Volcanoes

Use this key to check answers and read the explanations.

1. What is the opening through which lava, gas, or fragments reach the surface called?
   A. Vent
   B. Fault scarp
   C. Ocean trench
   D. River delta
   Correct answer: A. Vent
   A vent is an opening at Earth's surface through which volcanic material can emerge.

2. Which type of volcano has broad, gentle slopes built mainly by layers of flowing lava?
   A. Cinder cone
   B. Lava dome
   C. Shield volcano
   D. Impact crater
   Correct answer: C. Shield volcano
   Flows that can spread relatively far build the broad profile typical of a shield volcano.

3. A microscope shows fine volcanic ash particles from an eruption. What can the ash consist of?
   A. Only smoke and water vapor
   B. Tiny pieces of rock, minerals, and volcanic glass
   C. Only soot from burned wood
   D. Only grains of sea salt
   Correct answer: B. Tiny pieces of rock, minerals, and volcanic glass
   Volcanic ash consists of small fragments expelled by an eruption, including fine pieces of rock or glass.

4. A thick mass of lava moves slowly and piles above a volcanic vent. Which landform can it build?
   A. Glacial moraine
   B. River delta
   C. Sand dune
   D. Lava dome
   Correct answer: D. Lava dome
   Highly viscous lava can accumulate near a vent and form a rounded dome.

5. Which term means a stream of molten rock moving across the ground from a volcanic opening?

A. Ashfall
B. Lava flow
C. Lahar
D. Fumarole

Correct answer: B. Lava flow
A lava flow is molten rock that has erupted and moves across the surface.

6. Heavy rain mixes with loose volcanic debris and forms a fast-moving slurry in a river valley. What is this flow called?

A. Lahar
B. Lava dome
C. Ash plume
D. Steam vent

Correct answer: A. Lahar
A lahar is a moving mixture of water and volcanic rock debris that can follow channels.

7. After a major eruption drains part of a magma reservoir, the ground above it collapses and leaves a broad depression. Which feature can form?

A. Lava tube
B. Dike
C. Cinder cone
D. Caldera

Correct answer: D. Caldera
Collapse above a withdrawn reservoir can create a caldera, often much wider than a single vent.

8. The surface of a lava flow cools into a crust while hot lava keeps moving underneath. What can remain if the interior drains away?

A. A fault scarp
B. A meteorite crater
C. A lava tube
D. An underwater trench

Correct answer: C. A lava tube
A cooled crust can roof over the moving lava. A hollow tunnel can be left when the lava drains.

9. A steep volcanic cone contains repeated layers of lava flows and loose volcanic fragments. Which volcano type fits the description?

A. Composite volcano
B. Shield volcano
C. Lava lake
D. A single block of pumice

Correct answer: A. Composite volcano
Composite volcanoes can build layers through both flowing lava and fragment-producing eruptions.

10. A town lies east of a volcano, and the wind carrying the ash cloud blows from west to east. Which process most directly explains ash settling in the town?

A. The ash moves only through groundwater.
B. Molten rock flows east and changes into ash after reaching town.
C. The volcano’s entire cone moves east.
D. Wind transports particles downwind and they fall out of the air.

Correct answer: D. Wind transports particles downwind and they fall out of the air.
Air currents carry fine particles away from the vent. Some particles settle downwind.

11. Two magmas contain similar amounts of dissolved gas. One is substantially more viscous. What helps explain why the thicker magma can produce a more explosive eruption?

A. The thicker magma always freezes on leaving the reservoir.
B. Greater viscosity removes all dissolved gas.
C. Gas can have more trouble escaping from the thicker magma.
D. Greater viscosity prevents pressure from changing.

Correct answer: C. Gas can have more trouble escaping from the thicker magma.
Gas bubbles may be trapped more effectively in viscous magma. Expansion can then help fragment the magma.

12. An observer sees a sustained stream of lava spreading out with relatively little fragmentation. What term best fits that dominant style?

A. Meteoric
B. Effusive
C. Glacial
D. Alluvial

Correct answer: B. Effusive
Effusive eruptions are dominated by lava coming out and flowing. A volcano can show different styles over time.

13. Monitoring stations around a vent move slightly up and outward over several weeks. Which observation has the network measured directly?

A. The depth of every earthquake
B. The exact gas content of the magma
C. A guaranteed eruption time
D. Ground deformation

Correct answer: D. Ground deformation
GPS can track small changes in positions on the ground. Scientists interpret the pattern alongside other observations.

14. A volcano shows more earthquakes, ground movement, and a change in gas release. Why do scientists examine all three records together?

A. Together they give more evidence about possible movement below the surface.
B. Each instrument provides an exact countdown to an eruption.
C. A change in one record makes the others irrelevant.
D. All three instruments directly photograph the magma.

Correct answer: A. Together they give more evidence about possible movement below the surface.
Seismic, deformation, and gas measurements track different effects. Comparing them helps scientists assess activity without assuming it always leads to an eruption.

15. Two deposits lie near a volcano. One settles from a drifting cloud. The other follows a river channel and contains wet mud mixed with boulders. Which pairing best matches the two deposits?

A. Two lava flows
B. Lahar deposit, then ashfall
C. Ashfall, then lahar deposit
D. Two deposits from airborne ash

Correct answer: C. Ashfall, then lahar deposit
Ash settling out of the cloud produces ashfall. Water carrying a broad mix of rock sizes down a channel can leave a lahar deposit.