

Chapter 10 Volcanoes and Other Igneous Activity

Section 10.1 Volcanoes and Plate Tectonics

This section explains how magma forms and discusses the relationship between plate boundaries and igneous activity.

Reading Strategy

Outlining After you read, complete the outline of the most important ideas in the section. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

<p>I. Origin of Magma</p> <p style="padding-left: 20px;">A. Heat</p> <p style="padding-left: 20px;">B. _____</p> <p style="padding-left: 20px;">C. _____</p> <p>II. Volcanoes and Plate Boundaries</p> <p style="padding-left: 20px;">A. _____</p> <p style="padding-left: 20px;">B. _____</p> <p style="padding-left: 20px;">C. _____</p>
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Origin of Magma

1. Is the following sentence true or false? Magma forms when solid rock in the crust and upper mantle partially melts.

2. How is decompression melting of rocks triggered? _____

3. _____ rock buried at depth has a much lower melting temperature than does _____ rock of the same composition and under the same pressure.

Volcanoes and Plate Boundaries

4. Is the following sentence true or false? When solid mantle rock rises during seafloor spreading, magma is produced as a result of decompression melting. _____
5. Circle the letter of the change that allows rock melting to begin at convergent plate boundaries.
 - a. decreasing pressure
 - b. decreasing temperature
 - c. water reducing the melting point
 - d. water raising the melting point

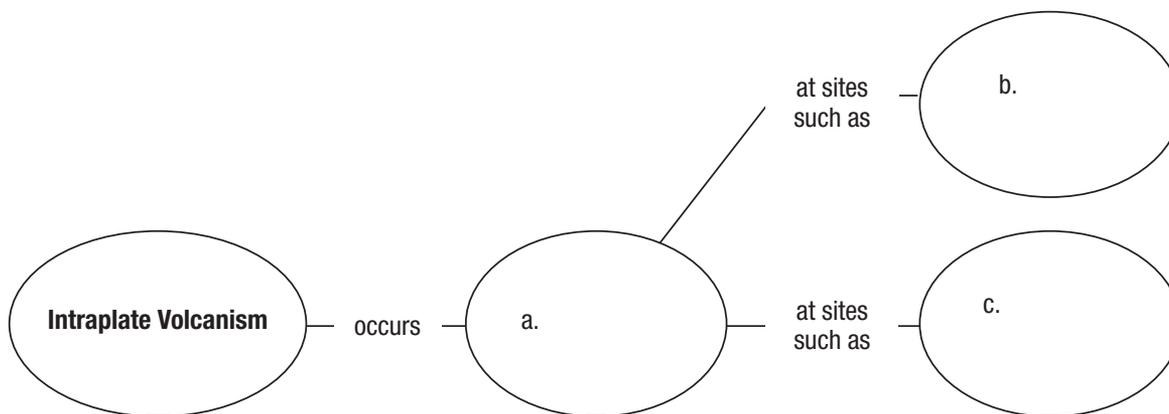
Chapter 10 Volcanoes and Other Igneous Activity

6. What landforms develop as a result of the volcanic activity that occurs where one oceanic plate descends beneath another oceanic plate? _____

7. Circle the letter of the answer that correctly completes the following sentence. At a convergent plate boundary, the fluids reduce the melting point of hot mantle rock enough for melting to begin when a sinking slab reaches a depth of about

- a. 100 to 150 km.
- b. 500 to 550 km.
- c. 700 to 750 km.
- d. 1000 to 1500 km.

8. Complete the concept map showing where intraplate volcanism occurs.



9. Circle the letter of the time most intraplate volcanism occurs.

- a. when oceanic crust sinks into the mantle and melts
- b. when a mantle plume rises to the surface
- c. when oceanic plates separate and magma rises to fill the rift
- d. when continental crust sinks into the mantle and melts

10. The result of a magma plume rising and decompression melting occurring may be the formation of a small volcanic region called a(n) _____.

11. Circle the letter of the number of years most hot spots have lasted.

- a. hundreds of years
- b. thousands of years
- c. millions of years
- d. billions of years