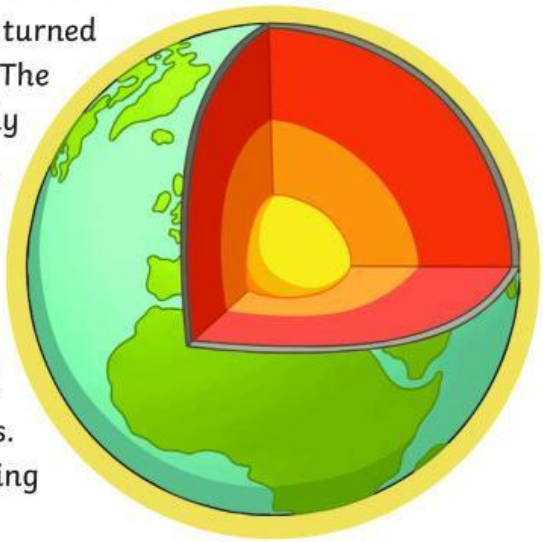
Volcanoes

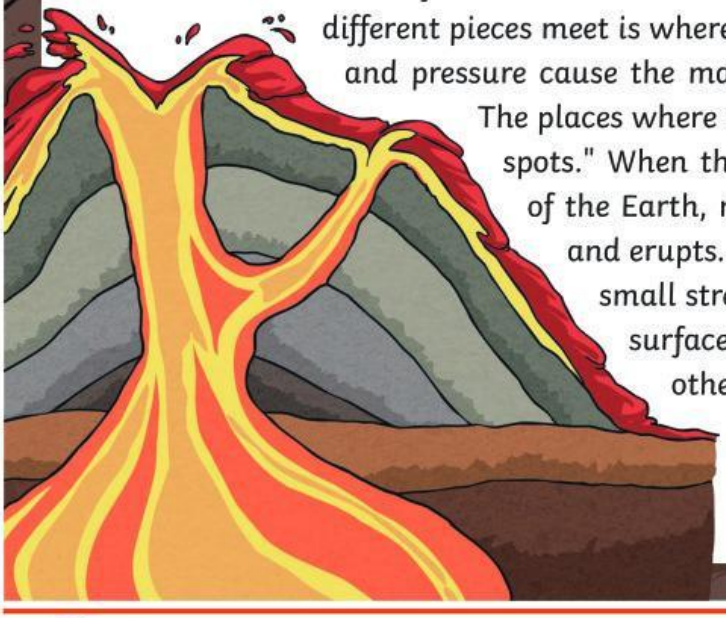
What is our Earth made of?

Deep inside the Earth, our planet is made of four different layers. Geologists believe as the Earth formed, heavier materials sank to the middle of the Earth and lighter materials stayed on the outside. The two deepest layers of the Earth are called the "core." The inner core is a solid, dense, and heavy layer made of up of iron and nickel. It is extremely hot and can reach temperatures of up to 10,000ºF! The outer core is a liquid layer made up of molten iron and nickel. It is so hot in the outer core that the metals in this layer have turned into liquid. The third layer is called the "mantle." The mantle is the thickest layer. It is approximately 1,802 miles thick. It is made of solid magma, which is made of molten rock and minerals. When a volcano erupts, magma escapes. The final layer of the Earth is the "crust." This is a very thin layer. It is only about 20 to 50 miles thick. It is not a single, smooth layer, but instead broken into many different pieces, called plates. These pieces can rub against each other causing friction and pressure.



How are volcanoes formed?

The intense heat and friction created in the different layers cause a constant change in the Earth. The crust of the Earth is broken into different pieces. The gaps where these different pieces meet is where magma and gases escape. The high heat and pressure cause the magma to rise to the surface of the Earth. The places where magma heats up and rises are called "hot spots." When there is a gap or a weak spot in the crust of the Earth, magma can break through to the surface and erupts. This eruption can be explosive or a single small stream. When magma breaks through to the surface, it is then called lava. Cinders, ash, and other gases also escape during this eruption. As lava cools, it builds up, creating the steep slopes of mountains we associate with volcanoes.



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Millions of people around the world live close to active volcanoes that can erupt at any time. Many of the world's volcanoes are located in a string around the Pacific Ocean, called the Ring of Fire. A large part of the danger of volcanic eruption is the lava that spews from the top of the mountain. However, the volcanic ash and gases that explode from the volcano can cause severe health problems and harm. Volcanic ash can travel hundreds of miles and contaminate water supplies, damage machinery, reduce visibility, and make it hard to breathe. In 79 B.C.E. Mount Vesuvius erupted near the Roman city of Pompeii. Many of the citizens living near the volcano were buried under the tons of volcanic ash and debris that fell from the sky from the eruption. At the same time, volcanoes can also have many benefits to the local environment. When volcanoes erupt, many minerals are also ejected. These minerals can help plants and can make the soil surrounding the volcanoes very rich and fertile.



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Questions

1. Which layer of the Earth is made up of liquid iron and nickel?
   - ○ inner core
   - ○ outer core
   - ○ mantle
   - ○ crust

2. The crust of the Earth _____.
   - ○ is the thickest layer of the Earth
   - ○ is smooth and made of a single, connected piece
   - ○ is made of solid magma
   - ○ is broken up and made of multiple pieces

3. When volcanoes erupt, _____.
   - ○ magma cools and solidifies in the magma chamber
   - ○ magma slowly rises to the surface of the Earth and escapes in gaps in the crust
   - ○ ONLY explosive eruptions occur
   - ○ the Earth's core explodes, causing magma to quickly rise through the layers of the Earth

4. How can volcanoes be beneficial?
   - ○ Minerals ejected can help plants.
   - ○ The smoke from volcanoes is good to breathe.
   - ○ Volcanic ash helps tree grow.
   - ○ Lava helps crops grow quicker.

5. What is the main idea of this text?

   _____

   _____

   _____

6. What can you infer from this text about living close to a volcano?

   _____

   _____

   _____

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Answers

1. Which layer of the Earth is made up of liquid iron and nickel?
   - ○ inner core
   - ✓ **outer core**
   - ○ mantle
   - ○ crust

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   - ○ The smoke from volcanoes is good to breathe.
   - ○ Volcanic ash helps tree grow.
   - ○ Lava helps crops grow quicker.

5. What is the main idea of this text?

   Possible answer. Volcanoes are caused by the pressure of magma building up underneath the Earth. When volcanoes explode, they can cause extensive damage.

6. What can you infer from this text about living close to a volcano?

   Possible answer. Living close to a volcano can be dangerous because of the ash, lava, and smoke that can erupt from a volcano.