



Washington State Parks and Recreation Commission

Mount St. Helen's Visitor Center: Teacher Resources 2016

Visiting a Volcano:

Grades 6-8 building activity sheet

Time Commitment: 35-40 minutes

Location: Mount St. Helens Visitor Center

Site: Exhibit

The purpose of this worksheet is so that students will be able to follow the displays inside of the visitor center. Students will be able to understand the formation of Mt. St. Helens and understand the impacts of the May 18th 1980 eruption. The students will be best served by looking at the exhibits and film to get a better grasp on the information regarding the eruption of Mount St. Helens.

Goal: the student will be able to understand how plate tectonics form stratovolcanoes like Mount St. Helens and the impacts it has on the surrounding environment.

Objectives:

- 1) Students will be able to use the scientific method to draw a reasonable conclusion
- 2) Students will be able to compare and contrast information.
- 3) Students will be able to read informational text and find the main ideas and infer relationships between what they see around them and the text.

Next Generation Science Standards:

MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

- Describe a subduction zone and how this creates uplift and volcanoes.
- Explain how igneous rocks form and the relationship to the rock cycle.

MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

- Use the information from the text available to defend your opinion of how the eruption of a volcano can change the surrounding environment.
- Explain the effects of a volcanic eruption on the landscape at various distances from a volcano.

MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

- Describe the formation of a stratovolcano and how that differs from other types of volcanoes.

Infer the relationship between a volcanic eruption and ecological succession of the surrounding slopes of a volcano.

Common Core Standards:

CCSS.ELA-Literacy.RH.6-8.8

Distinguish among fact, opinion, and reasoned judgment in a text.

CCSS.ELA-Literacy.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-Literacy.RST.6-8.2

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

CCSS.ELA-Literacy.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CCSS.ELA-Literacy.RST.6-8.8

Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

- Answer Key -

Visiting a Volcano:

Welcome to the Mount St. Helens Visitor Center, use the displays in the center to help you find the answers and solve the case about the volcano.

Mission: using the case clues to find out how and why Mount St. Helens erupted.

Clues:

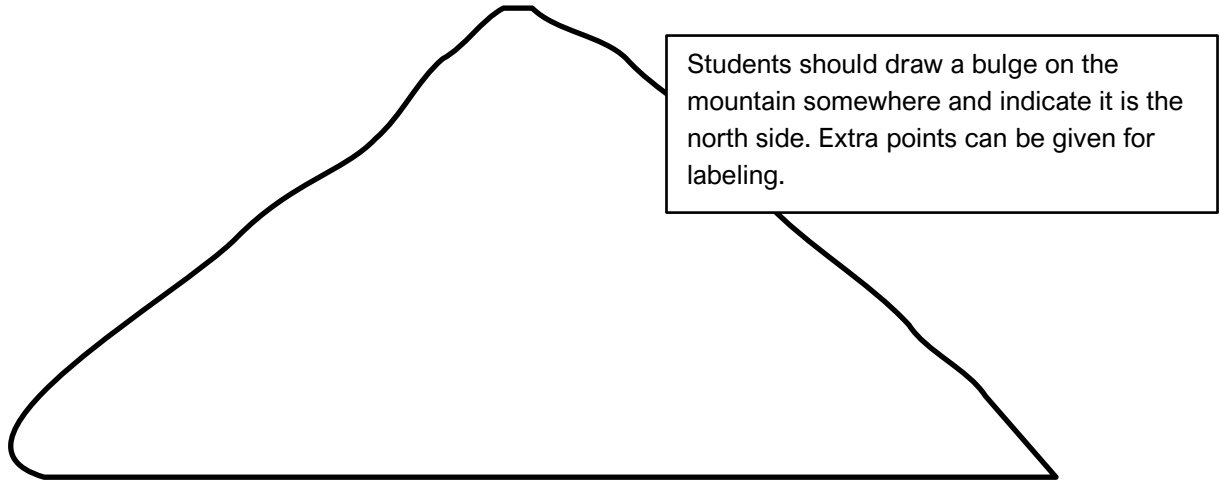
1. Mount St. Helens is a stratovolcano, which means it is made in layers where each eruption sits on top of the previous. It is like a layered cake where the frosting and cake are stacked on top of each other.
2. The magma chamber underneath the mountain is filled with molten Dacite rocks which have a huge amount of gas bubbles floating around inside of it. That gas makes very explosive eruptions.
3. Mount St. Helens is the youngest/smallest but most active of the volcanoes in the Cascade Range. The Cascade Range of volcanoes stretches from northern California to southern Canada.

1. While looking at the displays about plate tectonics and how volcanoes form, finish the sentences by filling in the blanks with the correct word(s) using the information that you learned.
 - a. Approximately 200 million years ago, this great Continent split into pieces /plates and shifted to their present locations.
 - b. These plates move anywhere from 1/2-7 inches each year.
 - c. When plates move apart volcanoes fill the separating edges.
 - d. More than 90% of the earth's volcanoes on landform above areas where one plate dives beneath another. These areas are known as Subduction Zones.
 - e. About 75 miles beneath your feet, rocks along the subduction zone Partially Melt forming Magma.
 - f. As a mixture of Liquid rock, tiny Crystals, and dissolved gas, magma Rises because it is Lighter than surrounding rock.
 - g. The Juan De Fuca plate plunges about 1 inch per year beneath the North American Plate.
2. What types of rock are found along these subduction zones and how do you know?
Answers should include igneous rocks, and that there is the volcano that forms them.
3. List some of the activities and places that were common for visitors to do/see around Mount St. Helens and Spirit Lake prior to 1980
 - a. Answers can include hiking, swimming, fishing, camping, skiing, mining, logging, climbing, wildlife watching, & use by Native Americans.
 - b. _____
 - c. _____

4. Based on what you know about volcanic eruptions, assess how a volcano erupting might effect one of the activities or places you listed above.

Answers can include destroyed the area, or changed the landscape, and that some areas are not yet recovered enough to do those activities again.

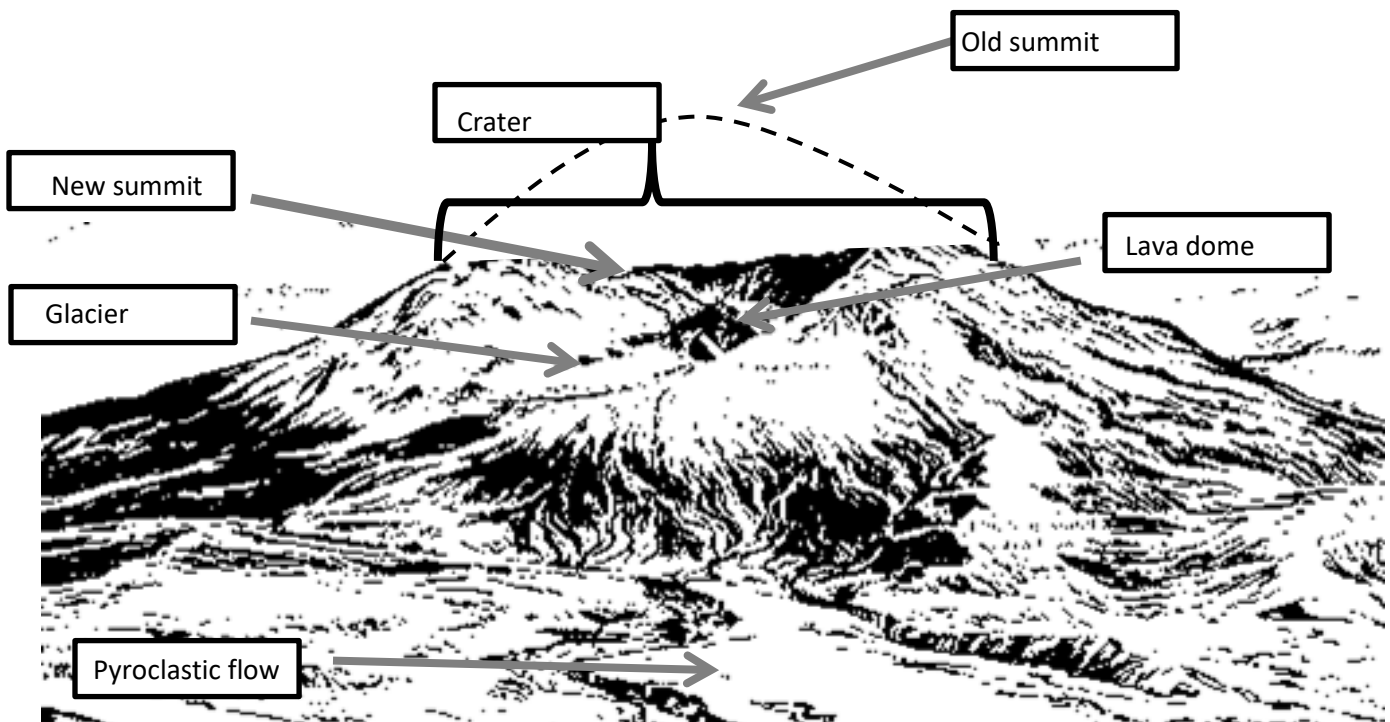
5. Below, draw the changes seen on Mount St. Helens during April 30th to May 17th and describe why that may have caused the eruption of 1980 to be so destructive.



Answers should include information about the "Bulge" forming and how it could form a landslide /avalanche. Students should also conclude that the movement of the "bulge" caused the directed/lateral blast.

6. On the picture label each part of the volcano using the word bank below.

- Crater** **Current Summit** **Lava Dome** **Pyroclastic Flow** **Glacier** **Old Summit**



7. Looking at the ash plume display, list the eruptions by size and write the amount of ejecta for each eruption below:

1. Mount Mazama – 150 km³ (4850 BC)

5. Vesuvius – 9 km³ (79 AD)

2. Tamboura – 80 km³ (1815)

6. Mt. St. Helens – 4 km³ (1900)

3. Mt. Katmai – 30 km³ (1912)

7. Mt. St. Helens – 1 km³ (1500/1980)

4. Krakatoa – 20 km³ (1883)

8. Mt. St. Helens – 1 km³ (1500/1980)

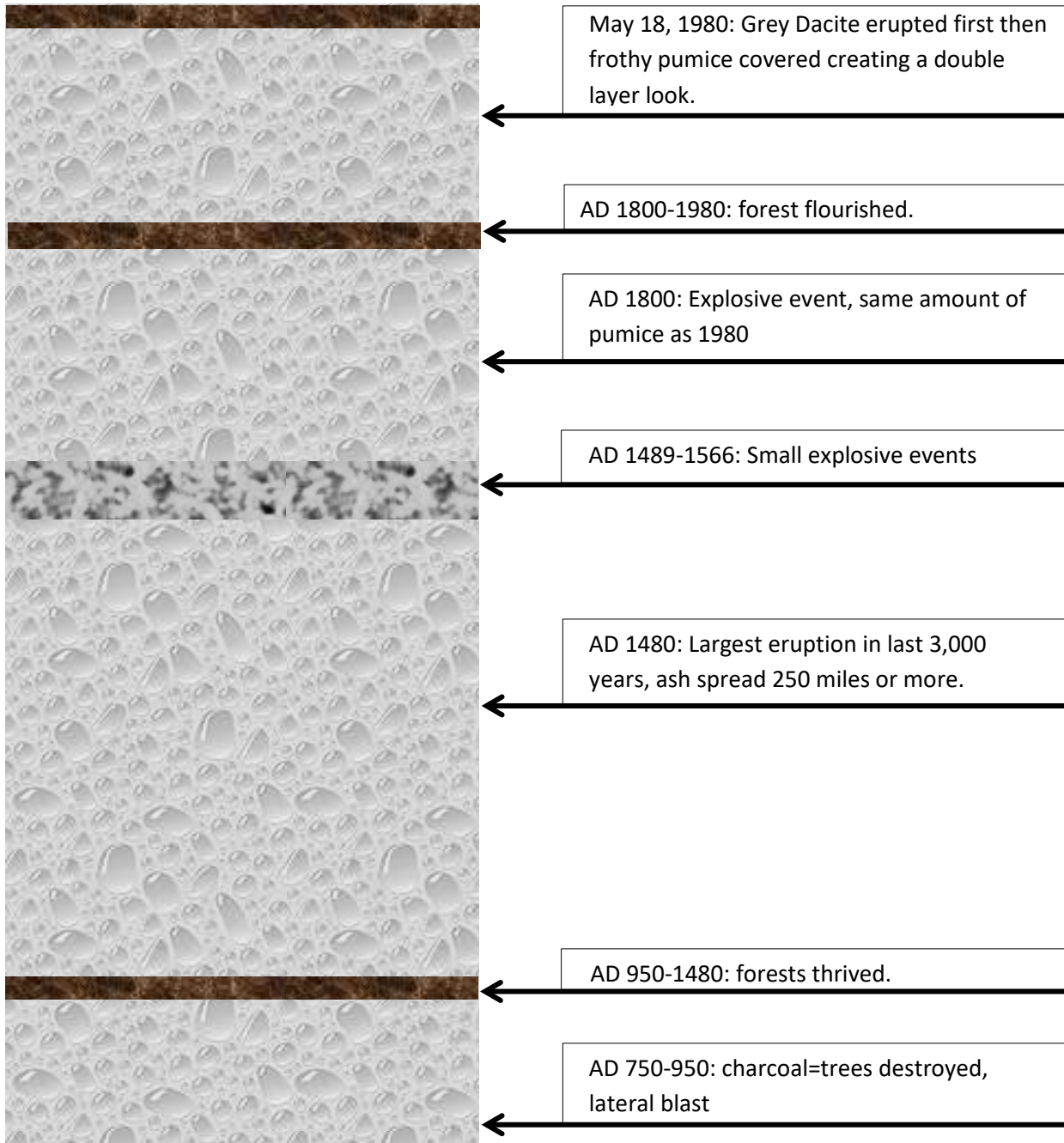
8. Using the information from above, compare the size of the eruption of Mount St. Helens in 1980 to the eruption of other volcanoes by the amount of ejecta produced.

Answers should include evidence from the list and that it is smallest or second smallest.

9. How does the 1980 eruption compare to the other eruptions listed for Mount St. Helens on the ash plume display?

Answers should be: smallest or second smallest eruption by size.

10. As you look at the “Layers of the Mountain” you can see the history of Mount St. Helens, as a land constantly changing. Looking at the display correctly label the drawing below with the dates and a short description of what that the layer represents.



11. What does this layering on the mountain tell us about the history of Mount St. Helens (I.E. the eruptive periods, length, frequency, etc.)? Give one example in your answer to defend your idea.

Answers should include: many eruptions have occurred, some eruptions lasted many years some shorter, forests thrived between eruptions, students should compare date and years as well.

12. Look at the “Survivors of the Blast” display and in the table below provide an example of a survivor of the blast and the feature that allowed them to survive.

Type of Survivor	Feature that helped them survive	How they survived the blast
Pocket gopher	Burrowing	Being in burrow
Ant	Underground living	Being home
Salamander	Hibernating	Hibernating in winter
Plant	Seeds underground	Seeds not sprouted
Fish	Under ice	Ponds/lakes under ice
Tree roots	Living underground	Double roots

13. If you were around at the time of the eruption in 1980 what types of adaptations would you want to have that you think might help you survive in the blast zone? Why would you choose that particular adaptation?

Answers should include living underground, hibernation, living underwater/ice. Migration and having not begun to grow for the season.

– End Answer Key –

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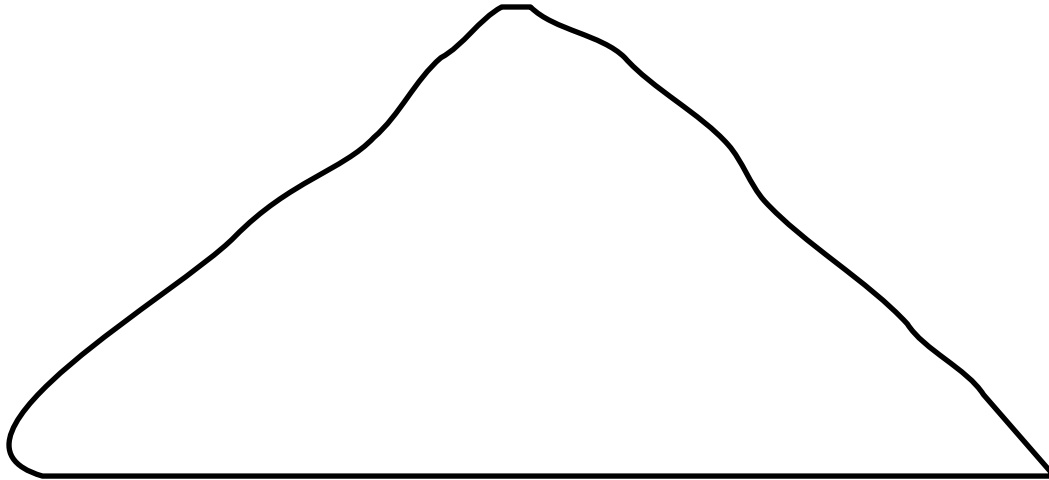
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1. While looking at the displays about plate tectonics and how volcanoes form, finish the sentences by filling in the blanks with the correct word(s) using the information that you learned.
 - h. Approximately 200 million years ago, this great _____ split into _____ and shifted to their present locations.
 - i. These plates move anywhere from _____ each year.
 - j. When plates move _____ volcanoes fill the separating edges.
 - k. More than _____ of the earth's volcanoes on landform above areas where one plate dives beneath another. These areas are known as _____.
 - l. About _____ beneath your feet, rocks along the subduction zone _____ forming _____.
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6. On the picture label each part of the volcano using the word bank below.

Crater

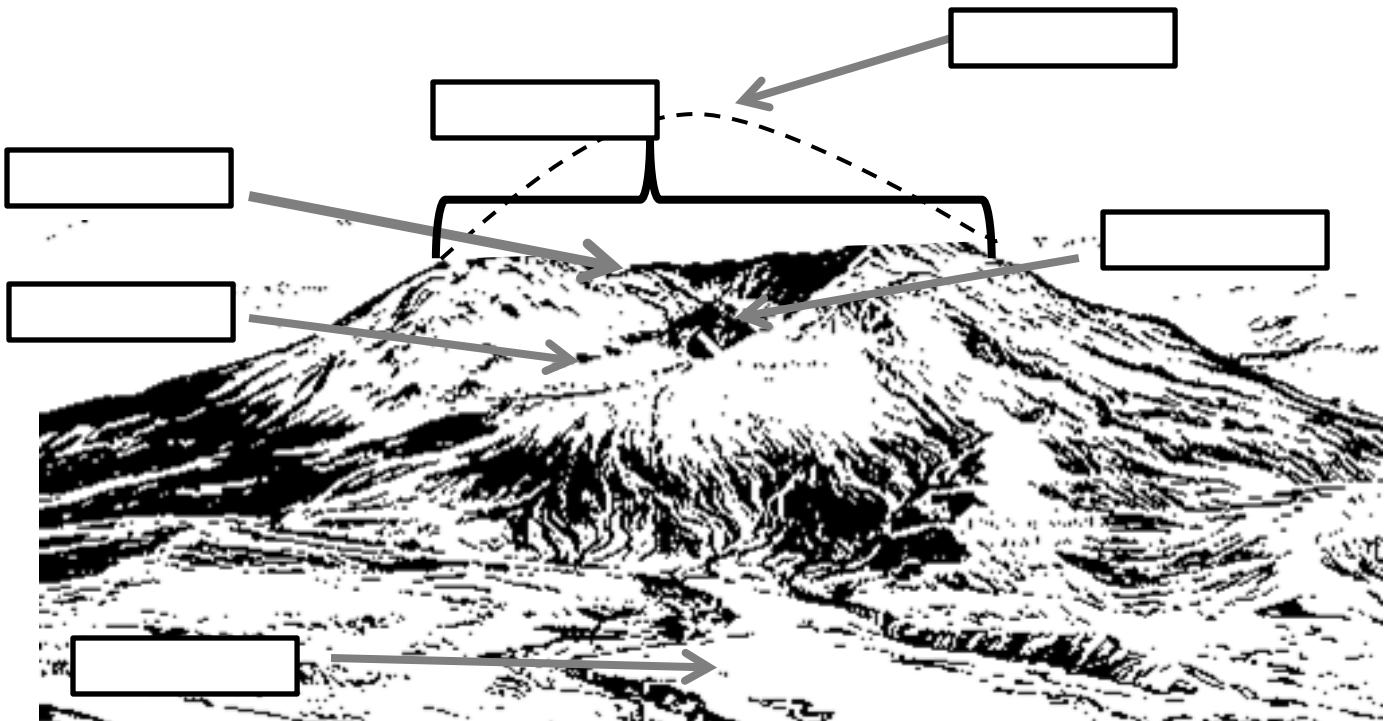
Current Summit

Lava Dome

Pyroclastic Flow

Glacier

Old Summit



7. Looking at the ash plume display, list the eruptions by size and write the amount of ejecta for each eruption below:

1. _____

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2. _____

6. _____

3. _____

7. _____

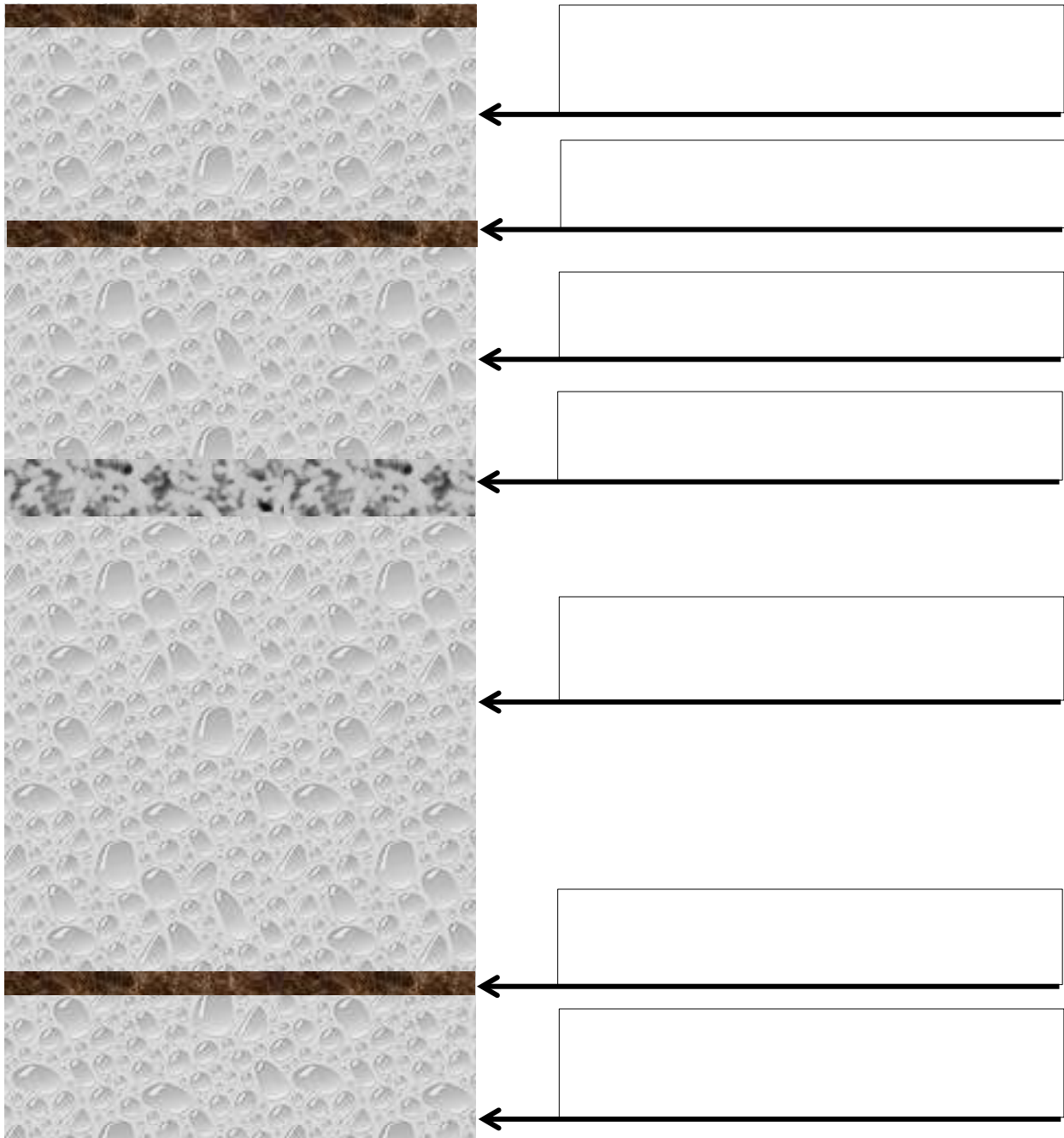
4. _____

8. _____

8. Using the information from above, compare the size of the eruption of Mount St. Helens in 1980 to the eruption of other volcanoes by the amount of ejecta produced.

9. How does the 1980 eruption compare to the other eruptions listed for Mount St. Helens on the ash plume display?

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