Objective sight words (tectonic plates, terrifying, anxiety-ridden, panic, equipped, imperative, aftershocks, subsided, horrified, urgent, reassemble, disorder, winding, treacherous); (natural disasters, Richter Scale, reactions)

Vocabulary

tectonic plates	**subsided**
terrifying	**horrified**
anxiety-ridden	**urgent**
panic	**reassemble**
equipped	**disorder**
imperative	**winding**
aftershocks	**treacherous**

Earthquakes and Tsunamis

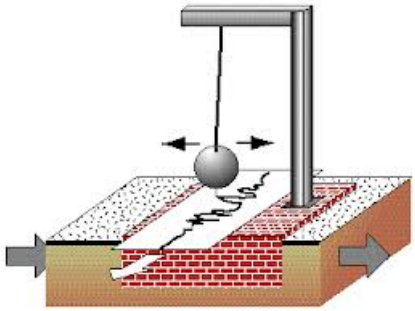
By: Sue Peterson

Earthquakes are the sudden shock of the earth's surface that result in the earth shaking and rolling. They can be felt over large geographical areas for brief moments of time. This is a natural way for the earth to release stress. Did you know that more than a million earthquakes shock the world each year? Let's look at what causes this unpredictable phenomenon.

There are nearly 20 tectonic plates that are along the earth's surface that continuously move past each other. When these plates stretch or squeeze, huge rocks form at their edges and the rocks shift causing an earthquake. You can visualize an earthquake by holding a pencil horizontally in the air and applying force to both ends by pushing down on them. Eventually, the pencil will break somewhere

between the two pencil ends to release the stress placed on it. This is exactly how the earth's crust reacts to produce an earthquake. The plates move and put forces on each other so the earth's crust breaks for this stress to be released in the form of energy. This energy then moves at a terrifying rate through the earth as an earthquake.

A seismograph is an instrument used to record the strength of the earthquake. It also measures how long the earthquake occurs. Other significant terms to know concerning the topic of earthquakes include the "epicenter" which is the point on the earth's surface above the source of the earthquake; "seismic waves" which is the energy created by the quake that causes building, structures, and the earth to move horizontally; and the Richter Scale, a measurement of an earthquake's intensity.



The points on the Richter Scale correspond to the amount of shaking of the earth (ten times the amount of shaking and 33 times the amount of energy). It has been reported that the energy released by a large earthquake may be equal to 10,000 times the energy of the first atomic bomb and cause anxiety-ridden victims to panic. Following is a chart that shows the types of earthquakes and the rating of each on the Richter Scale:

Richter Scale

4	Minor Earthquake
5	Moderate Earthquake
6	Strong Earthquake
7	Major Earthquake
8	Great Earthquake

If you live in a region of the world that has been known to have a history of earthquakes, it is advised that you assemble a well-equipped safety and emergency kit. It is also imperative to have an established disaster plan so everyone remains safe. During an actual earthquake, it is advisable to get under a sturdy piece of furniture where nothing can fall on you and to stay clear of glass windows and larger objects. If you are outdoors, you need to stay far away of buildings, trees, and power lines. If you are in a car, it is important to drive to a safe area and stay in the car until the trembles stop.

There may be aftershocks, movements after the earthquake. Check for personal injuries and damage to your home when all movement has subsided. Depending on the strength of the earthquake, you may be horrified and need someone for reassurance. It is urgent that you remain calm. You may be able to reassemble some of the items that were tossed about and repair the disorder that has occurred during this disaster at a later time.

_____

Tsunamis are formed by the displacement of water, either a landslide, volcanic eruption or by the slippage of the earth's plates, rock about 15-200 kilometers (50,000-650,000 feet) deep that carry the continents and seas of the earth on an underground ocean of hot, semi-solid material. Tsunamis are large ocean waves that flow straight avoiding any winding and circular turns like most every day waves.

Tsunamis travel up to 965 kph (600 mph), thus capable of causing severe damage with their treacherous speed alone. They travel the fastest in deeper water, yet hit near the shoreline at 48-64 kph (30-40 mph).

Practice

Language Work

A. Write the words.

terrifying _____

anxiety-ridden _____

imperative _____

reassemble _____

horrified _____

B. Use each word in a sentence. Underline the word used.

panic _____

_____

_____.

equipped _____

_____

_____.

treacherous _____

_____

_____.

subsided _____

_____

_____.

disorder _____

_____

_____.

C. Phonics work. The word “winding” has the base word “wind” that can be pronounced with either a short “i” or a long “i” sound, depending on the meaning of the word. Find the word “winding” in the text. Copy the sentence and indicate if it is a short “i” or a long “i” sound. How do you know? Then, write the definition of the word in context.

Copy the sentence: _____

_____

_____.

Explain if it is short “i” or long “i”. How do you know?

_____

_____

_____.

What does this word mean in context? _____

_____

_____.

Multiple-Choice Questions (Put an X in front of the correct answer.)

1. In paragraph two, why does the author use an example of holding a pencil?
   - ☐ a. to experience an earthquake
   - ☐ b. to visualize an earthquake
   - ☐ c. to experience a tsunami
   - ☐ d. to visualize a tsunami

2. What number on the Richter Scale is given to a **strong** earthquake?
   - ☐ a. 4
   - ☐ b. 5
   - ☐ c. 6
   - ☐ d. 7

3. According to the text, what is the **most important** thing you should do during and after an earthquake?
   - ☐ a. repair disorder
   - ☐ b. reassemble items
   - ☐ c. panic
   - ☐ d. remain calm

Extended Response (Answer in complete sentences.)

1. Explain why earthquakes occur.

_____

_____

_____

_____

_____

_____.

2. Explain the purpose of the Richter Scale. What do the numbers mean?

_____

_____

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_____

_____.

3. Compare and contrast earthquakes and tsunamis. Explain at least one likeness and one difference.

_____

_____

_____

_____

_____

_____

_____

_____.

Answer Sheet

Answers for Matching, Multiple-Choice Questions, and Extended Response

Earthquakes and Tsunamis

Multiple-Choice Questions

1. **b**
2. **c**
3. **d**

Extended Response (Accept reasonable answers.)

1. **The earth's tectonic plates stretch and squeeze, rocks form at their edges, and these shift to cause the earthquake.**
2. **The purpose of the Richter Scale is to measure the earthquake's intensity. The ratings show the type of earthquake from minor to great.**
3. **The student compares and contrasts an earthquake and a tsunami, giving one likeness and one difference.**