

**Argue from Evidence** • Use your observations of the rock samples to determine which of the locations are volcanic. Provide reasoning.



Location ID	Volcanic? (Y/N)	Why?
1		
2		
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11		

**Summarize** • Answer each question in complete sentences. Use evidence from your observations to support your response.



- 1 What are the common characteristics of rocks believed to come from volcanoes?

They are dark or gray, and they can be porous. many are fine-grained.

- 2 What process could lead to the characteristics of volcanic rocks?

The process of the magma cooling, and the speed at which it cools. Gas in the magma might cause some to be porous.

- 3 Why might holes be present in rocks like pumice, but not in obsidian?

With pumice, there might have been more gas in the magma as it cooled. Obsidian might have cooled quickly and with less gas.

- 4 How could the viscosity of magma affect how volcanic rocks form?

maybe it might affect how porous the rocks are, since runnier magma could fill gaps in the cooling rock more quickly. However, gas content would also have an effect on porousness.



5

What could volcanic rocks tell us about how explosive a volcano is? What physical evidence provides support about explosivity?

If the magma has more gas, it makes a volcano more explosive, which could determine how rocks form. If a volcano is less explosive, like the Hawaiian volcanoes, then the magma content is different because it is thinner and runnier—these rocks probably look different from rocks formed from stickier/thicker magma.

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Do all rocks on Earth originate from volcanoes? Why or why not? Explain.

- No, because rocks can form from cooled magma that is not erupted from volcanoes.
- Yes they could, because volcanic rocks can be eroded and eventually become sedimentary rock. They can also undergo heat and pressure and form metamorphic rock.

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Could rocks that come from shield volcanoes differ from stratovolcanoes? Explain.

Yes, because the magma is very different. Shield volcanoes have thin, runny magma but stratovolcanoes have thick, sticky magma. Different types of magma can form different rocks.



**Synthesize** • How does knowing rock types help us identify volcanoes?

Extrusive igneous rocks are erupted from volcanoes, and intrusive igneous rocks help indicate that a magma chamber is, or was, nearby. We also know that sedimentary and metamorphic rocks are not created in volcanoes.

### Formative Assessment: Exit Ticket

**Construct Explanations** • Basalt is a volcanic rock, often found in the ocean seafloor. Why might basalt be found in the ocean? Explain.

- When submarine volcanoes erupt, or seafloor spreading occurs, the lava might be affected differently to lava on land. For example, it might cool more quickly due to being underwater.
- Land eruptions might also produce basalt, with this then being eroded into the ocean.