

## What is a volcano?

Did you ever shake a can of soda and then open it. Shaking releases gas from the soda. The gas explodes in a spray. Something similar can happen to a volcano.

A **volcano** is a mountain built up around an opening in the crust. The opening may form from a crack. Sometimes magma may melt upward and crack the land. In either case, a volcano may *erupt* suddenly—forcing out melted rock, gases, and pieces of solid rock.

A volcano erupts when magma (melted rock) below the volcano rises to the surface. Gases escape from the magma as it rises. If the gases escape slowly, a volcano erupts gently. If the gases escape quickly, a volcano explodes.



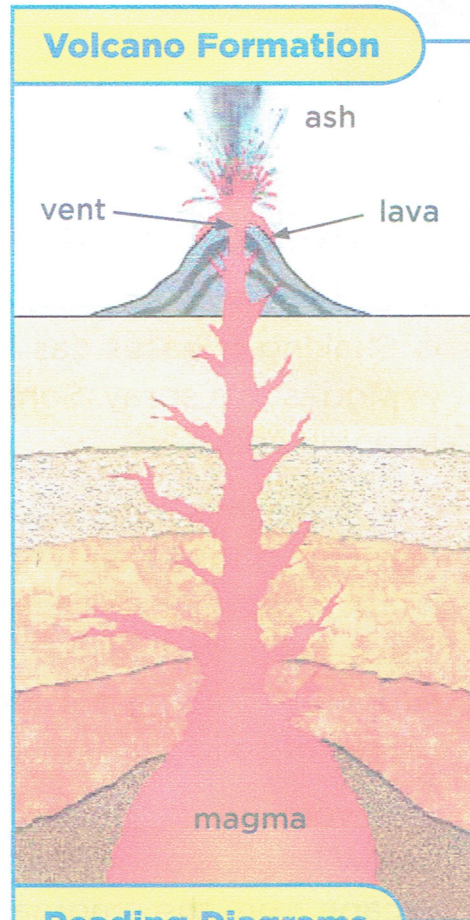
▲ When Mount St. Helens erupted in 1980, it “blew its top,” leaving a huge cuplike opening at the top. The land around the volcano was buried under ash and soot.

## Rising Magma

At the center of a volcano is an opening called a **vent**. The vent may form from movement along a fault. Or magma may melt upward and crack through the surface.

As magma rises up through a vent, it reaches the surface. When magma reaches the surface, it becomes *lava*. Lava is melted rock that starts to cool and harden.

Lava can ooze or explode out of a volcano. Either way, it hardens into a layer around the vent. Some volcanoes release ash, which also forms a layer. The volcano gets bigger each time the volcano erupts and lava and ash build up around the vent.



### Reading Diagrams

What forms on the sides of a volcano each time the volcano erupts?

**LOG ON** *Science in Motion* Watch a volcano erupt @ [www.macmillanmh.com](http://www.macmillanmh.com)

## ✓ Quick Check

Fill in the boxes to explain how a volcano can erupt.

First **17.** \_\_\_\_\_



Next **18.** \_\_\_\_\_



Last The volcano erupts. Lava or ash is released.



## What are some kinds of volcanoes?

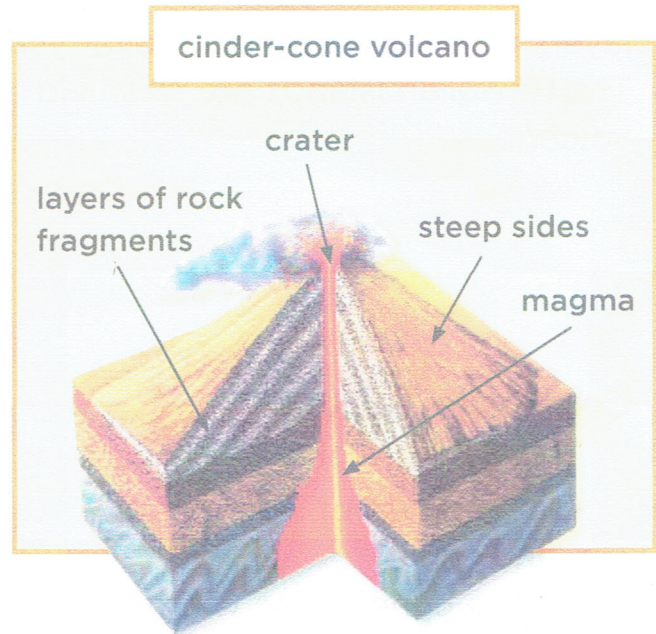
Volcanoes have different shapes. The shape depends on how a volcano erupts and what it releases when it erupts.

### Cinder-Cone Volcano

This kind of volcano:

- is shaped like a cone and has steep sides
- has thick magma inside. This magma has lots of trapped gas.
- forms from explosions.

With each explosion, lava bursts into the air. The lava hardens into rock fragments. The fragments settle into a layer around the vent. A cuplike shape, a **crater**, forms around the vent.



This cinder-cone volcano is in Lassen Volcanic National Park in northeastern California. ▶

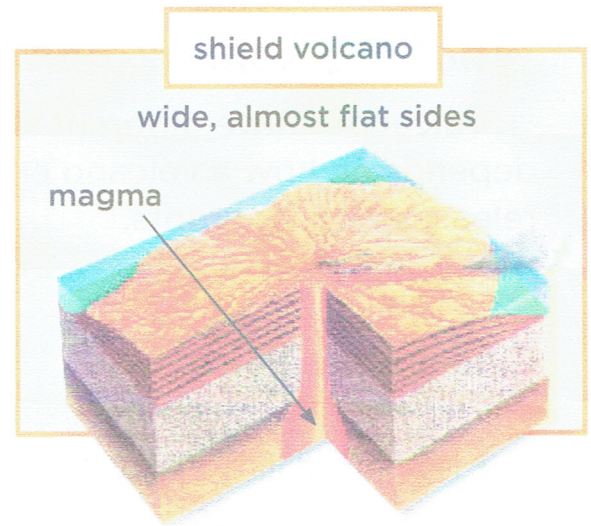


## Shield Volcano

This kind of volcano:

- has wide, almost flat sides
- forms from lava flowing from one or more openings.

This kind of volcano forms from layers of lava that build up over years. The Hawaiian Islands are all shield volcanoes.

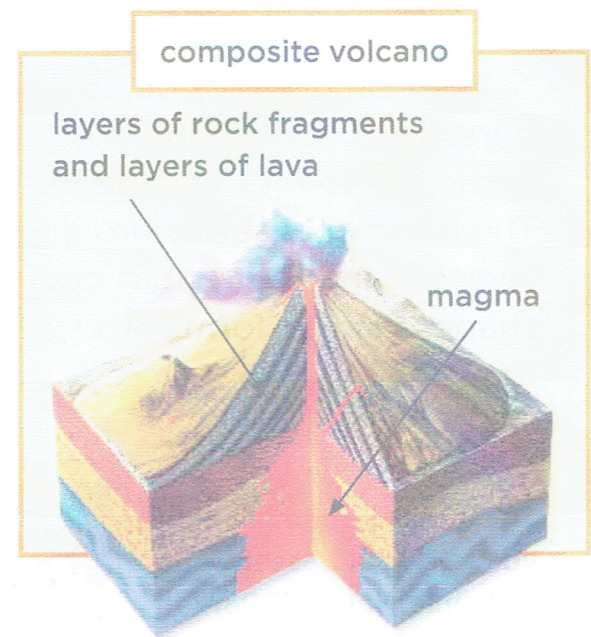


## Composite Volcano

This kind of volcano:

- is made up of layers of lava and ash
- has a cone shape with sides that match, one as steep as another.

This kind of volcano forms when it erupts in two ways. It erupts quietly releasing lava. Then it explodes releasing ash. These two ways keep "taking turns."

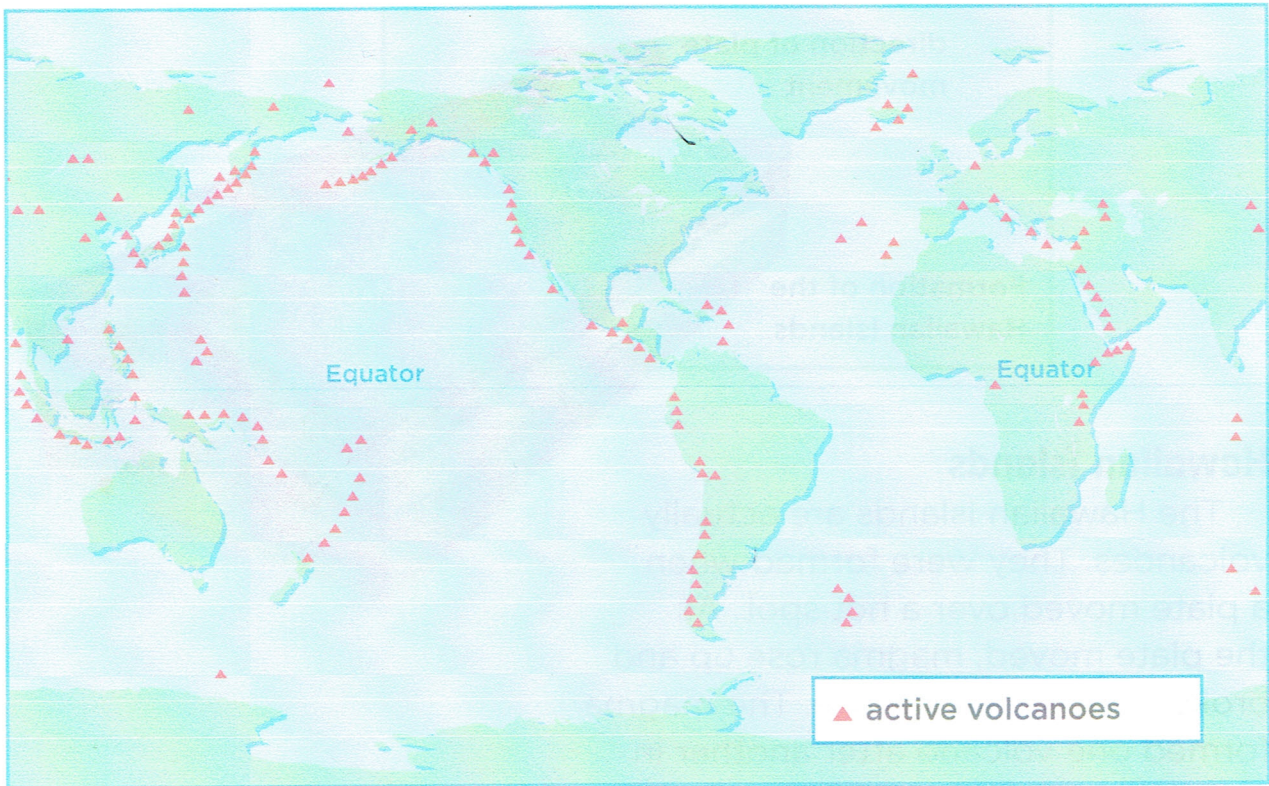


### Quick Check

Match the volcano with the description.

- |                       |                              |
|-----------------------|------------------------------|
| 19. _____ cinder-cone | a. wide, almost flat sides   |
| 20. _____ shield      | b. forms from lava and ash   |
| 21. _____ composite   | c. forms from rock fragments |

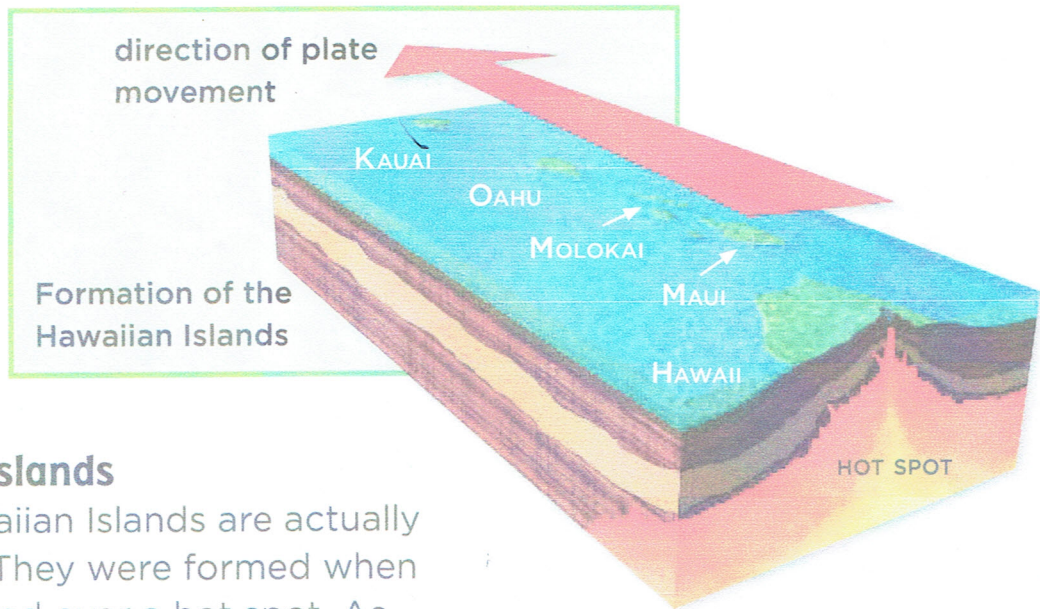




## Where do volcanoes form?

Many volcanoes form at the edges of plates. Remember, plates are pieces of the crust. Volcanoes form where two plates meet.

- **When two plates push together** One plate moves under the other. The plate that moves down under melts and forms magma. The magma rises and forms a volcano
- **When two plates pull apart** Magma rises up through an opening when plates pull apart. These volcanoes often form along the ocean bottom.
- **Hot spots** Some volcanoes form in the middle of a plate. They form when a plate moves over a hot spot. A **hot spot** is a place where magma has melted part of the way through the crust.



## Hawaiian Islands

The Hawaiian Islands are actually volcanoes. They were formed when a plate moved over a hot spot. As the plate moved, magma rose up and broke through the surface. The magma formed one volcano after another in a chain. Hawaii is the youngest island, the only one still erupting.

## Volcano Safety

To stay safe where volcanoes may erupt:

- stay away from lava flows
- have breathing masks and goggles ready
- obey your town's warning system. Leave immediately if told to do so.

## ✓ Quick Check

How do volcanoes form at each place?

22. where two plates push together \_\_\_\_\_

23. hot spot \_\_\_\_\_

24. Why are breathing masks important if you live near an active volcano? \_\_\_\_\_