

Chapter 5 **Earthquakes**

Study Guide

1. Earth's Crust in Motion

a. **Stress in the Crust**

b. Types of Stress

i. **Shearing**ii. **Tension**iii. **Compression**iv. **Deformation**v. *How does deformation change earth's surface?*

c. Kinds of Faults

i. **Strike-Slip Fault**ii. **Normal Fault**1. **Hanging wall**2. **Footwall**iii. **Reverse Faults**iv. *What are the three types of fault? What force of deformation produces each?*

d. Friction Along Faults

e. Mountain Building

i. Mountains Formed by Faulting

1. **Fault-block mountain**

ii. Mountain Formed by Folding

1. **Folds**iii. **Anticlines and Synclines**iv. **Plateaus**

2. Measuring Earthquakes

i. **Focus**ii. **Epicenter**a. **Seismic Waves**i. Primary Waves (**P Waves**)ii. Secondary Waves (**S Waves**)iii. **Surface Waves**

- b. Detection Seismic Waves
 - i. **Seismograph**
 - c. Measuring Earthquakes
 - i. **Magnitude**
 - ii. **The Mercalli Scale**
 - iii. **The Richter Scale**
 - iv. **The Moment Magnitude Scale**
 - d. Locating the Epicenter
3. Earthquake Hazards and Safety
- a. How Earthquakes Cause Damage
 - i. Local Soil Conditions
 - ii. **Liquefaction**
 - iii. **Aftershocks**
 - iv. **Tsunamis**
 - b. Making Buildings Safer
 - i. Choice of Location
 - ii. Construction Methods
 - 1. **Base-isolated building**
 - c. Protecting Yourself During an Earthquake
4. Monitoring Faults
- a. Devices that Monitor Faults
 - i. Creep Meters
 - ii. Laser-Ranging Devices
 - iii. Tiltmeters
 - iv. Satellites Monitors
 - v. *What do fault-monitoring instruments measure?*
 - b. Monitoring Risk in the United States

SECTION 5-1 REVIEW AND REINFORCE

Earth's Crust in Motion

◆ Understanding Main Ideas

Use the diagrams below to answer items 1–3.

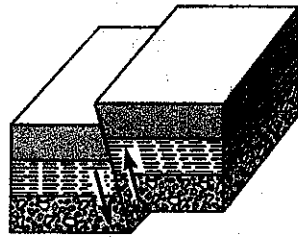


Diagram A

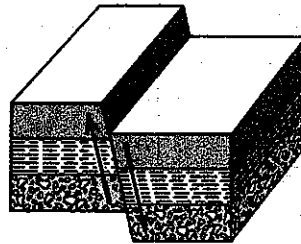


Diagram B

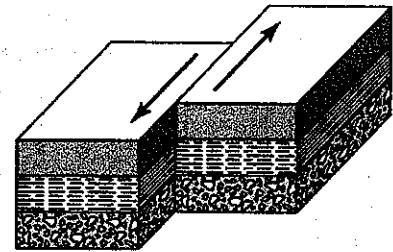


Diagram C

1. Diagram A

- a. Type of Fault: _____ b. Stress Force: _____
 c. Movement Along Fault: _____

2. Diagram B

- a. Type of Fault: _____ b. Stress Force: _____
 c. Movement Along Fault: _____

3. Diagram C

- a. Type of Fault: _____ b. Stress Force: _____
 c. Movement Along Fault: _____

◆ Building Vocabulary

Write a definition for each of these words. Use the back of this sheet if you need more space.

4. deformation _____
5. fault-block mountain _____
6. syncline _____
7. earthquake _____
8. stress _____
9. anticline _____
10. plateau _____

SECTION 5-2

REVIEW AND REINFORCE

Measuring Earthquakes

◆ Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What are seismic waves?

2. In what order do the three types of seismic waves arrive at a seismograph?

3. Which type of seismic wave can make the ground roll like ocean waves?

4. Describe the moment magnitude scale and explain why it is useful in measuring earthquakes.

5. How do geologists locate the epicenter of an earthquake?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|------------------------|--|
| _____ 6. focus | a. records ground movements caused by seismic waves as they move through the Earth |
| _____ 7. epicenter | b. slowest seismic waves that produce the most severe ground movements |
| _____ 8. surface waves | c. the point beneath Earth's surface where rock under stress breaks and triggers an earthquake |
| _____ 9. seismograph | d. a measurement of earthquake strength |
| _____ 10. magnitude | e. the point on the surface directly above where an earthquake occurs |

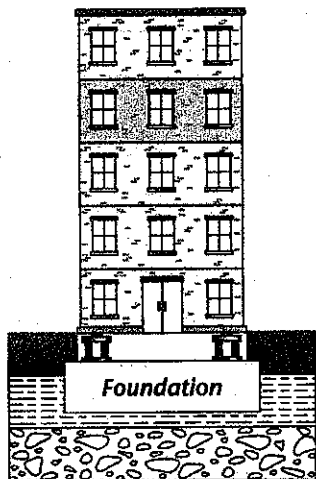
SECTION 5-3**REVIEW AND REINFORCE**

Earthquake Hazards and Safety

◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. What types of damage do earthquakes cause?
2. How do ground conditions affect earthquake damage to buildings?
3. Why are aftershocks dangerous to buildings after a large earthquake?
4. Why do tsunamis grow into larger waves when they approach land?
5. If an earthquake strikes while you are indoors, what should you do?
6. Why should people living in earthquake regions prepare emergency kits?
7. What kind of building design is shown in this figure? Explain how the design helps reduce earthquake damage.



◆ Building Vocabulary

Write a word to complete each sentence correctly.

8. The water displaced by a strong earthquake on the ocean floor forms large waves called _____.
9. _____ occurs when an earthquake's violent shaking suddenly turns loose, soft soil into liquid mud.
10. A(n) _____ is an earthquake that occurs after a large earthquake centered in the same area.

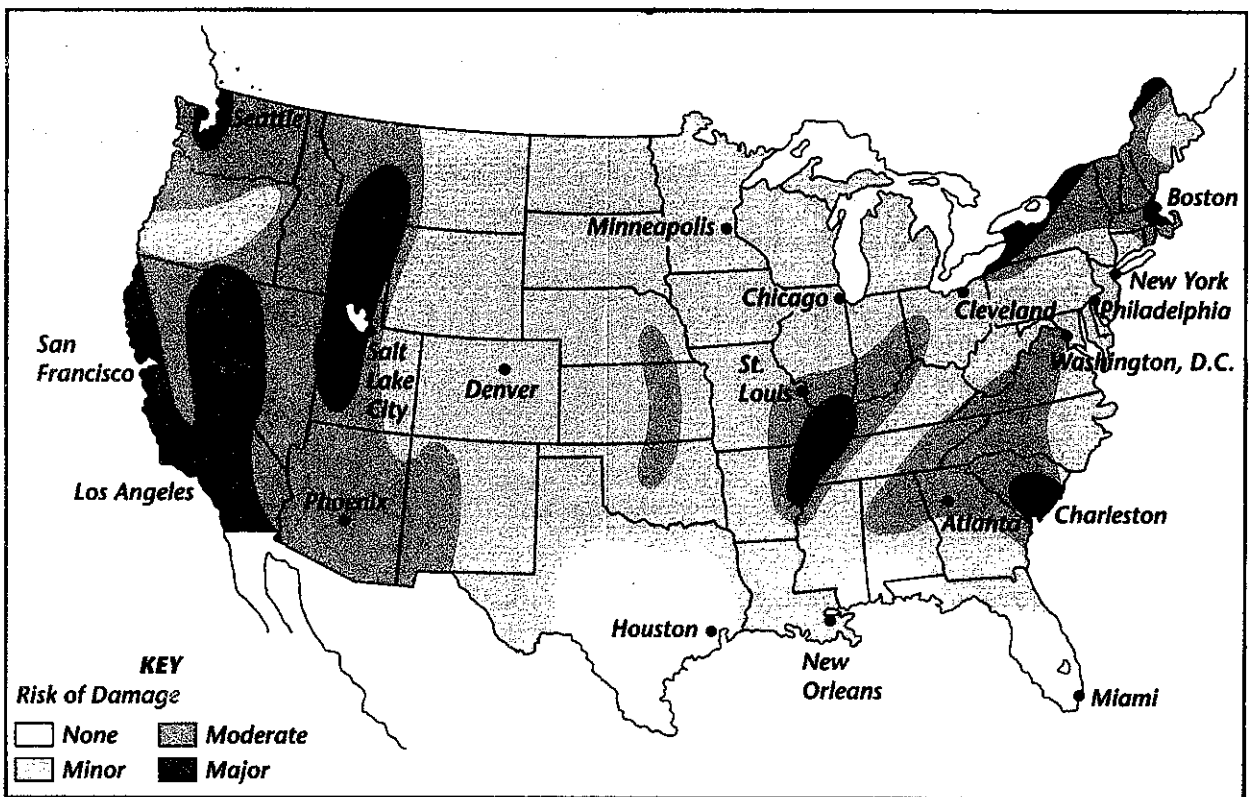
SECTION 5 - 4 REVIEW AND REINFORCE

Monitoring Faults

◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. How might monitoring faults help geologists predict an earthquake?
2. What two factors help geologists determine earthquake risk?
3.
 - a. Name three cities shown on the map below that have a *major* risk of earthquake damage.
 - b. Name three cities that have a *moderate* risk of earthquake damage.
 - c. Name three cities that have a *minor* risk of earthquake damage.



© Prentice-Hall, Inc.

◆ Building Vocabulary

Answer each of the following on a separate sheet of paper.

4. Name four instruments that are used to detect movement along faults.
5. Briefly describe how each instrument works.

Name: _____

Class: Ch. 5 Review
Earth Science

Choose the letter of the correct answer.

1. Compared to P waves and S waves, surface waves move
[A] slower. [B] farther from the epicenter. [C] faster. [D] at the same rate.
2. A large area of flat land elevated high above sea level is called a
[A] canyon. [B] fault. [C] plateau. [D] syncline.
3. The point beneath Earth's surface where rock breaks under stress and triggers an earthquake is called the
[A] syncline. [B] epicenter. [C] footwall. [D] focus.
4. A fold in rock that bends upward into an arch is called a(n)
[A] plateau. [B] syncline. [C] anticline. [D] canyon.
5. Which scale would most likely be used to tell how much earthquake damage was done to people, homes, and buildings?
[A] the Mercalli scale [B] the moment magnitude scale
[C] the Richter scale [D] the seismic scale
6. In a normal fault, the part of the fault that lies below the other part is called the
[A] reverse fault. [B] hanging wall. [C] anticline. [D] footwall.
7. Geologists know that wherever plate movement stores energy in the rock along faults,
[A] earthquakes are not likely. [B] an earthquake is occurring.
[C] an earthquake could never occur. [D] earthquakes are likely.
8. The type of seismic waves that arrive at the surface first and move by compressing and expanding the ground like an accordion are called
[A] P waves. [B] surface waves. [C] S waves. [D] Mercalli waves.
9. Which type of fault-monitoring device is most like a carpenter's level?
[A] laser-ranging device [B] tiltmeter [C] creep meter [D] satellite
10. Stress that pushes a mass of rock in two opposite, horizontal directions is called
[A] compression. [B] deformation. [C] shearing. [D] tension.

Choose the letter of the correct answer.

11. Which of the following can cause damage days or months after a large earthquake?
[A] the arrival of surface waves [B] a tsunami [C] liquefaction [D] an aftershock
12. The risk of earthquakes is high along the Pacific coast of the United States because
[A] there have been no earthquakes there lately.
[B] serious earthquakes are rare east of the Rockies.
[C] satellites have detected increasing elevation of the ground surface.
[D] that's where the Pacific and North American plates meet.

Fill in the word or phrase that best completes the statement(s).

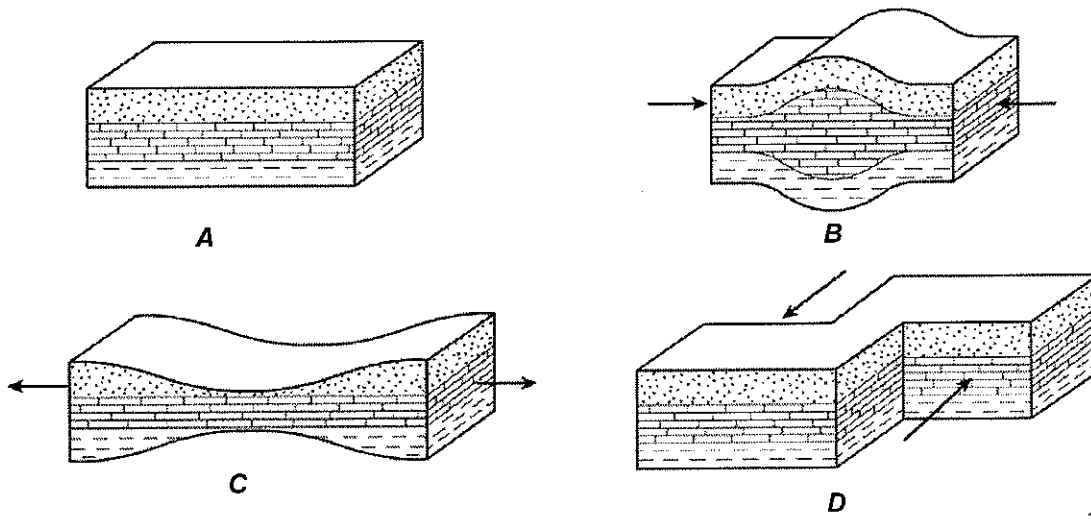
13. The process in which the violent shaking of an earthquake turns soft soil into liquid mud is called _____.
14. The _____ scale accurately rates the size of seismic waves only for small, nearby earthquakes.
15. An earthquake that occurs shortly after a larger earthquake is a(n) _____.
16. A valley that dips between two parallel ranges of hills was formed by a downward fold in rock called a(n) _____.
17. A change in the volume or shape of Earth's crust is called _____.
18. Vibrations that move through the ground carrying the energy released during an earthquake are called _____.
19. Blocks of rock uplifted by normal faults are called _____ mountains.

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

20. A type of building that absorbs the energy of seismic waves is a fixed-base building.
21. In a strike-slip fault, the rocks on either side of the fault slip past each other sideways.
22. When an earthquake occurs, S waves are the first seismic waves to arrive at a given location.
23. Geologists use a creep meter to measure the horizontal movement along a fault.

Use the diagram to answer the question(s).

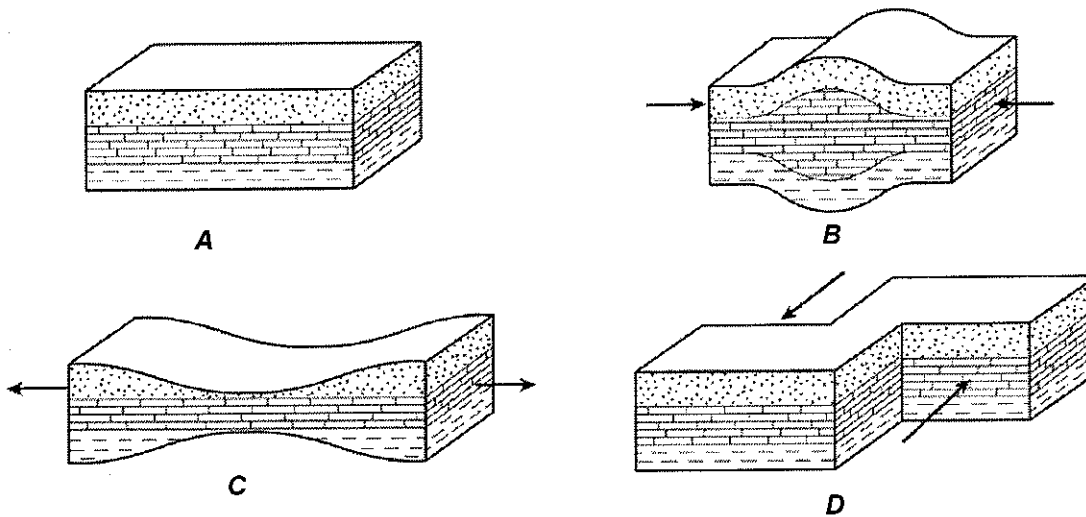
Rock Stress



24. Describe the rock layers shown in Diagram A and any forces acting on the rock.

Use the diagram to answer the question(s).

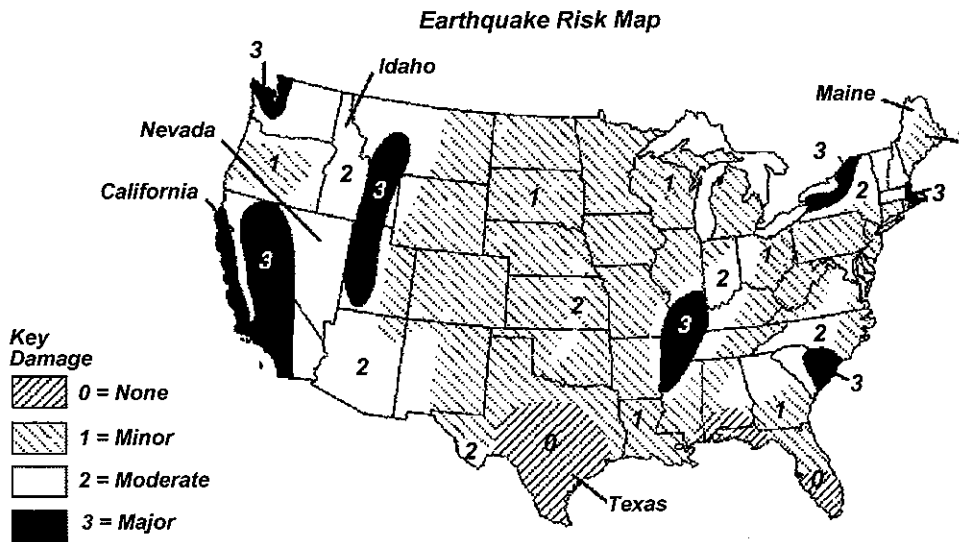
Rock Stress



25. Compare Diagram B to Diagram A. How is it different?

26. What caused the rock layers to take on the shape shown in Diagram C?

Use the diagram to answer the question(s).



27. What earthquake damage is Texas likely to suffer?
28. In which direction does the major earthquake risk zone in Idaho run?

Write an answer to the following question(s).

29. How does the design of base-isolated buildings reduce their risk of damage by earthquakes?
30. Explain how satellites are used to monitor faults.

Thank you for evaluating AnyBizSoft PDF Splitter.

A watermark is added at the end of each output PDF file.

To remove the watermark, you need to purchase the software from

<http://www.anypdftools.com/buy/buy-pdf-splitter.html>