Volcanic Eruptions

Engage

What To Do:
1. Watch the video "Volcanic Eruptions" from National Geographic found at https://www.youtube.com/watch?v=CgpNqrR318U
2. Answer the questions below.

1. What do you notice happening in this video?

2. What do you wonder about?

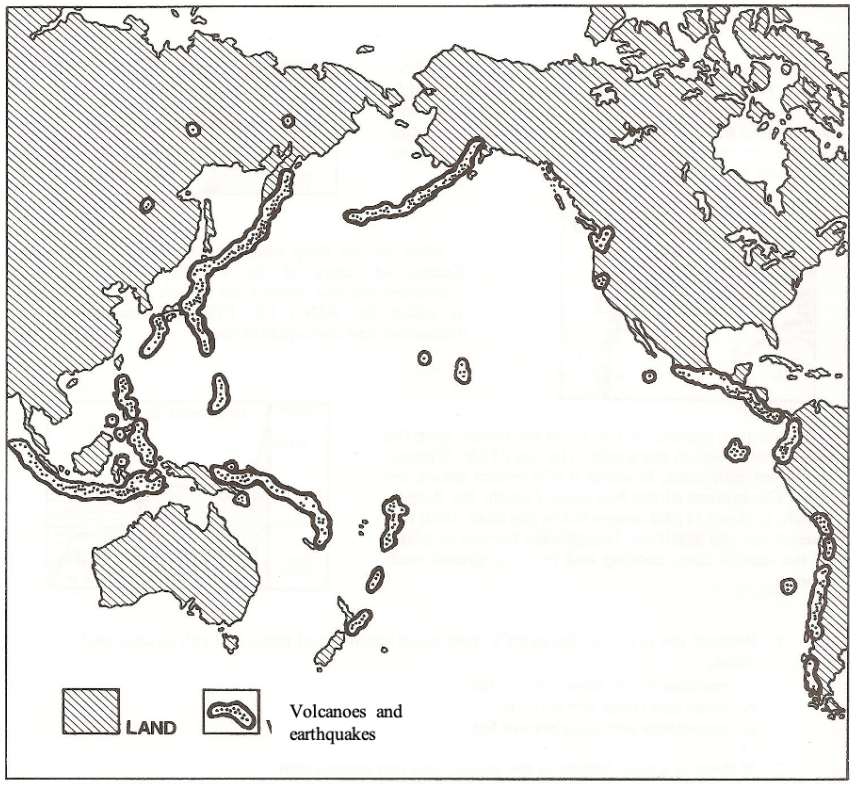
3. What questions do you have?

Share with your partners.

Explore

Materials: colored pencils, Plate Boundary Map from previous lesson

What To Do:
1. Label the Pacific Ocean and the continents around it: North America, South America, Australia, and Asia.
2. Look at the key at the bottom of the picture and color the areas on the map where volcanoes and earthquakes are found either orange or red.
3. Compare it to the Plate Boundary Map from the previous lessons.



Questions:
1. Around which plate do most of the volcanoes and earthquakes happen? _____
2. What does this tell you about the edge of plate boundaries?

_____

Explain

1. Watch the video “Supervolcanoes 101” found at https://www.youtube.com/watch?v=kAlawvE8lVw
2. Use the Word Bank to fill in the blanks below.

WORD BANK
explode violent stages supereruption calderas magma pressure reservoir resurgence Yellowstone lake

1. Supervolcanoes are the most _____ and complex class of volcanoes.
2. They're usually characterized as large depressions in the ground, called _____.
3. In terms of eruptions, supervolcanoes _____ at a magnitude of eight.
4. Supervolcanoes undergo a life cycle of three major _____: a surge of trapped magma, a supereruption, and a resurgence.
5. The first stage of a supervolcano's life cycle involves a pocket of _____ trapped under the Earth's crust.
6. Called a hotspot, this magma _____ is fed by a pipeline deep into Earth's molten interior.
7. The next stage of a supervolcano's life cycle is a _____.
8. The buildup of _____ in a magma reservoir hits a critical mass and then explodes, sending ash and rocky material, into the sky.
9. After a supereruption, a supervolcano undergoes a stage called _____.
10. The _____ Caldera in the United States is currently in resurgence, after a supereruption occurred about 640,000 years ago.
11. In the time since, freshwater collected in the caldera to form a _____, plants and wildlife returned to reclaim the space.

Watch the video “Hotspot Volcanic Creation” from https://www.youtube.com/watch?v=cLsT-HG3yw8

2. Use the Word Bank to fill in the blanks below.

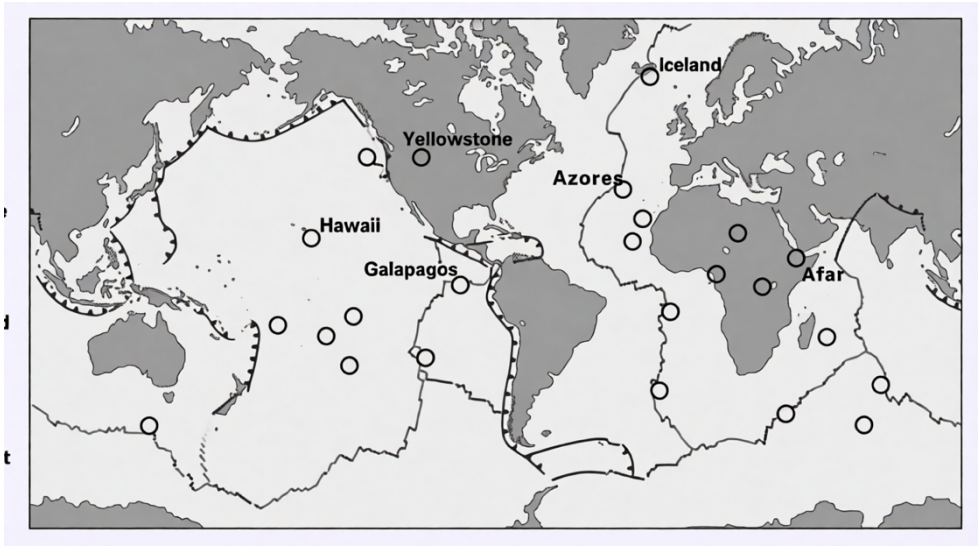
WORD BANK
plumes hotspots rock core mantle lava melting volcanoes cracks erupts chains moves Hawaiian

1.Today we're exploring the incredible phenomenon of volcano formation at _____.
2. Step one, heat from the earth's _____.
3. It all starts deep within the earth where intense heat from the core causes the mantle to become very hot causing thermal _____that rise towards the surface.
4. Step two, as the heat rises, it forms mantle plumes, columns of extremely hot rock that ascend through the _____.
5. Step three is in the _____ of the crust.
6. When the mantle plume reaches the base of the crust, the intense heat causes partial melting of the overlying _____.
7. Step four, formation of _____.
8. As the pressure builds up in the magma chamber, magma forces its way through _____ in the Earth's crust.
9. When it reaches the surface, it _____, forming a volcano.
10. These eruptions can occur repeatedly, building up layers of _____ and ash to form large volcanic structures.
11. Step five, island _____ and plate movement.
12. Over millions of years, as a tectonic plate _____ over the stationary hotspot, a chain of volcanoes can form.
13. Each new volcano forms as the plate moves away from the hot spot, creating a sequence of volcanic islands like the _____ Islands.

Elaborate

What To Do:

1. Color the hotspot circles yellow.
2. Outline the edges of the plates in red.



Questions:

1. How many of the hotspots are on one of the plate boundaries?

_____

2. How many of the hotspots are not on plate boundaries?

_____

3. Which state in the United States has been created by a hotspot?_____

4. What country has been created by a hotspot? _____

5. What national park in the US is located on a hotspot?

_____

6 Which continent has the most hotspots? _____

Evaluate

Name _____ period _____

EXIT TICKET

Volcanic Eruptions

1. Where do most volcanoes and earthquakes happen?
   - A. In the middle of continents
   - B. Along plate boundaries
   - C. At the bottom of a mountain
   - D. In the ocean

2. The tectonic plate where most volcanos form is called the –
   - A. North American Plate
   - B. Indo-Australian Plate
   - C. Pacific Plate
   - D. Antarctic Plate

3. Supervolcanoes form when a pocket of _____ is trapped under the Earth's crust explodes.
   - A. magma
   - B. radioactive material
   - C. super-hot water
   - D. ice

4. Hotspots occur –
   - A. only at a plate boundary
   - B. only in the Antarctic
   - C. where a mantle plume reaches the surface
   - D. only in Africa

5. The reason supervolcanoes and hotspots occur is –
   - A. the core must let off some heat.
   - B. the ice at the poles is too cold.
   - C. because of earthquakes.
   - D. plate tectonics