

## Chapter 6 Volcanoes

## Study Guide

## 1. Volcanoes and Plate Tectonics

- a. What is a **Volcano**?
  - i. **Magma**
  - ii. **Lava**
- b. Location of Volcanoes
  - i. **Ring of Fire**
- c. Volcanoes at Diverging Plate Boundaries
- d. Volcanoes at Converging Boundaries
  - i. **Island Arc**
  - ii. *How can oceanic crust eventually become magma?*
- e. **Hot Spot** Volcanoes

## 2. Volcanic Activity

- a. How Magma Reaches Earth's Surface
  - i. Magma Rises
  - ii. A Volcano Erupts
- b. Inside a Volcano
  - i. **Magma Chamber**
  - ii. **Pipe**
  - iii. **Vent**
  - iv. **Lava Flow**
  - v. **Crater**
  - vi. *How does magma rise through the lithosphere?*
- c. Characteristics of Magma
  - i. **Silica**
- d. Types of Volcanic Eruptions
  - i. Quite Eruptions
    1. **Pahoehoe**
    2. **Aa**
    3. *What types of lava are produced by quite eruptions?*
  - ii. Explosive Eruptions

1. **Pyroclastic Flow**

2. *What causes an explosive eruption?*

e. Stages of a Volcano

- i. **Active**
- ii. **Dormant**
- iii. **Extinct**

f. Other Types of Volcanic Activity

- i. **Hot Spring**
- ii. **Geyser**
- iii. **Geothermal Energy**

g. Monitoring Volcanoes

h. Volcano Hazards

3. Volcanic Landforms

a. Landforms From Lava and Ash

- i. **Shield Volcanoes**
- ii. **Cinder Cone Volcanoes**
- iii. **Composite Volcanoes**
- iv. Lava Plateaus
- v. **Calderas**
- vi. *What are the three types of volcanic mountains?*

b. Soils from Lava and Ash

- i. *How does volcanic soil form?*

c. Landforms from Magma

- i. **Volcanic Necks, Dikes, and Sills**
- ii. **Batholiths**
- iii. Dome Mountains

4. Volcanoes in the Solar System

a. Earth's Moon

b. Volcanoes on Venus

- i. *What types of volcano is most common on Venus?*

c. Volcanoes on Mars

d. Volcanoes on Distant Moons

**SECTION 6-1**

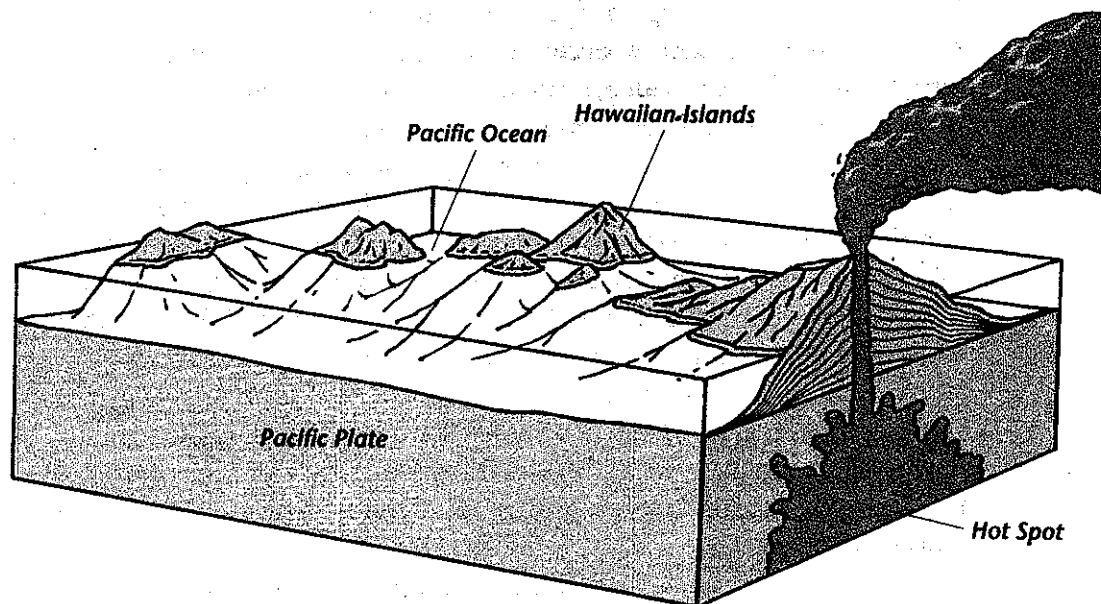
**REVIEW AND REINFORCE**

## Volcanoes and Plate Tectonics

### ◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. In what way are volcanoes a constructive force?
2. Why do so many of Earth's volcanoes occur along plate boundaries?
3. Explain how the hot spot shown in the diagram below created the Hawaiian Islands. Draw an arrow on the diagram to help explain the process.



### ◆ Building Vocabulary

Answer the following questions on a separate sheet of paper.

4. What is the difference between magma and lava?
5. Define each of these terms in your own words.  
a. volcano   b. Ring of Fire   c. island arc

**SECTION 6-2**

**REVIEW AND REINFORCE**

# Volcanic Activity

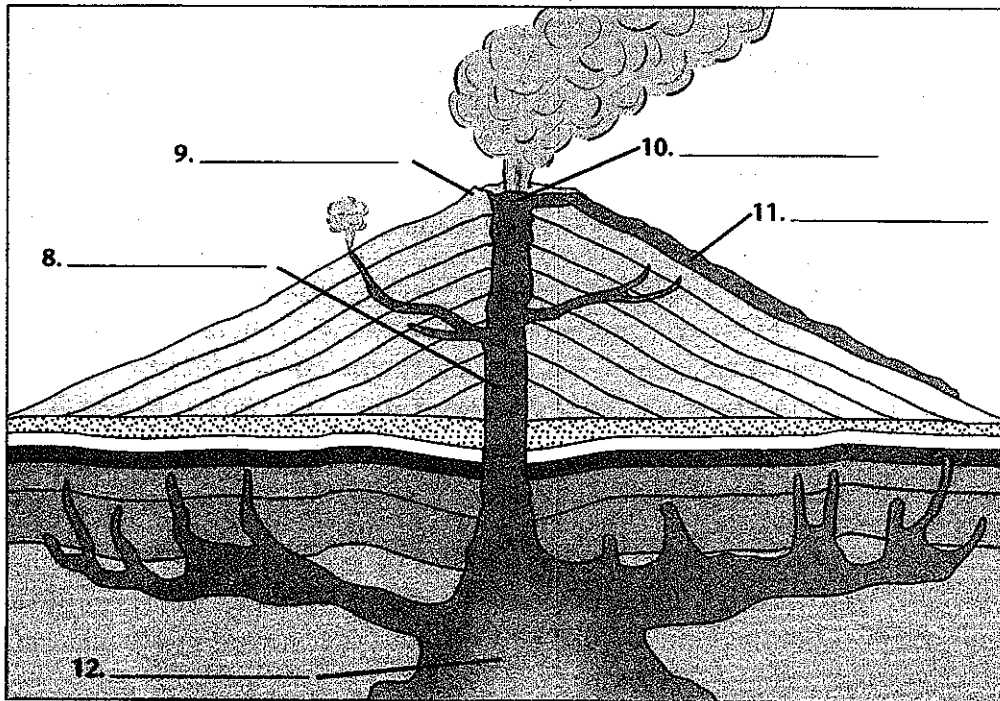
## ◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. Why does magma in the mantle rise through the crust above it?
2. As magma rises toward the surface, what happens to the gases in it? Why?
3. What three things determine how thick or thin magma is?
4. What are the differences between pahoehoe and aa? What kind of eruption produces these types of lava?
5. How does an explosive eruption produce a pyroclastic flow?
6. What are two uses of geothermal energy?
7. Identify three hazards of volcanic eruptions.

## ◆ Building Vocabulary

Label the figure below with the names of a volcano's parts.

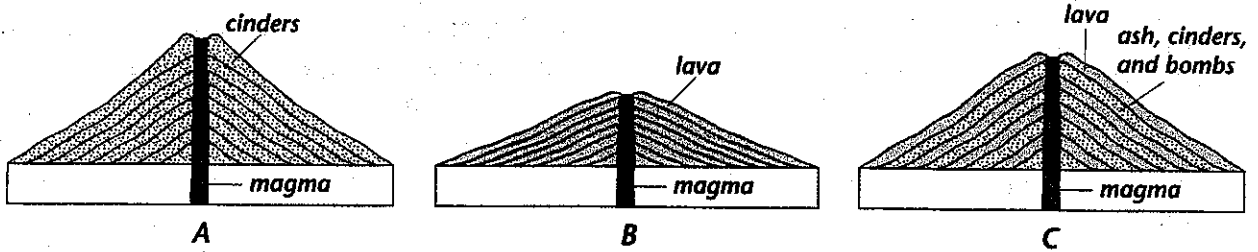


**SECTION 6-3**

**REVIEW AND REINFORCE**

# Volcanic Landforms

## ◆ Understanding Main Ideas



Answer the following questions on a separate sheet of paper.

1. Name each type of volcano shown in the diagrams. How is each formed?
2. How does a lava plateau form?
3. What happens to create a caldera?
4. Why is volcanic soil so fertile?

## ◆ Building Vocabulary

Define each of the following terms in the spaces provided.

5. batholith \_\_\_\_\_  
\_\_\_\_\_
6. dike \_\_\_\_\_  
\_\_\_\_\_
7. volcanic neck \_\_\_\_\_  
\_\_\_\_\_
8. sill \_\_\_\_\_  
\_\_\_\_\_

**SECTION 6-4**

**REVIEW AND REINFORCE**

# Volcanoes in the Solar System

## ◆ Understanding Main Ideas

Answer the following questions in the spaces provided.

1. Look at Figure 14 on page 200 of your textbook. What created the moon's craters? What created the moon's dark areas?

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2. Which planet, Mars or Venus, has the greater number of volcanoes?

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3. Which planet has the largest volcanic mountain? What is it called?

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4. Which three bodies in the solar system are *known* to have active volcanoes?

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5. How do volcanic features on Venus and Mars compare to volcanic features on Earth?

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6. Are the volcanoes on Io and Triton similar to the volcanoes on Earth? Explain.

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Name: \_\_\_\_\_

Class: Ch. 6 Review  
Earth Science

Choose the letter of the correct answer.

- The formation of the Hawaiian Islands is one example of  
[A] the Ring of Fire. [B] volcanoes forming over a hot spot.  
[C] continental drift. [D] volcanoes forming along plate boundaries.
- When magma hardens in a volcano's pipe, the result will eventually be a landform called a  
[A] volcanic neck. [B] sill. [C] dike. [D] batholith.
- Tall, cone-shaped mountains in which layers of lava alternate with layers of ash are called  
[A] cinder cone volcanoes. [B] lava plateaus.  
[C] composite volcanoes. [D] shield volcanoes.
- What provides the force that causes magma to erupt to the surface?  
[A] the density of the magma [B] dissolved gases trapped in the magma  
[C] the silica in the magma [D] gravity in the lithosphere
- When ash, cinders, and bombs build up in a steep pile around a volcano's vent, the result is a  
[A] shield volcano. [B] cinder cone volcano.  
[C] composite volcano. [D] dormant volcano.
- Because Mercury, Venus, and Mars are smaller than Earth and their cores have cooled, scientists think that  
[A] the volcanic activity on these planets has just begun.  
[B] the volcanic activity on these planets has ended.  
[C] the volcanoes on these planets are smaller and cooler than those on Earth.  
[D] there never was volcanic activity on these planets.
- Which of the following helps to determine how easily magma flows?  
[A] the amount of silica in the magma [B] the number of vents on the volcano  
[C] the size of the crater [D] the diameter of the pipe
- Before lava reaches the surface it is called  
[A] liquid fire. [B] volcanic ash. [C] rock. [D] magma.

Choose the letter of the correct answer.

9. The huge hole left by the collapse of a volcanic mountain is called a  
[A] shield volcano. [B] lava plateau. [C] cinder cone. [D] caldera.
10. If a volcano's magma is high in silica, the volcano will probably  
[A] remain dormant. [B] produce dark-colored lava.  
[C] erupt explosively. [D] erupt quietly.

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

11. Magma travels through a long tube or \_\_\_\_\_ that connects the magma chamber with the surface.
12. Volcanic activity on Neptune's moon Triton involves eruptions not of magma, but of \_\_\_\_\_.
13. An energy source called \_\_\_\_\_ energy is provided by water heated by magma.
14. A major volcanic belt known as the \_\_\_\_\_ circles the Pacific Ocean.
15. Groundwater heated by a nearby body of magma can spray from the ground under pressure, forming a(n) \_\_\_\_\_.
16. Sometimes rising magma is blocked by horizontal layers of rock. The magma forces the layers of rock to bend upward into a landform called a(n) \_\_\_\_\_.

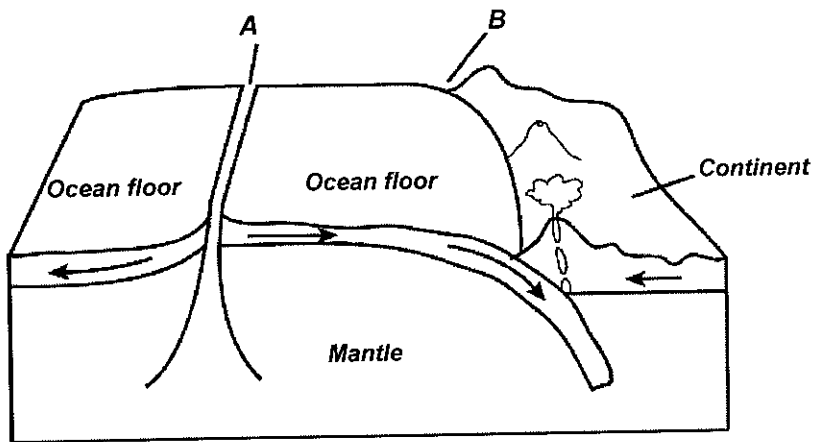
If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

17. Olympus Mons, the biggest volcano in the solar system, is found on the planet Mars.
18. A dike forms when magma forces itself between rock layers and hardens.
19. Volcanoes that form along a mid-ocean ridge occur at a diverging plate boundary.
20. A pyroclastic flow typically occurs during a quiet eruption.
21. Ash, cinders, and bombs build up in a steep pile to form cinder cone volcanoes.
22. Dissolved minerals trapped in magma under tremendous pressure provide the force for a volcanic eruption.



Use the diagram to answer the question(s).

### Location of Volcanoes

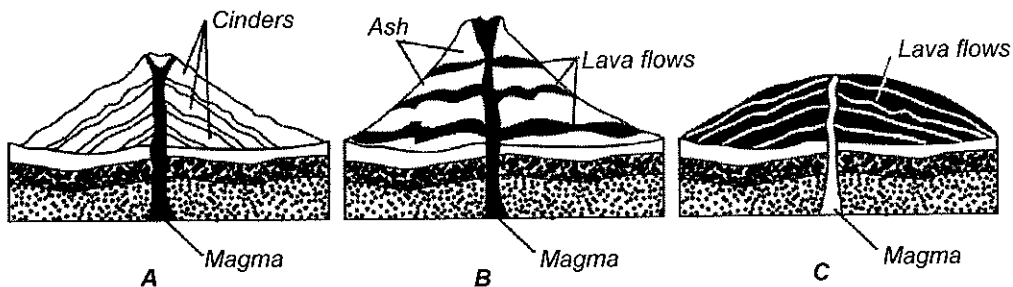


23. Name and describe the type of boundary shown at A.

24. Describe an exception to the patterns pictured at A and B where volcanoes can also form.

Use the diagram to answer the question(s).

### Types of Volcanoes



25. Name the type of volcano illustrated in Diagram A and describe how it forms.

26. In the United States, where do volcanoes like the one shown in Diagram C occur?

Write an answer to the following question(s).

30. How does the release of trapped gases in magma cause a volcano to erupt?

Write an answer to the following question(s).

27. Imagine you are a geologist living 200 years in the future. You want to sample lava from active volcanoes within the solar system. Besides Earth, which bodies of the solar system will you sample and what substances do you expect to find in each sample?
28. Describe the three stages of a volcano.
29. You live on a large volcanic island, but far from the island's active volcano. Besides damage from lava, what volcano hazards could still affect your town and its people?

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