

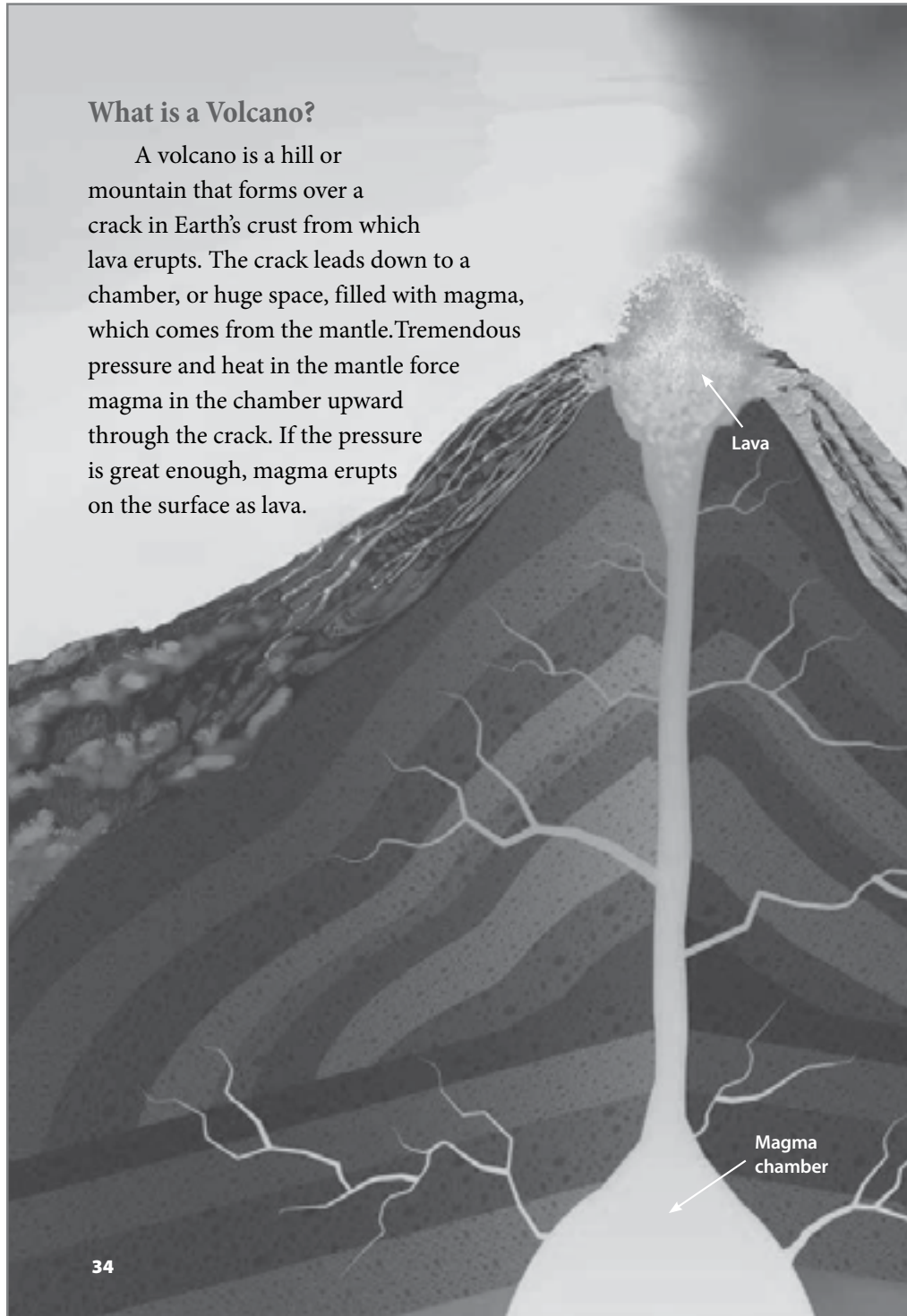
Excerpts from *The Changing Earth*

Read the following excerpts and use them to complete the activity that follows.

Earth's Fiery Volcanoes

What is a Volcano?

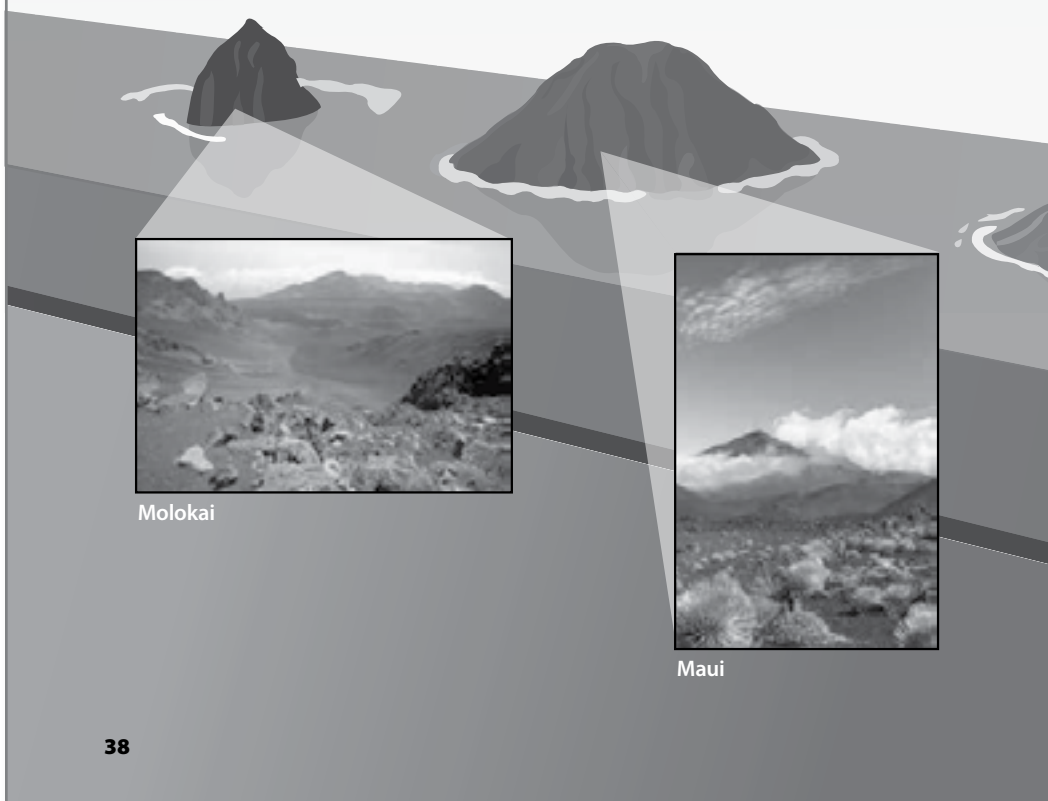
A volcano is a hill or mountain that forms over a crack in Earth's crust from which lava erupts. The crack leads down to a chamber, or huge space, filled with magma, which comes from the mantle. Tremendous pressure and heat in the mantle force magma in the chamber upward through the crack. If the pressure is great enough, magma erupts on the surface as lava.



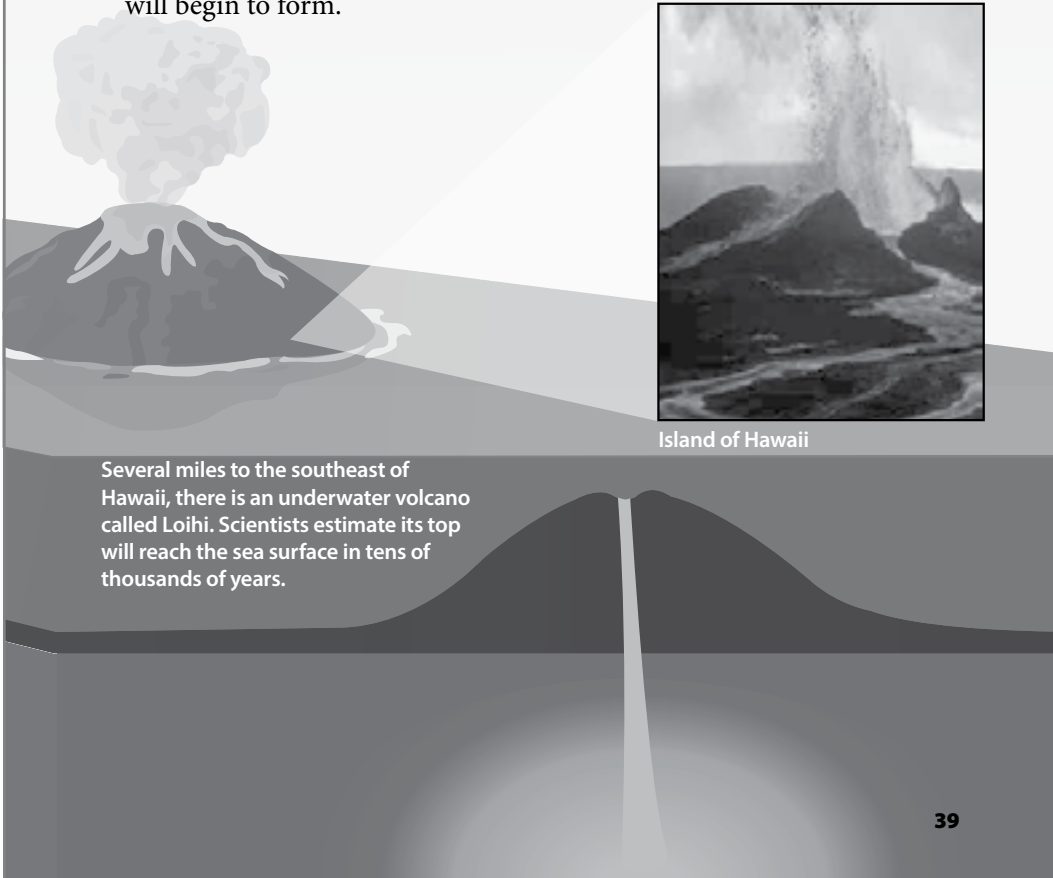
Hotspots

Not all volcanoes form along plate boundaries. Some occur in places that geologists call **hotspots**. A hotspot is a very hot region deep within the mantle. A huge magma chamber forms beneath Earth's crust at a hotspot. Magma periodically erupts from the chamber through cracks in the crust.

Geologists have identified dozens of hotspots worldwide. Some are beneath continental crust. Others are beneath oceanic crust. Hotspots underneath oceanic crust have formed many islands. The process begins when magma erupting from a hotspot forms a volcano on the seafloor. With repeated eruptions, the volcano grows taller and taller over time. Eventually the top of the volcano may rise above the ocean's surface and form an island.



Over a very long period of time, ocean hotspots may form chains of islands. This is because hotspots remain in the same place while tectonic plates slowly keep moving. The Hawaiian Islands, for example, were formed by a hotspot located beneath the middle of the Pacific Plate. The island of Kauai formed about 5 million years ago. It began as an undersea volcano that grew tall enough to rise above the water. As the Pacific Plate inched its way northwest, however, Kauai moved along with it. At some point, the island was no longer directly above the hotspot. A new underwater volcano began forming on the seafloor. This volcano grew to form the island of Oahu. Next came the island of Molokai, then Maui, and finally the island of Hawaii. Hawaii currently lies over the hotspot, which is why it has so many active volcanoes. Eventually, Hawaii will drift away from the hotspot and a new island will begin to form.



Mythic Volcano Spirits: Hawaii's Goddess of Fire

Pele had a magic digging stick. When she jabbed the stick into the ground, a crater would open up in which volcanic fires burned. Pele began digging along Kauai's rocky coast. Every time she made a crater, seawater mysteriously flooded in and put out the flames. Much to her dismay, Pele discovered that her sister, Na-maka-o-kaha'i, had followed Pele to Kauai. Na-maka-o-kaha'i was trying to ruin Pele's plans to build a home and get married.

*Hoping to **outsmart** her hateful sister, Pele fled to Oahu, the next island in the Hawaiian chain. She took her youngest sister, Hi'iaka, and her brothers with her. Na-maka-o-kaha'i followed them and, once again, she caused seawater to fill every crater Pele dug. So Pele kept moving, traveling to the islands of Molokai and then Maui. There, too, Na-maka-o-kaha'i worked her watery magic. Time and again, she turned Pele's craters into cold, wet holes in the ground.*





Finally, Pele reached Hawaii, the largest island in the chain. Pele climbed the mountain called Kilauea and dug a crater at its top. The bright orange flames of volcanic fire flared and did not go out. Pele's crater on Kilauea was far above the sea, out of the reach of the ocean goddess.

Pele was pleased with her new home. She sent Hi'iaka to fetch her husband-to-be from Kauai. She told her little sister to be back in less than 40 days. She also warned Hi'iaka not to fall in love with Lohi'au herself. In turn, Hi'iaka made Pele promise to protect a grove of beautiful trees that grew on Kilauea. Hi'iaka adored the trees. She was afraid that if Pele lost her temper, she would send out rivers of lava to burn them down.

The journey took much longer than Hi'iaka expected. By the time she reached Kauai and found Lohi'au, more than 40 days had passed. On the trip back to Hawaii, Hi'iaka grew increasingly fond of Lohi'au. She also grew increasingly afraid of how Pele would react to their being so late in returning.

When Hi'iaka finally reached Kilauea with Lohi'au, she looked in horror on her beautiful forest. It was gone, burned to the ground by Pele's volcanic fire. To punish her older sister, Hi'iaka kissed Lohi'au. Enraged, Pele sent a huge river of lava streaming down the side of Kilauea. Lohi'au was buried beneath it.

*Driven by the need for **revenge**, Hi'iaka dug into the rocky side of the volcano. Lava began draining out and flowing toward the sea. One of Pele's brothers stopped Hi'iaka before all of Pele's volcanic fire drained away. Because so much lava had already been lost, the top of Kilauea collapsed. A great **caldra**, or bowl-shaped depression, was left behind. It is still visible at the volcano's top.*

Two of Pele's brothers took pity on the dead king—and on Hi'iaka, who truly loved him. They dug Lohi'au out of the lava



*and brought him back to life. Hi'iaka and Lohi'au were married and lived happily ever after, while Pele remained in her **lofty** volcano home.*

Some people believe that Pele still lives in Kilauea. When the volcano erupts, they say it's a sign her fiery temper is flaring again.

Princess Power

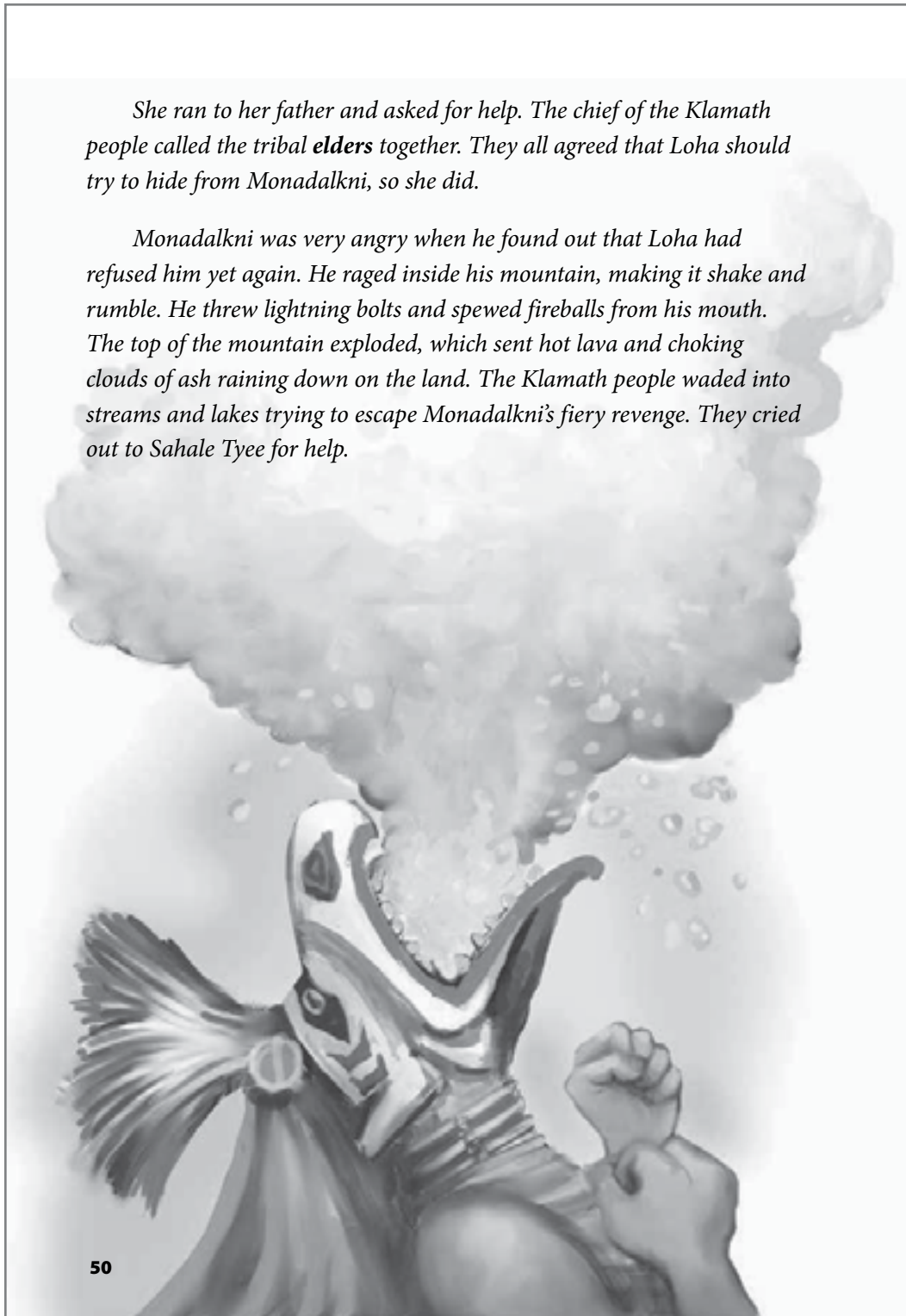
In 1880, Mauna Loa erupted. A large lava flow crept down the mountainside toward the city of Hilo. The Hawaiian princess Ruth Keelikolani traveled to the scene as the lava neared the city. Princess Ruth stood directly in the path of the advancing lava. She recited ancient chants and made offerings to Pele. The next day the lava flow stopped. This helped keep belief in Pele alive.



Mythic Volcano Spirits: The Origin of Crater Lake

*She ran to her father and asked for help. The chief of the Klamath people called the tribal **elders** together. They all agreed that Loha should try to hide from Monadalkni, so she did.*

Monadalkni was very angry when he found out that Loha had refused him yet again. He raged inside his mountain, making it shake and rumble. He threw lightning bolts and spewed fireballs from his mouth. The top of the mountain exploded, which sent hot lava and choking clouds of ash raining down on the land. The Klamath people waded into streams and lakes trying to escape Monadalkni's fiery revenge. They cried out to Sahale Tyee for help.



NAME: _____

DATE: _____

The Chief of the Above World came to the aid of his people. He fought Monadalkni and the two spirits waged a violent, fiery battle. Sahale Tyee eventually gained the upper hand and forced Monadalkni back down into his mountain. Sahale Tyee caused the top of the mountain to collapse, forever shutting off this entrance to the Below World.

The Klamath elders prayed for rain. The rains came and put out the volcanic fires. Rainwater filled the caldera on the mountaintop, creating the high, deep body of water known today as Crater Lake.



Using information from the excerpts, make notes on how volcanic activity is explained in the excerpts. Shaded cells indicate that no information is needed there.

Volcanic Activity	“Earth’s Fiery Volcanoes”	“Mythic Volcano Spirits: Hawaii’s Goddess of Fire”	“Mythic Volcano Spirits: The Origin of Crater Lake”
creation of volcanoes on an island chain			
eruptions			
formation of a caldera			

1. What similarities do you notice across excerpts?

2. What differences do you notice across excerpts?