

Classroom NewsBreak®

A current events lesson plan from Weekly Reader

Major Quake Hits Japan

Prime minister says his country faces its most serious crisis since World War II.

What's The Scoop?

The people of Japan are coping with a huge disaster that began on Friday afternoon, March 11, with a powerful earthquake. The magnitude 9.0 quake took place off the country's northeast coast. It was Japan's strongest recorded earthquake.

Smaller earthquakes, called aftershocks, continued for hours. Thousands of people have died; thousands more are injured or missing. Many survivors are without food, clean water, or electricity. Experts say that aftershocks as strong as magnitude 7.0 could still occur. The quake that struck Haiti in 2010 was a 7.0.

The earthquake produced enormous waves of water called **tsunamis** (soo-NAH-meess). A wave about 30 feet high hit the city of Sendai, northeast of Japan's capital, Tokyo. Sendai is the city nearest to the quake's **epicenter**. (The epicenter is the area above where an earthquake begins underground.) Buildings collapsed. Cars and ships were overturned or swept away by the water.

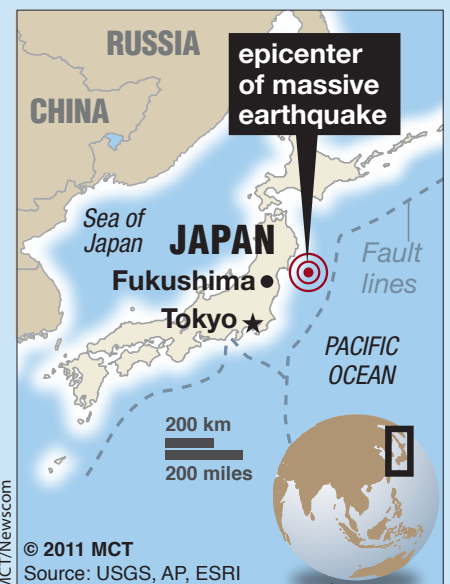
The earthquake damaged some of Japan's nuclear power plants. Nuclear plants produce energy called radiation. Too much radiation can be very dangerous. Workers have been trying to cool the plants. Officials ordered people in nearby areas to leave as a precaution. "First I was worried about the quake," Kenji Koshiba, who lives near the damaged plants, told The Associated Press. "Now I'm worried about radiation." So far, however, officials say the damaged plants are not producing dangerous amounts of radiation.

"The current situation of the earthquake, tsunami, and the nuclear plants is in a way the most severe crisis in the 65 years since the Second World War," Prime Minister Naoto Kan said in a televised address. (Japan was left in ruins after that war, which ended in 1945.) But, the prime minister added, "if the nation works together, we will overcome."



The Yomiuri Shimbun via AP Images

After the earthquake, a tsunami caused great damage along Japan's coast. More than 10,000 people remain missing.



MCT/Newscom

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Source: USGS, AP, ESRI

The quake's epicenter was near Japan's east coast, 231 miles northeast of Tokyo.

Want to know more? Go to www.weeklyreader.com.

BACKGROUND

- A tsunami is a series of extremely large ocean waves produced by an underwater earthquake, a volcanic eruption, or a landslide. Most tsunamis occur within the Ring of Fire, an area along the borders of the Pacific Ocean where earthquakes and volcanic eruptions are frequent.
- *Tsunami* comes from the Japanese words *tsu* (harbor) and *nami* (wave). A tsunami is not like regular waves. It strikes like an onrushing tide, forcing its way around and through obstacles. The water's sheer weight crushes objects in its path and carries large items—including ships and boulders—for miles.
- The deadliest tsunami on record occurred Dec. 26, 2004, when a powerful underwater earthquake

struck in the Indian Ocean near Sumatra, an island in the western part of Indonesia. The quake had a magnitude of 9.0. The resulting tsunami killed more than 270,000 people. It directly affected 12 countries: Indonesia, Malaysia, Thailand, Myanmar, Bangladesh, India, Sri Lanka, the Maldives, the Seychelles, Somalia, Kenya, and Tanzania.

- The world's largest recorded earthquake since 1900 was a magnitude 9.5 quake that struck Chile in May 1960, killing more than 2,000 people. The most powerful earthquake recorded in the United States was a magnitude 9.2 quake that struck near Anchorage, Alaska, in March 1964. The quake and resulting tsunami killed 128 people.

FAQs

FREQUENTLY ASKED QUESTIONS

▶ What is an earthquake?

An earthquake is the sudden, sometimes violent shaking of Earth's outer rocky layer, or crust. Though earthquakes usually last less than one minute, they can cause major damage and loss of life. Earthquakes cannot be prevented or predicted.

▶ What causes earthquakes?

Most earthquakes occur along faults, or cracks in tectonic plates—the huge slabs of rock that form Earth's crust and fit together like puzzle pieces. Sometimes pressure builds up along faults. When the pressure releases, an earthquake results. Japan's location on the Ring of Fire puts it at a greater risk for tsunamis and earthquakes than countries in other parts of the world. The worst earthquake in the country's history struck Tokyo in 1923. The magnitude 8.3 quake killed about 120,000 people.

▶ How are earthquakes recorded?

A device called a seismograph records the intensity, direction, and duration of vibrations during an earthquake. The vibrations, which travel outward from the earthquake fault at speeds of several miles per second, are called seismic waves. Seismographs create seismograms, which are zigzag lines that show the changing intensity of the vibrations. Seismologists use that data to determine specifics such as the duration of the earthquake and the amount of energy released.

STUDENT SKILLS

The skills page will help students understand the cause of earthquakes. **Answers:** 1. crust, 2. Pressure builds up along fault lines and results in an earthquake when the pressure is released. 3. Pacific Plate, 4. South American Plate, 5. North American Plate

JAPAN AT A GLANCE

Area: 145,914 square miles (slightly smaller than California)

Population: 126,475,664

Official language: Japanese

Major religions: Shintoism and Buddhism

Government: a parliamentary government with a constitutional monarchy

Economy: Japan has the third-largest economy in the world.

Sources: CIA World Factbook and World Book Online

ACTIVITY PROMPTS

Get talking. Ask: What is an earthquake? Where did a major earthquake take place recently? Then help students locate Japan on a map.

Study tsunamis. Explain to students that the earthquake triggered a massive tsunami that flooded Japan. Ask: How do tsunamis form?

Follow the waves. Have students track the path of the tsunami from the earthquake's epicenter to the west coast of the United States. Check out ptwc.weather.gov for updates.

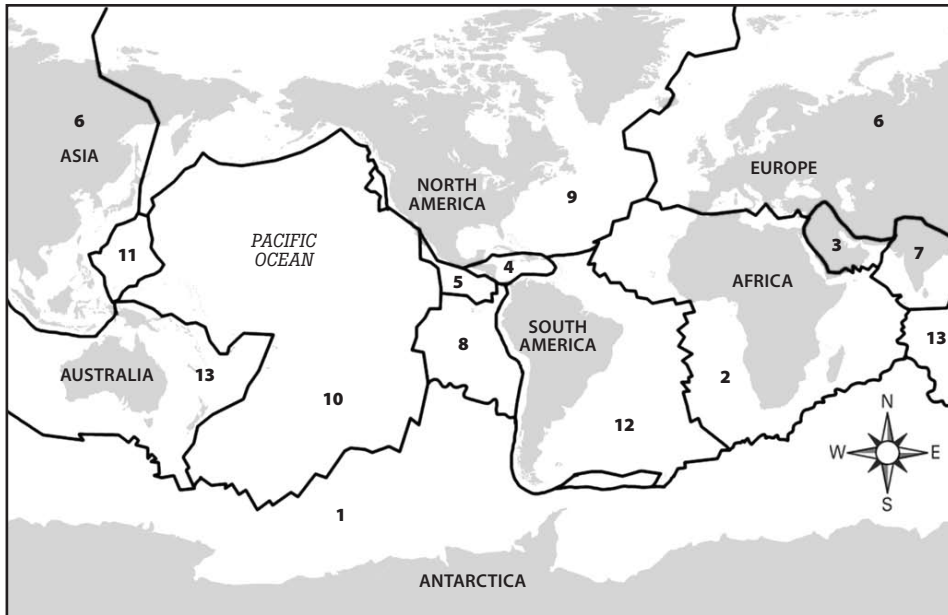
Practice map skills. Explain to students that Japan is located along the Ring of Fire, an area that circles the Pacific Ocean. Ask: Why might earthquakes and tsunamis be common in the Ring of Fire?

Get involved. Encourage students to think about ways to help victims in Japan. Here are the Web sites of some relief organizations:

- American Red Cross
www.redcross.org
- Oxfam America
www.oxfamamerica.org

What Causes Earthquakes?

Read the paragraph below, and then answer the questions that follow.



Sources: U.S. Geological Survey, DK Ultimate Visual Dictionary of Science
Map: Leigh Haeger

KEY	
1.	Antarctic Plate
2.	African Plate
3.	Arabian Plate
4.	Caribbean Plate
5.	Cocos Plate
6.	Eurasian Plate
7.	Indian Plate
8.	Nazca Plate
9.	North American Plate
10.	Pacific Plate
11.	Philippine Plate
12.	South American Plate
13.	Australian Plate

Earthquakes are sudden movements in Earth's **crust**, or outer rocky layer, caused by the release of pressure inside Earth. Large sections of Earth's crust, called **tectonic plates**, move. (See the map for some major plates.) Most earthquakes occur near **faults**, or cracks in the plates. Sometimes, pressure builds up along fault lines and results in an earthquake when the pressure releases.

1. What is Earth's outer rocky layer called?

2. Why do most earthquakes occur along fault lines?

3. What is the name of the plate labeled 10?

4. South America is part of which plate?

5. According to the map, which plate is north of the Caribbean Plate?
