Transfer