

For Creative Minds

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Pacific Rim of Fire

A volcano is a landform that vents molten rock, or **magma**, up through the earth's surface. **Molten** means that the rock is so hot it turns to liquid. Volcanoes often look like mountains.

The earth's surface is made up of giant plates. These plates are the outer, rigid layer of the earth, just like an orange peel is the outer layer of the fruit.

The **mantle** is the layer underneath the earth's plates. It is made of mostly solid rock. Heat within the Earth's interior melts some of this solid rock to form magma. Magma is less dense than the solid rock, so it rises toward the surface. If it reaches the surface, the molten rock is called **lava**.

Volcanoes are most common on the boundaries between the earth's plates. Volcanoes can also form over **hot spots**, especially hot areas in the earth's mantle. Magma formed at a hot spot can rise through the earth and reach the surface.

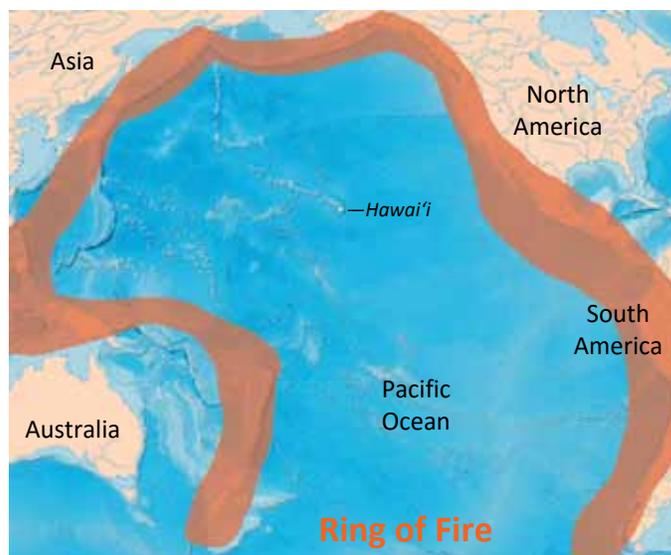
Volcanoes form when magma erupts to the surface. Magma is stored in large, underground chambers beneath the earth's surface. Over time, pressure builds inside the magma chamber. Eventually the magma vents upward through the earth's surface in a **volcanic eruption**.

One of the earth's major plates is the Pacific Plate, which lies beneath the Pacific Ocean.

The Hawaiian Islands are near the center of the Pacific Plate. These islands were created by a hot spot that vented magma onto the ocean floor. Over time, enough lava piled up to form islands that rise above sea level.

A chain of islands, like the Hawaiian Islands, is called an archipelago.

Most (75%) of the world's active volcanoes are located around the edges of the Pacific Ocean. This area is called the **Ring of Fire**.



Princess Luka and Mauna Loa



Portrait of Princess Ruth Keelikolani Wearing Ornaments (in All Her Monumentality) 1909

DOE Oceania: Amer Polynesia: Hawaiian: NM 50997
04892200, National Anthropological Archives,
Smithsonian Institution



Fact or fiction?

The story in this book is fiction, but it is based on a true story (above). Compare the two versions and answer the following questions based on the historical facts.

1. Was Princess Luka a real person or a fictional character?
2. Were Nani and Keoki real people or fictional characters?
3. Did the lava flow from Mauna Loa move fast or slow?
4. How did Princess Luka travel from the shore to the lava flow?
5. Did the lava stop as soon as Princess Luka arrived?

Princess Ruth Luka Keanolani Kauanāhoahoa Ke'elikōlani was born in 1826. She was part of the Kamehameha royal family of the Kingdom of Hawai'i. Her mother, High Chiefess Kalani Pauahi, died giving birth to her, and her mother's husband sent the baby princess away. Queen Kaahumanu adopted Princess Luka.

Princess Luka was the Royal Governor of the Island of Hawai'i, a major landowner, and the wealthiest woman in the islands. The people of Hawai'i loved and respected her.

On November 5, 1880, a volcano called Mauna Loa started to erupt. Over the next few months, thick lava crept toward the town of Hilo. The townspeople could see the glow of forests burning. In June of 1881, the lava was only five miles from Hilo. The town organized a day of prayer. But the lava kept coming. It moved 100-500 feet each day. In late July, Princess Luka travelled to Hilo. A borrowed wagon took her to the lava flow. By August 10, 1881, the flow stopped. It was only a mile and a half away from Hilo Bay. The town was safe.

When Princess Luka died, she left most of her property to her cousin. Princess Bernice Pauahi used Princess Luka's wealth to form schools for the children of Hawai'i. To this day, the Kamehameha Schools teach the Hawaiian language and the hula . . . and Princess Luka's love for her people and culture lives on.



Volcanic Vocabulary Matching

Match the volcano terms with their location on the next page.

ash: tiny pieces of rock and volcanic glass that are exploded or carried into the air during an eruption. Ash can be carried by the wind for great distances from the vent.

conduit: the path magma travels from the magma chamber to the vent. A conduit can have one direct path from the magma chamber to the surface, or it can split and lead to multiple vents.

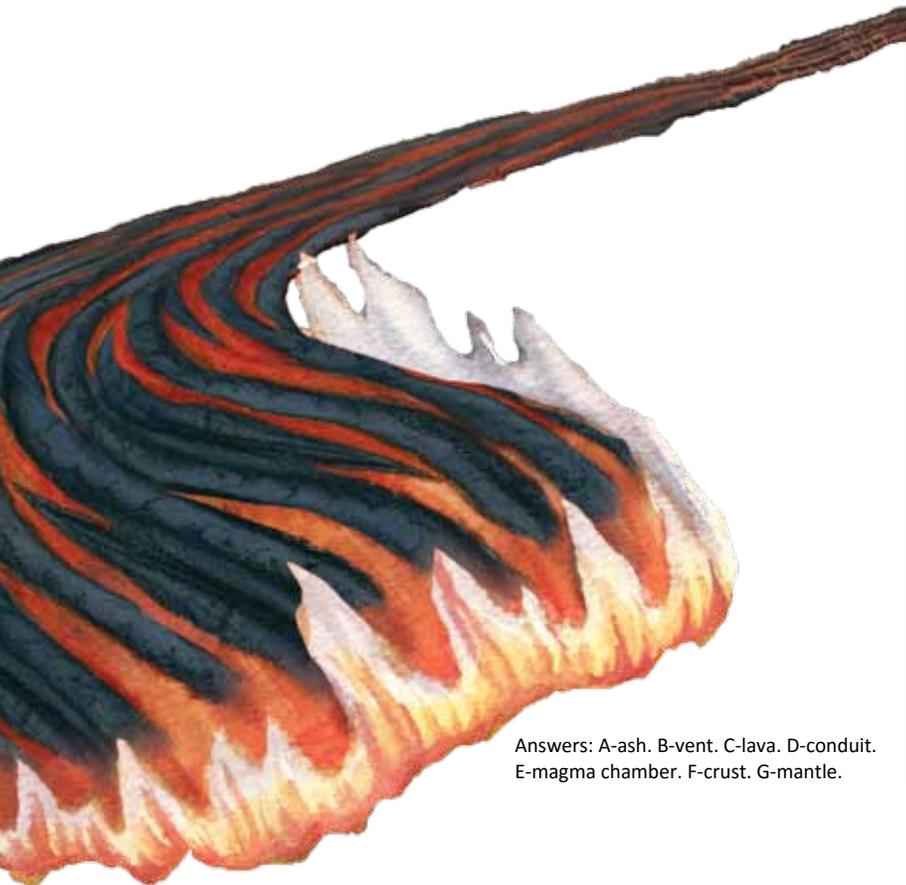
crust: the solid, top layer of the earth, which forms the continents and the land under the oceans.

lava: molten rock erupted at the surface. Lava cools and hardens as it flows along the ground.

magma chamber: a place within a volcano where magma is stored before an eruption. When pressure builds inside the chamber, magma moves to the surface, where it erupts from a volcanic vent.

mantle: the layer of mostly solid rock underneath the earth's crust.

vent: where magma is erupted on to the earth's surface. On Hawaiian volcanoes, vents often open at the summit (top) and along the flanks (sides) of the volcano.



Respect Hawai'i's Natural Resources!

People who visit Hawai'i should be careful to not interfere with or harm any of Hawai'i's natural resources. This includes flowing lava. Throwing anything into the lava is disrespectful to many Native Hawaiians and, in some areas, it is against the law.

You can share the beauty and wonder of nature with those who come after you! When you visit Hawai'i's volcanoes, or any other natural habitat, respect the environment.



Answers: A-ash. B-vent. C-lava. D-conduit.
E-magma chamber. F-crust. G-mantle.

