**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?**

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| a. | plate tectonics | c. | continental drift |
| b. | seafloor spreading | d. | paleomagnetism |

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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 \_\_\_\_.**

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| a. | Ring of Lava | c. | East African Rift Valley |
| b. | Ring of Fire | d. | circum-Atlantic belt |

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1. Label the epicenter and focal point.

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

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| **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.** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |