**Name:**

**STUDY GUIDE: Plate Tectonics, Earthquakes, and Volcanoes**

**Brain POP - Plate Tectonics**

**1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was the name of the supercontinent that existed millions of years ago.**

**2. The surface, or \_\_\_\_\_\_\_\_\_\_\_\_, of the Earth is broken into about \_\_\_\_ plates that float on the liquid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**3. When the plates move, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shift along with them. We don’t notice the ground moving because they only move a few \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ each year.**

**4. Volcanoes, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and trenches occur at active \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between the plates.**

**5. Divergent boundaries are where plates are moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is created by liquid rock pushing up from the mantle.**

**6. Convergent boundaries are where plates are moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ each other. Sometimes one plate \_\_\_\_\_\_\_\_\_\_\_\_\_\_, or is subducted under another.**

**7. Transform boundaries are where plates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ horizontally past one each other and cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**8. The plates are always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slowly changing the face of the \_\_\_\_\_\_\_\_\_\_\_.**

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| **1. Explain the theory plate tectonics**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **2. All of the following support the theory of continental drift except \_\_\_\_\_.**  A. The continents seemed to fit together like pieces of a puzzle.  B. There are similar fossils on different continents.  C. Mountain ranges on different continents lined up.  D. The North Pole and Antarctica are covered in ice.  **3.What hypothesis states that the continents were once joined to form a single supercontinent?**   |  |  |  |  | | --- | --- | --- | --- | | a. | plate tectonics | c. | continental drift | | b. | seafloor spreading | d. | paleomagnetism | |

4. Use the word bank below to complete the sentences.

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| **seismograph Sea floor spreading earthquakes melt P Waves**  **Epicenter Continental-continental Metamorphic S Waves**    Which of the following occur at divergent boundaries? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  An earthquakes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is occurs directly above the focus.  Mountains form at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ convergent boundaries.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rocks form due to heat a pressure.  Magma forms when rocks from the upper crust and mantle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the instrument that records earthquake waves.  \_\_\_\_\_\_\_\_\_\_\_\_\_ shake particles at a right angle to the direction of travel. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ change a materials volume by expansion and compression.  Predictions are made on the assumption that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are repetitive (they occur on the same fault lines). |

5. Match structures formed at each plate boundary

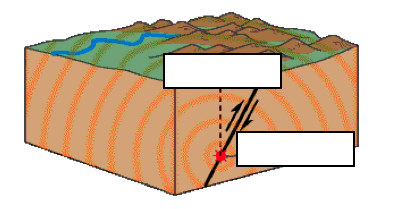
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| A B C    \_\_\_\_ 1. Convergent \_\_\_\_ 2. Divergent \_\_\_\_ 3. Transform  **Explain what happens (plate motion) and what features occur at each plate boundary.**  **Convergent ( Hint: Three types)**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Divergent (Hint: Two types)**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Transform**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**6. In the chart below compare and contrast magma and lava.**

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| **Magma** | **Lava** |
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Circle the best answer

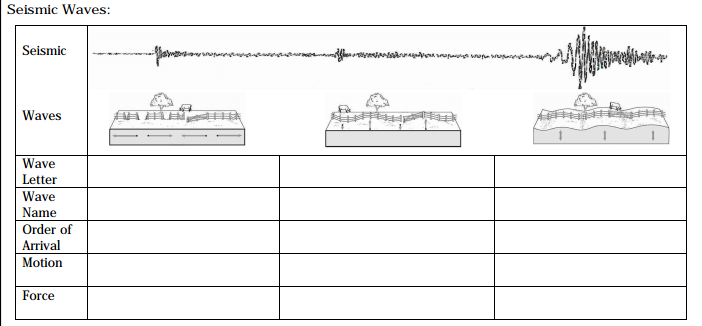
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| **1. Most of the active volcanoes on Earth are located in a belt known as the \_\_\_\_.**   |  |  |  |  | | --- | --- | --- | --- | | a. | Ring of Lava | c. | East African Rift Valley | | b. | Ring of Fire | d. | circum-Atlantic belt | |



1. Label the epicenter and focal point.

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| 1. At which type of plate boundary do earthquakes typically occur? |

1. **Complete the chart below.**



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| **1. What are the causes of damage during or after an earthquake (5 in total)? 1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **2. How can we predict earthquakes?**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **\_\_\_3.** **Which of the following affects the amount of destruction caused by earthquake vibrations?**  **a. The design of structures**  **b. The nature of the material on which structures are built**  **c. The intensity and duration of the vibrations**  **d. All of the above** | **4.** **What is the minimal number of seismic stations that is needed to determine the location of an Earthquake’s epicenter?**  **a. One**  **b. Two**  **c. Three**  **d. Four** |
| **Explain the hazards to humans from an earthquake --->** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**D. Volcanoes:**

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| **\_\_\_1.** **The particles ejected in volcanic eruptions are called \_\_\_\_\_.**  **a. Calderas**  **b. Volcanic stocks**  **c. Laccoliths**  **d. Pyroclastic material** | **2. List the types of volcanoes and explain each of them.** |
| **3. Most of the active volcanoes on Earth are located in a belt known as the \_\_\_\_.**  **a. Ring of Fire**  **b. Ring of Lava**  **c. East African Rift Valley**  **d. Mid-Pacific Rise** | **Which of the following factors helps determine whether a volcanic eruption will be violent or relatively quiet?**   |  |  | | --- | --- | | **a.** | **amount of dissolved gases in the magma** | | **b.** | **temperature of the magma** | | **c.** | **composition of the magma** | | **d.** | **all of the above** | |

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| **Explain precautions that can be made to protect life from various geohazards . Some examples include landslides, earthquakes, tsunamis, sinkholes, groundwater pollution, and flooding.**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |