Section 19.2

Objectives

- **Describe** how a seismometer works.
- **Explain** how seismic waves have been used to determine the structure and composition of Earth's interior.

Review Vocabulary

mantle: the part of Earth's interior beneath the lithosphere and above the central core

New Vocabulary

seismometer
seismogram

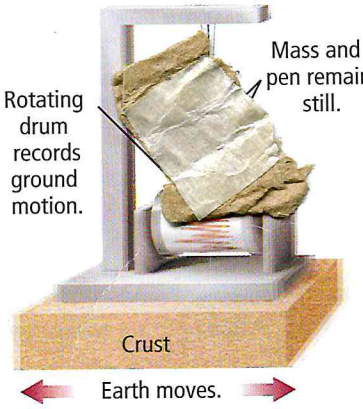
Seismic Waves and Earth's Interior

MAIN Idea **Seismic waves can be used to make images of the internal structure of Earth.**

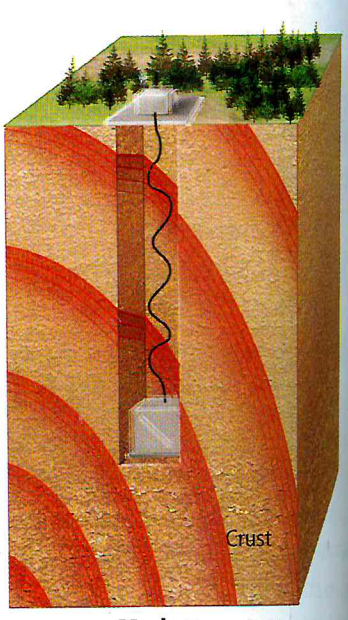
Real-World Reading Link When you look in a mirror, you see yourself because light waves reflect off your face to the mirror and back to your eye. Similarly, seismic waves traveling through Earth reflect off structures inside Earth, which allows these structures to be imaged.

Seismometers and Seismograms

Most of the vibrations caused by seismic waves cannot be felt at great distances from an earthquake's epicenter, but they can be detected by sensitive instruments called **seismometers** (size MAH muh turz). Some seismometers consist of a rotating drum covered with a sheet of paper, a pen or other such recording tool, and a mass, such as a pendulum. Seismometers vary in design, but all include a frame that is anchored to the ground and a mass that is suspended from a spring or wire, as shown in **Figure 19.7.** During an earthquake, the mass and the pen attached to it tend to stay at rest due to inertia, while the ground beneath shakes. The motion of the mass in relation to the frame is then registered on the paper with the recording tool, or is directly recorded onto a computer disk. The record produced by a seismometer is called a **seismogram** (SIZE muh gram). A portion of one is shown in **Figure 19.8.**



Historic



Modern

Concepts In Motion

Interactive Figure To see an animation of seismometers, visit glencoe.com.

Figure 19.7 The frame of a historic seismometer is anchored to the ground. When an earthquake occurs, the frame moves but the hanging mass and attached pen do not. The mass and pen record the relative movement as the recording device moves under them. Compare this to a modern sensor and transmitter.