

Volcano

1.

Compared to felsic lavas, mafic lavas are _____ and generally move _____.

Student Response

Correct Answer

- A. cooler, slower
- ☒ B. hotter, faster
- C. hotter, slower
- D. hotter, at the same speed
- E. cooler, faster



Score: 1/1

2.

Arrange the following lava types in order of DECREASING viscosity.

[-----] HIGH viscosity
[-----]
[-----] LOW viscosity

Student Response

Correct Answer

Arrange the following lava types in order of DECREASING viscosity.

Arrange the following lava types in order of DECREASING viscosity.

[felsic] HIGH viscosity
[intermediate]
[mafic] LOW viscosity

[felsic] HIGH viscosity
[intermediate]
[mafic] LOW viscosity (100.0%)

Score: 1/1

3.

A shield volcano such as Kilauea will most likely erupt _____.

Student Response

**Correct
Answer**

- A. huge quantities of ash
- B. pumice and scoria
- ☒ C. lava flows and scoria
- D. pyroclastic flows, lahars, and scoria
- E. pyroclastic flows and lahars



Score: 1/1

4.

Magma rises in the crust PRIMARILY due to differences in _____.

Student Response

**Correct
Answer**

- ☒ A. density
- B. gas content
- C. tephra content
- D. temperature
- E. water content



Score: 1/1

5.

Which of the following is an important difference between a pyroclastic flow and a lahar?

Student Response

**Correct
Answer**

- A. pyroclastic flows contain more water
- B. pyroclastic flows only occur during eruptions
- ☒ C. the risk of pyroclastic flow is heightened by glaciers and snow

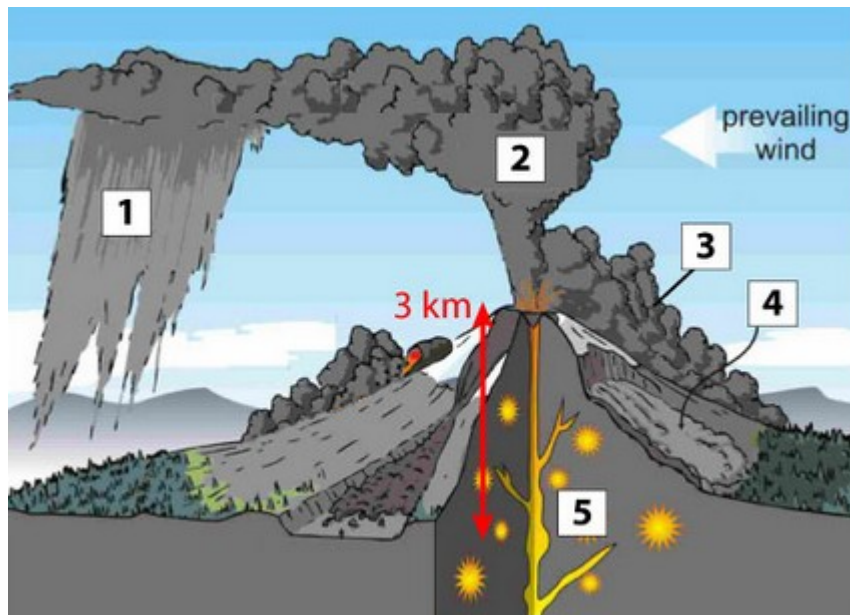


- D. pyroclastic flows travel further than lahars
- E. pyroclastic flows are cooler than lahars

Score: 0/1

6.

What type of volcano is shown in the figure below?



Student Response

Correct Answer

- A. cinder cone
- B. shield volcano
- ☒ C. stratovolcano
- D. caldera
- E. dome complex



Score: 1/1

7.

Which would be the LEAST likely volcanic hazard at Mount Baker (part of the Cascade Range)?

Student Response

Correct Answer

- A. lava flows
- B. lahars
- C. tephra
- ☒ D. volcanic landslides
- E. pyroclastic flows



Score: 0/1

8.

The 2 primary gases found in magmas and lavas are _____.

Student Response

Correct Answer

- A. water vapour and hydrochloric acid
- ☒ B. water vapour and carbon dioxide.
- C. water vapour and carbon monoxide
- D. hydrochloric acid and carbon monoxide.
- E. carbon dioxide and hydrochloric acid



Score: 1/1

9.

The explosivity of hot spot volcanism is dictated by which of the following?

Student Response

Correct Answer

- A. the rate of plate movement
- B. the composition of the overlying plate
- C. the type of plate boundary at the hot spot



- ☐ D. the silica composition of the mantle
E. the temperature of the overlying plate

Score: 0/1

10.

What event started the sequence of events recorded during the May 18, 1980 eruption of Mount St. Helens?

Student Response

**Correct
Answer**

- ☐ A. eruption of a crypto-dome
B. a magnitude 5.1 earthquake
C. melting of snow and ice in the summit crater
D. a large landslide
E. a blast eruption



Score: 0/1

11.

The main factor leading to an increase in volcano-related fatalities over the past 50 years is an INCREASE in _____.

Student Response

**Correct
Answer**

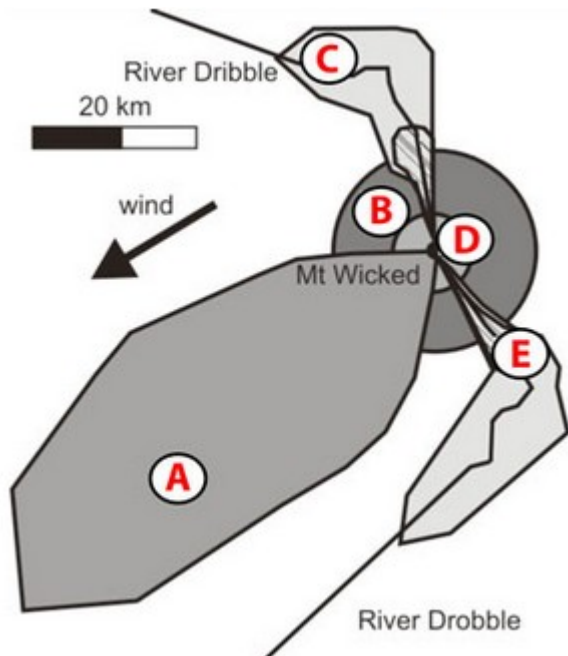
- A. urbanization
B. caldera-type eruption
☐ C. population
D. the rate of volcanic eruptions
E. the rate of sea floor spreading



Score: 1/1

12.

Which zone on the stratovolcano hazard map shown below is MOST LIKELY for lava flows?



Student Response

Correct Answer

- A. A
- ☒ B. B
- C. C
- D. D
- E. E



Score: 0/1

13.

Which of the following is TRUE about acoustic flow monitors (AFMs)?

Student Response

Correct Answer

- ☒ A. AFMs are like seismometers except that they sense higher



frequency vibrations.

- B. AFM use is now superseded by the use of sensors that detect the gases given off by passing lahars.
- C. AFMs detect lahars when laser beams are interrupted by its passing; this sends a warning signal back to a base station.
- D. The best way to deploy AFMs is to mount them under aircraft.
- E. AFMs are only useful at detecting lahars when they are accompanied by a major volcanic eruption.

Score: 1/1

14.

During the 1986 Lake Nyos eruption, the most dangerous areas to be in were _____ because the gas was _____.

Student Response

**Correct
Answer**

- A. on top of hills, acidic
- B. on top of hills, less dense than air
- C. in valleys, scalding
- D. on top of hills, flammable
- ☒ E. in valleys, denser than air




Score: 1/1

15.

The number of fatalities from volcanic eruptions has increased steadily over the past 200 years because _____.

Student Response

**Correct
Answer**

- ☒ A. the world's population has increased exponentially and people are forced to live closer to volcanoes 
- B. many volcanologists differ on how and when to evacuate

towns and cities prior to an eruption

- C. eruptions are becoming more explosive and violent because of global warming
- D. eruption prediction has been complicated by the use of complex technologies such as GPS and InSAR
- E. the number of eruptions has increased

Score: 1/1

16.

Which of the following volcanic HAZARDS is the most likely to kill people, plants, and animals?

Student Response

Correct Answer

- A. lava flow
- B. lahar
- C. tsunami
- ☒ D. pyroclastic flow
- E. toxic gas



Score: 1/1

17.

Which of the following monitoring techniques would BEST indicate year-to-year uplift of the ground in a volcanic area and hence the possibility of a potential future eruption?

Student Response

Correct Answer

- A. LANDSAT imagery
- B. COSPEC survey
- C. electromagnetic survey
- ☒ D. InSAR imagery



E. airborne magnetic survey

Score: 1/1

18.

Magma is molten rock material _____.

Student Response

**Correct
Answer**

- ☒ A. beneath the surface of the Earth
- B. on the surface of the Earth
- C. at the interface between the surface and a volcano
- D. formed of mostly iron and magnesium
- E. formed mostly of silica and feldspar



Score: 1/1

19.

The photo below shows a stratovolcano. What is most likely marked by the letter X?



Student Response

**Correct
Answer**

- A. snow
- B. ash cloud deposit
- C. lava flow deposit
- D. pyroclastic flow deposit

☒ E. lahar deposit



Score: 1/1

20.

What type of magma would you expect in the ground above a continental hot spot?

Student Response

Correct Answer

A. Intermediate

☒ B. Felsic



C. Ultramafic

D. Felsic-intermediate

E. Mafic

Score: 1/1

1.

Which statement about the Pacific Ring of Fire is TRUE?

Student Response

Value

A. It is marked by increased seismicity and volcanism around the Indian Ocean.

B. It is a result of the subduction of the Juan de Fuca Plate under the North American Plate.

☒ C. Volcanoes in this region are characterised by non-explosive volcanism.

0%

D. Continental and oceanic volcanic arcs are common throughout this area.

E. It includes seismically active areas such as Turkey and Iran.

Score: 0/1

2.

Which of the following volcanic hazards is the LEAST hazardous to humans?

Student Response	Value
A. volcanic gases	
B. pyroclastic flows	
<input checked="" type="checkbox"/> C. lava	100%
D. lahars	
E. lateral blasts and explosive eruptions	

Score: 1/1

3.

Inflation and deflation of active volcanoes is measured by all of the following EXCEPT _____.

Student Response	Value
A. GPS	
B. satellite interferometry	
<input checked="" type="checkbox"/> C. seismogram	100%
D. LIDAR (light detection and ranging) images	
E. taped distances between stakes	

Score: 1/1

4.

Which of the following has the highest viscosity in its molten/liquid form?

Student Response	Value
------------------	-------

- ☒ A. rhyolite
- B. air
- C. basalt
- D. water
- E. andesite

100%

Score: 1/1

5.

What part does water play in volcanism at arcs?

Student Response	Value
<input checked="" type="checkbox"/> A. It causes the downgoing plate to be more buoyant and this leads to more melting at shallower depths. B. It lubricates the downgoing plate and increases the rate of subduction, which leads to increased production of magma. C. It boils off the subducted plate at depth, causing the subducted plate to melt. D. It does not have a role. E. It lowers the melting temperature of rock.	0%

Score: 0/1

1.

Hot spot volcanoes form when _____.

Student Response	Value
<input checked="" type="checkbox"/> A. anomalously hot areas in the plate melt near faults, producing a chain of volcanoes B. friction at a transform boundary melts the crust C. subducted water interacts with lithosphere to produce magma D. material from the core-mantle boundary rises to form magma and melts the overlying crust E. the underlying mantle moves beneath the crust over time, forming a chain of volcanoes	0%

Score: 0/1

2.

A hazard NOT caused by volcanic ash and ash clouds is _____.

Student Response	Value
A. causing a tsunami when ash falls into the ocean	
B. collapsing houses in nearby tropical villages	
C. scratching an airplane windshield	
<input checked="" type="checkbox"/> D. fast moving mudflows	0%
E. abrading an airplane engine	

Score: 0/1

3.

All of the following are characteristics that make Mt. Rainier the most hazardous volcano in the Cascades arc EXCEPT _____.

Student Response	Value
A. has active hot springs	
B. has great height and mass	
<input checked="" type="checkbox"/> C. has a thick ice cap	0%
D. generates earthquakes	
E. produces pahoehoe lava	

Score: 0/1

4.

Which of the following is TRUE about viscosity?

Student Response	Value
------------------	-------

- ☒ A. Dark colored extrusive rocks are always the most viscous. 0%
- B. The viscosity of a magma changes with temperature.
- C. Volcanoes with highly viscous magmas produce very fluid lava and erupt explosively.
- D. Low gas content and high viscosity are positively correlated.
- E. Viscosity does not influence volcano shape.

Score: 0/1

5.

Compared to all other volcanoes in the Cascade Arc, Mt. Rainier is considered to be the most dangerous volcano because _____.

- | Student Response | Value |
|---|-------|
| A. it has erupted most frequently over the past 2000 years | |
| B. it has the largest volume of ice and snow | |
| C. it has a history of erupting pyroclastic flows | |
| <input checked="" type="checkbox"/> D. it is hydrothermally altered | 0% |
| E. it has erupted frequently over the past 200 years | |

Score: 0/1

1.

Immediately after an eruption at Kilauea in Hawaii, the surface of the volcano _____.

- | Student Response | Value |
|--|-------|
| A. inflates, making the slopes of the volcano slightly steeper | |
| B. subsides, making the slopes of the volcano less steep | |
| C. shows higher tilt in the north-south direction | |
| D. shows higher tilt in the east-west direction | |
| E. cracks open in many places surrounding the summit | |

Score: 0/1

2.

Which of the following volcanic hazards is typically the DEADLIEST for people?

Student Response	Value
A. pyroclastic flows from Hawaiian eruptions	
B. pyroclastic flows from stratovolcanoes	
C. ash falls from Hawaiian eruptions	
D. ash falls from maars	
E. ash falls from stratovolcanoes	
Score: 0/1	

3.

Which of the following eruptions had the highest Volcanic Explosivity Index (VEI)?

Student Response	Value
A. Yellowstone caldera, 600,000 years ago	
B. Mt. Unzen, 1991	
C. Kilauea, on-going	
D. Mount Garibaldi, 12,000 years ago	
E. Mount St. Helens, 1980	
Score: 0/1	

4.

Which volcano poses the GREATEST risk to life and property in Vancouver and southern British Columbia?

Student Response	Value
A. Mount Garibaldi	
B. Mount Rainier	

- C. Mount Baker
- D. Mount Cayley
- E. Mount Meager

Score: 0/1

5.

Which magma composition will produce the most explosive volcanoes?

	Student Response	Value
A. andesite		
B. basalt		
C. gabbro		
D. dacite		
E. rhyolite		

Score: 0/1

6.

Why did you choose your answer for Question 5? That magma composition _____.

	Student Response	Value
A. has the highest viscosity		
B. is rich in crystals		
C. is typical of Hawaiian-type eruptions		
D. is the most common in volcanoes		
E. flows very fast		

Score: 0/1

7.

Which of the following poses the GREATEST hazard to the Metro Vancouver area from a nearby volcanic eruption?

Student Response	Value
A. lahar	
B. lateral blast	
C. ash fall	
D. pyroclastic flow	
E. poisonous gases	
Score: 0/1	

8.

Large eruptions from stratovolcanoes typically affect climate by _____.

Student Response	Value
A. heating ocean water with lava flows	
B. ejecting ash particles that block sunlight and cause global cooling	
C. reducing alpine ice cover, contributing to global warming	
D. heating the atmosphere, causing global warming	
E. melting large quantities of ice causing sea level to rise	
Score: 0/1	

9.

How did the residents of Vestmannaeyjar, Iceland, save their harbor from a lava flow?

Student Response	Value
A. They dug channels that diverted the lava flow away from the harbor.	
B. They chilled the lava flow with water, making the flow solidify before it blocked the harbor.	
C. They extracted more geothermal energy that was being produced by the volcano, decreasing the volume of lava erupted.	

- D. They constructed high cement walls around the harbor and the lava solidified against the walls.
- E. As the lava cooled, they blasted the new rock away and dumped it offshore.

Score: 0/1

10.

Which of the following is the most common volcanic rock on Earth?

Student Response	Value
A. andesite	
B. basalt	
C. rhyolite	
D. granite	
E. dacite	

Score: 0/1

11.

Aircraft flying at high altitudes between North America and Asia can be very susceptible to _____ erupted from volcanoes in Cascadia and Alaska.

Student Response	Value
A. volcanic ash	
B. lahars	
C. volcanic bombs	
D. lava flows	
E. pyroclastic flows	

Score: 0/1

12.

Which of the following volcanic hazards can occur without an accompanying eruption?

Student Response	Value
A. sector collapse / volcanic landslide	
B. volcanic ash cloud	
C. pyroclastic flow	
D. volcanic bombs	
E. lava flow	
Score: 0/1	

13.

If you are hiking in Garibaldi Provincial Park and your map identifies a feature near your trail as "The Cinder Cone", what rock type would you be most likely to encounter as you walk near this feature?

Student Response	Value
A. basalt	
B. andesite	
C. rhyolite	
D. granite	
E. dacite	
Score: 0/1	

14.

Why are stratovolcanoes the most common type of volcano around the Pacific Rim?

Student Response	Value
A. they are typical of mid-ocean ridges	
B. they are found nowhere else	
C. they are typical of hot spots	

- D. they are typical of continent-ocean subduction zones
- E. they are typical of continental rifting

Score: 0/1

15.

Two volcanic gas products are _____.

Student Response	Value
A. nitrogen gas and carbon monoxide	
B. carbon monoxide and carbon	
C. carbon dioxide and water vapour	
D. sulphur and vog	
E. hydrogen sulfide and oxygen	

Score: 0/1

16.

The Hawaiian volcanic chain extends from southeast to northwest, growing progressively older to the northwest. This age progression implies that movement of the Pacific Plate in this region has been towards the _____.

Student Response	Value
A. north	
B. northwest	
C. southeast	
D. west	
E. east	

Score: 0/1

17.

How can studying the geologic history of a volcano help most in eruption forecasting?

Student Response	Value
A. Most volcanoes erupt with a regular periodicity, so knowing the time period between eruptive cycles allows accurate predictions of when the next eruption will occur.	
B. Mapping pyroclastic flows from previous eruptions will show exactly where the pyroclastic flows will go in the next eruption.	
C. Information from geologic records allows scientists to pinpoint how big the next eruption will be from a certain volcano.	
D. Mapping the extent of lahars from previous eruptions will show exactly where the lahars will go in the next eruption.	
E. Mapping previous volcanic deposits from a volcano is helpful for developing hazard maps for land-use planning and disaster preparedness.	

Score: 0/1

18.

Good news! You have just been informed that your annual charity bicycle-ride is up to the top of a volcano. But it is next week and you have an injured knee. If you could choose the EASIEST ride up, which type of volcano would it be?

Student Response	Value
A. a tuya	
B. a composite volcano	
C. a stratovolcano	
D. a cinder cone	
E. a shield volcano	

Score: 0/1

19.

Jokulhlaups are _____.

Student Response

Value

- A. plants that tolerate highly acidic soils that are the first to recolonize a lava flow
- B. rubbly, slow moving lava flows in Iceland, similar to a'a in Hawaii
- C. floods induced by volcanic eruptions underneath glaciers
- D. low viscosity basaltic lava flows at hotspots like Iceland
- E. earthquake-triggering collapses of basaltic rock off of Iceland

Score: 0/1

20.

Maars are _____.

Student Response

Value

- A. lava flows on Earth's Moon
- B. lava flows in Hawaii that flow all the way to the ocean and are quenched by seawater
- C. craters formed by the interaction of magma with groundwater
- D. basaltic lava flows with low explosivity
- E. cinder cones on the flanks of larger volcanoes

Score: 0/1