

# 5-6 How are volcanoes classified?

## Objective

Identify and describe the three kinds of volcanic cones.

## Key Terms

- shield cone:** volcanic cone made up of layers of hardened lava
- cinder cone:** volcanic cone made up of rock particles, dust, and ash
- composite (Kuhm-PAHZ-ihnt) cone:** volcanic cone made up of alternating layers of lava and rock particles

## Classifying by Eruption

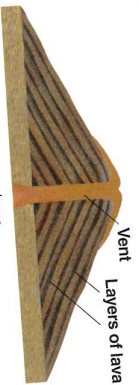
Volcanic eruptions may be classified as quiet or explosive. During a quiet eruption, lava flows freely through a vent or a fissure. Explosive eruptions shoot rocks, lava, gases, ash, and dust high into the air. Different kinds of volcanic eruptions form different types of volcanic cones. Volcanic mountains are really just large volcanic cones.

- NAME:** What are the two basic kinds of volcanic eruptions?

**Shield Cones** A shield cone is a type of volcano, or volcanic cone. It is made up of layers of hardened lava. A shield cone forms from quiet eruptions. Lava flows over a large area and hardens.

Layers of lava build up to form the cone. The cone has a wide base. The sides of the cone have gentle slopes.

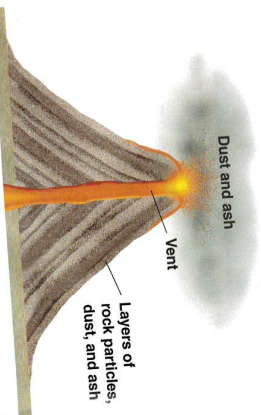
Mauna Loa in the Hawaiian Islands is one of the largest shield cone volcanoes in the world. It is more than 4 km above sea level.



▲ Figure 5-19 Shield cone volcano

- DESCRIBE:** How does a shield cone form?

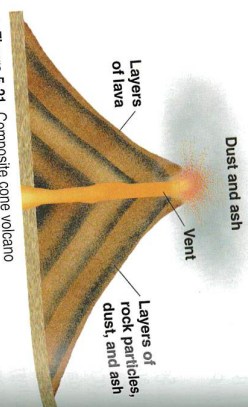
**Cinder Cones** Explosive eruptions form cinder cones. Dust, ash, and rock particles are thrown out of the vent and settle to form the cone. Cinder cone volcanoes have steep sides and narrow bases. The rock particles are loose and roll down the slope. Parícutín is a cinder cone volcano.



▲ Figure 5-20 Cinder cone volcano

- DESCRIBE:** How does a cinder cone form?

**Composite Cones** A composite cone is made up of layers of lava and rock particles. It is formed from a series of quiet and explosive eruptions. A quiet eruption results in the lava forming a wide base. An explosive eruption adds a layer of dust, ash, and rock particles. Then, another quiet eruption adds more lava. Eventually, a very high, wide volcanic cone with steep sides is formed. Mount St. Helens and Mount Hood, in Oregon, are composite cones.



▲ Figure 5-21 Composite cone volcano

- INFER:** How could you tell what kind of eruption formed a layer of a composite cone?

**Volcanoes in Space** Io is a bright red and yellow moon of Jupiter. Scientists think Io's color is caused by volcanic action. Io is the first moon or body other than Earth on which scientists have seen active volcanoes. The volcanoes on Io are very powerful. They shoot out many metric tons of material high into Io's atmosphere each month.



▲ Figure 5-22 Red-hot gases shoot out from this volcanic eruption on Io.

- INFER:** What types of cones do you think Io's volcanoes are forming?

## CHECKING CONCEPTS

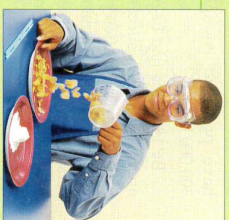
- Cinder cones are formed by \_\_\_\_\_ eruptions.
- There are \_\_\_\_\_ kinds of volcanic cones.

## Hands-On Activity

### MODELING VOLCANIC CONES

You will need a lab apron, crushed cereal flakes, 2 paper plates, a metric ruler, plaster of Paris, a measuring cup, and a teaspoon.

- In the measuring cup, mix 3 teaspoons of plaster of Paris with about 75 mL of water. Be sure the mixture is not too runny.
- Hold the measuring cup about 15 cm over a paper plate. Pour the plaster of Paris slowly onto the plate. Let it harden.
- Clean the cup. Fill it halfway with crushed cereal flakes. Hold it about 15 cm above the second paper plate. Slowly pour the cereal onto the plate.



▲ STEP 3 Slowly pour the cereal onto the plate.

- Practicing Your Skills**
- INFER:** a. What does the plaster of Paris represent? b. What does the cereal represent?
  - MEASURE:** What is the width of each base?
  - ANALYZE:** Which kind of volcanic cone does each model represent? Explain.

- Volcanic cones with gentle slopes and wide bases are \_\_\_\_\_ cones.
- Shield cones are formed by \_\_\_\_\_ eruptions.

## THINKING CRITICALLY

- SEQUENCE:** Place these volcanic cones in order from steepest to flattest: shield, cinder, and composite.
- PREDICT:** What type of eruption do you think each of these volcanoes might have in the future: Mauna Loa, Mount Hood, and Parícutín?

## Web InfoSearch

**Volcanoes of the World** Both active and inactive volcanoes can be found in many places around the world.

**SEARCH:** Use the Internet to make a list of five volcanoes and find out about each of them. Are they active or inactive? Have they erupted in recent years? Start your search at [www.conceptsandchallenges.com](http://www.conceptsandchallenges.com). Some key search words are volcano, Ring of Fire, and Volcano Observatory.