Volcanic Eruptions

Understanding Main Ideas
Answer the following questions on a separate sheet of paper.

1. Why does magma in the mantle rise through the crust above it?
2. As magma rises toward the surface, what happens to the gases in it? Why?
3. Contrast the silica content of magma in quiet and explosive eruptions.
4. How does an explosive eruption produce pyroclastic flow?
5. Identify two hazards of a quiet volcanic eruption.
6. Describe the stages of volcanic activity.

Building Vocabulary
Label the figure below with the names of a volcano’s parts.

7. ____________
8. ____________
9. ____________
10. ____________
11. ____________
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Can you imagine a mineral crystal as big as a truck? Such crystals do exist. They sometimes are found in pegmatites, which are a type of mineral deposit. Pegmatites form from low-viscosity, watery magma. Viscosity refers to a fluid’s resistance to flow. High-viscosity magma is thick and flows slowly. Low-viscosity magma is thin and flows more quickly.

As magma cools and starts to harden beneath Earth’s surface, the magma that’s left becomes more and more watery. This extra water lowers the viscosity of the magma, which makes it more fluid. In some cases, the last magma to harden can have a large amount of water in it. In the more watery magma, atoms are able to move long distances. These atoms become concentrated in the water magma and combine to form large crystals. Some of these large crystals found in pegmatites include gems and rare elements.

1. What effect does water have on the viscosity of magma?
2. How do the crystals in pegmatites form?
3. According to the table, which pegmatite in the United States contains uranium ore?
4. Which pegmatite has a lot of aquamarine, a valuable gem?
5. Why are pegmatites important to society?

<table>
<thead>
<tr>
<th>Location</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Hills, South Dakota</td>
<td>Contains crystals more than 10 m long</td>
</tr>
<tr>
<td>Petaca, New Mexico</td>
<td>Contains the mineral uraninite, an ore of uranium</td>
</tr>
<tr>
<td>Oxford County, Maine</td>
<td>Deposit is mined to obtain lithium, a rare mineral</td>
</tr>
<tr>
<td>Kings Mountain, North Carolina</td>
<td>Includes gem-quality minerals, such as aquamarine</td>
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</tbody>
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