Erupting Volcanoes Worksheet

Name: ..... Date: .....

I. Multiple Choice Questions

Choose the best answer for each question.

1. **What is the reason behind the formation of a chain of hot spot volcanoes?**
   a) The area where the plates meet is active and forms a chain of hot-spot volcanoes along the boundary.
   b) Hot-spot volcanoes are formed due to meteorites that hit the Earth's surface.
   c) As the plate moves, the hot spot of the mantle does not move and form a chain of volcanoes.
   d) Hot-spot volcanoes are formed due to nuclear explosions that occur inside the Earth.

2. **Which statement is TRUE about volcanoes?**
   a) Most are formed from the movement of mountains.
   b) Most are formed from the movement of hot spots.
   c) Most are formed where plates meet.
   d) Most are formed away from plate boundaries.

3. **Where does magma erupting from a hotspot volcano come from?**
   a) outer core
   b) inner core
   c) mantle
   d) crust

4. **Which statement is TRUE about volcano belts?**
   a) Volcano belts contain dormant volcanoes.
   b) Volcano belts form away from plate boundaries.
   c) Volcano belts form in oceans only.
   d) Volcano belts occur at plate boundaries.

5. **How are the hot spot volcanoes formed?**
   a) Hot spots form along convergent boundaries where the plates come closer to each other.
   b) Hot spots form at both convergent and divergent boundaries where the plates move.
   c) Hot spots form when plumes of magma rise from Earth's mantle to Earth's crust.
   d) Hot spots form along divergent boundaries where the plates part away from each other.

6. **What is the reason behind the volcanic eruption?**
   a) formation of new continents
   b) temperature of air
   c) movement of tectonic plates
   d) speed of wind

7. **The following are signs that alert for a volcanic eruption EXCEPT _____.**
   a) gas emissions
   b) earthquakes
   c) weather changes
   d) deformation

8. **What does the bulging of a volcano before a volcanic eruption indicate?**
   a) tectonic plates will collide suddenly
   b) the walls of the volcano will collapse
   c) magma is moving upward in the crust
   d) small earthquakes will happen

9. **How could lava flow cause destruction?**
   a) the high speed of lava flow destroys the nearby objects
   b) lava flow causes landslides
   c) lava flow destroys everything in its path
   d) living things respire the air mixed with lava and die

10. **Which statement BEST describes the mudflow hazard caused by a volcanic eruption?**
    a) lava flows from the volcano opening and causes the rocks to melt and form mud
    b) magma erupts from inside the Earth and causes underground water to mix with soil and form mud
    c) ice at the volcano's top melts due to extreme heat, carries with it rocks and ashes
    d) mixtures of hot gas, ash, and rocks are released by pyroclastic flow and form mud

11. **Why is pyroclastic flow considered the most severe volcanic hazard to living things?**
    a) it contains gases that stay in the air for a long time and damage living things
    b) it contains water that melted from the volcano slopes and form mud
    c) it is released at great speed and carries large rocks and hot toxic gases
    d) it contains lava that destroys everything it moves on

12. **What is the effect of the pyroclastic flow on living things?**
    a) the erupted rocks and ashes lead to mudflow
    b) the erupted lava destroys everything in its way
    c) the erupted rocks and ashes vibrate the ground and cause landslide
    d) toxic gases and hot ashes are respired by people and animals

13. **What do scientists do to provide predictions of volcanic eruptions?**
    a) record weather changes
    b) wait to record recent volcanic eruptions
    c) study past eruptions and monitor changes
    d) do research on soil

II. Fill-in-the-Blank Questions

Fill in the blank with the correct term.

14. Volcanoes are mostly found at convergent or divergent plate boundaries. But some volcanoes form far from the tectonic plate as it moves over a _____.

15. Kauai Island is the oldest Hawaiian island, located _____ the hotspot.

16. The ages of the rocks _____ as we move from Hawaii to Kauai.

17. Kauai Island is the oldest Hawaiian island and is a(n) _____ volcano.

18. The _____ includes the western coasts of South and North America, the eastern coasts of Asia, and the Aleutian Islands.

19. A(n) _____ is an opening in the Earth's crust caused by the movement of tectonic plates.

20. A(n) _____ volcano is a volcano that hasn't erupted for a very long time but can erupt in the future.

III. Short Answer Questions

Answer the following questions in complete sentences.

21. **Explain the relationship between the movement of tectonic plates and the formation of volcanoes at convergent boundaries.**

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22. Describe what a dormant volcano is and how it differs from an active and an extinct volcano.

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23. Briefly explain why monitoring volcanic gases, such as sulfur dioxide, is important for predicting volcanic eruptions.

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24. Imagine you live near an active volcano. What are three specific actions local authorities might take based on scientific monitoring to ensure the safety of the community during an increasing risk of eruption?

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25. In your own words, describe one way in which a volcanic eruption can have a destructive impact on the environment and one way it can have a potentially beneficial impact over a long period.

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Answer Key

1	c) As the plate moves, the hot spot of the mantle does not move and forms a chain of volcanoes.
2	c) Most are formed where plates meet.
3	c) mantle
4	d) Volcano belts occur at plate boundaries.
5	c) Hot spots form when plumes of magma rise from Earth's mantle to Earth's crust.
6	c) movement of tectonic plates
7	c) weather changes
8	c) magma is moving upward in the crust
9	c) lava flow destroys everything in its path
10	c) ice at the volcano's top melts due to extreme heat, carries with it rocks and ashes
11	c) it is released at great speed and carries large rocks and hot toxic gases
12	d) toxic gases and hot ashes are respired by people and animals
13	c) study past eruptions and monitor changes
14	hot spot
15	farthest away from
16	increase
17	extinct
18	Ring of Fire
19	volcano
20	Dormant
21	At convergent boundaries, two tectonic plates move towards each other. When an oceanic plate collides with another oceanic or continental plate, the denser plate subducts (sinks) beneath the other. As the subducting plate descends into the mantle, it melts, forming magma. This magma then rises to the surface, leading to the formation of volcanoes.
22	A dormant volcano is a volcano that has not erupted for a very long time but is still capable of erupting in the future. It differs from an active volcano, which is currently erupting or has erupted recently and is expected to erupt again. An extinct volcano, on the other hand, is a volcano that is not expected to erupt again, as its magma supply has been cut off.
23	Monitoring volcanic gases, especially sulfur dioxide (SO_2), is crucial because changes in gas composition and release rates can indicate magma movement beneath the volcano. An increase in SO_2 often suggests that fresh magma is rising to the surface, making an eruption more likely. This provides scientists with an important clue about the volcano's internal activity.
24	If there's an increasing risk of eruption, local authorities might: Issue evacuation orders or alerts for specific high-risk areas, guiding residents to safe zones. Establish exclusion zones around the volcano to prevent people from entering dangerous areas. Set up emergency shelters and aid stations to provide support for displaced residents.
25	**Destructive Impact:** A volcanic eruption can have a destructive impact by releasing fast-moving pyroclastic flows or lava flows that incinerate and bury everything in their path, destroying homes, infrastructure, and agricultural land. Volcanic ash can also collapse roofs, damage crops, and contaminate water supplies. **Beneficial Impact** (long-term): Over a long period, volcanic eruptions can lead to the formation of fertile soils. Volcanic ash and weathered volcanic rocks are rich in minerals, which, over time, break down to create nutrient-rich soil excellent for agriculture. This is why many fertile regions and islands are found in volcanic areas.