

VOLCANO WORLD ACTIVITY

Volcano World Computer Activity

The screenshot shows the top navigation bar of the Volcano World website. It includes the OSU logo, a search bar, and a menu with items like Calendar, Library, Maps, Online Services, and Make a Gift. Below the navigation bar is the 'Volcano World' title and a secondary menu with links to Home, Volcano List, Teachers, Learn More, All About Volcanoes, Kids Only, Adventures and Fun, and FAQs. A 'Glossary' link is also present. The main content area features a 'Home' link, a section for 'Earth Science Lessons' with a description and a list of five chapters, and a 'Printer-friendly version' link.

[Home](#)

Earth Science Lessons

The following are Earth Science lessons, geared toward and tested by 5-8 grade students.

Many chapters have activities, questions and answers, and resources that can be used by teachers.

There are a total of five chapters:

- Chapter 1: [Plate Tectonics](#)
- Chapter 2: Earthquakes and Volcanoes
- Chapter 3: Cones, Eruptions, and Pyroclasts
- Chapter 4: Rocks and Minerals
- Chapter 5: Prehistoric Earth

Choose from the selections on the right to proceed.

[Printer-friendly version](#)

Earth Science Lessons

- Chapter 1 Plate Tectonics
- Chapter 2 Earthquakes and Volcanoes
- Chapter 3 Cones, Eruptions, and Pyroclasts
- Chapter 4 Rocks and Minerals
- Chapter 5 Prehistoric Earth

Click on the Link below or Type in the following WEBSITE:
<http://volcano.oregonstate.edu/earth-science-lessons>

IF the above link does not work then go to
<http://volcano.oregonstate.edu/>
Click on “TEACHERS”
“EARTH SCIENCE lessons”
“PLATE TECTONICS”

This screenshot shows the 'Teachers' page on the Volcano World website. A black arrow points from the 'Teachers' link in the secondary menu to the 'Earth Science Lessons' link in the main content area. A dropdown menu is open under 'Earth Science Lessons', showing a list of chapters: Plate Tectonics, Earthquakes and Volcanoes, Eruptions, Rocks and Minerals, and Prehistoric Earth.

[Home](#)

Teachers

- Earth Science Lessons
- Teaching Resources
- Mount St Helens Living Lab (Under Construction)

- Plate Tectonics
- Earthquakes and Volcanoes
- Eruptions
- Rocks and Minerals
- Prehistoric Earth

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Once on the WEBSITE:

<http://volcano.oregonstate.edu/earth-science-lessons>

The screenshot shows a website with a dark navigation bar at the top containing links like 'Home', 'Volcano List', 'Teachers', 'Learn More', 'All About Volcanoes', 'Kids Only!', 'Adventures and Fun', and 'FAQ's'. Below the navigation bar, there's a breadcrumb trail 'Home » Earth Science Lessons'. The main content area is titled 'Chapter 1 Plate Tectonics' and includes a description, a list of lessons (#1 The Earth's Layers, #2 Pangea to Present, #3 How Earth's Plates Move), and resources for teachers. On the right side, there's a sidebar titled 'Earth Science Lessons' with a list of lessons: 'Chapter 1 Plate Tectonics' (with sub-items: 'The Earth's Layers Lesson #1', 'Pangaea to the Present Lesson #2', 'How Earth's Plates Move Lesson #3', 'Chapter 1 Copymaster: Test, Reviews, Answer Keys, Chapter Schedule') and 'Chapter 2 Earthquakes and Volcanoes'. A black arrow points from the 'Chapter 1 Plate Tectonics' link in the main content area to the 'The Earth's Layers Lesson #1' link in the sidebar.

1. Choose from the column on the RIGHT

1. Click on under: **Chapter 1 Plate Tectonics**
the topic:

1. [The Earth's Layers](#), Lesson #1:
2. Read and complete the activity.
3. TAKE NOTES this will be on the exam... WHILE reading... answer the QUESTIONS located on the bottom of the page marked.

2. When done answer the questions at the bottom of the page...
3. Scroll to the top and on the right side click on the next lesson
4. Repeat step #2 but complete the following lessons (SEE BELOW)

1. **Chapter 1 Plate Tectonics**

1. [Pangea to the Present](#), Lesson #2
2. [How Plates Move](#), Lesson #3

2. Click on: **Chapter 2 Earthquakes and Volcanoes**

1. [Earthquakes - the Rolling Earth Lesson #4](#)
2. [Volcanoes Lesson #5](#)
3. [Volcanic Terms](#), Lesson #6

3. Click on: **Chapter 3 Cones, Eruptions, and Pyroclasts**

1. [Lava flows and pyroclasts](#), Lesson #7.
2. [Volcanic Cones and Eruptions](#), Lesson #8.
3. [Hot spot volcanoes](#) – Hawaii & Yellowstone Lesson #9.

2. I encourage you to take SOME NOTES as you go through the information
3. When DONE... you will place your answers on a scan tron for GRADING...

GOOD LUCK...

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Lesson 1

- (01) **Question #1. Name the 5 layers of the Earth in order from the outside to the center of the Earth?**
- Crust, Upper Mantle, Lower Mantle, Outer Core, Inner Core.
 - Inner Core, Outer Core, Lower Mantle, Upper Mantle, Crust
 - Continental Crust, Oceanic Crust, Mantle, Upper Mantle, Transition Zone,
 - Lower Mantle, Outer Core, Inner Core.
- (02) **Question #2. What causes the mantle to "flow"?**
- This flow is due to great pressure differences from the top to the bottom of the mantle.
 - This flow is due to great temperature differences from the bottom to the top of the mantle.
 - This flow is from the temperature and stress and the viscosity of the mantle.
- (03) **Question #3. What are the two main metals that make up the outer and inner core**
- Silicon & Oxygen
 - Magnesium & Iron
 - Nickel and Iron.
- (04) **Question #4. Describe in your own words how the Earth's layers were formed?**
HINT: "The Four Layers" will help you.
- Earth cooled the lighter, denser materials sank to the center and the heavier materials rose to the top. Because of this, the crust is made of the heaviest materials (rock- basalts and granites) and the core consists of lighter metals (nickel and iron).
 - Earth cooled the heavier, denser materials sank to the center and the lighter materials rose to the top. Because of this, the crust is made of the lightest materials (rock- basalts and granites) and the core consists of heavy metals (nickel and iron).
 - Layers were made from all the magma that the volcanoes erupt all over the world.

Lesson 2

- (05) **Question #1. What caused Pangaea to break up?**
- The movement is caused by the convection currents that roll over in the upper zone of the mantle.
 - The movement is caused from the plates moving apart
 - The movement is caused by volcanic activity that is triggered by the upper zone of the mantle.
- (06) **Question #2. What is the Continental Drift Theory?**
- States that the continents have moved but are no longer moving today
 - States that the continents have moved and are still moving today
 - That the plates were moving apart from each other but have stopped.
- (07) **Question #3. What happened at the Triple Junction? Where is it located today?**
- Three-way split in the crust allowing massive lava flows; Located today is the west central portion of Africa and the east central portion of South America
 - Formed because of the three way split in the crust allowing massive lava flows. It was located in Africa and South America.

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- c. Three-way split in the mantle allowing massive magma flows; Located today is the west central portion of South America and the east central portion of Africa

Lesson 3.

- (08) Question #1. In your own words explain what happens at a subduction zone
 - a. Boundary in which an Continental plate is driven down and destroyed by an oceanic plate
 - b. Boundary in which an Oceanic plate is driven down and destroyed by a Continental plate
 - c. It is where the Oceanic and the Continental split apart.
 - d. It is where the Continental and Oceanic slide pass each other.
- (09) Question #2. In your own words explain what happens at a mid-ocean ridge.
 - a. Earth is producing "new" crust where two plates are diverging or spreading apart
 - b. it is where the whole planet Earth split into different planets
 - c. Earth is producing "old" crust where two plates are subducting under each other
- (10) Question #3. At a subduction zone what causes magma to rise?
 - a. magma, rises to the surface because it is more dense then the surrounding rock
 - b. magma, rises to the surface because it is less dense then the surrounding rock
 - c. Lava is less dense that the solid surrounding rock
 - d. Lava cools more quickly and rises faster

Lesson 4 SKIP

Lesson 5.

- (11) Question #1. **Question: At what type of plate boundaries do volcanoes form?**
 - a. Boundaries of two plates, one overriding the other; where two oceanic plates are spreading apart.
 - b. Boundaries of two plates, one collides with the other; where two continental plates are spreading apart.
 - c. Boundaries of convergence plate only
- (12) Question #2. **Question: What are the two definitions for the term volcano.**
 - a. An opening in the mantle in which molten rock called lava and gases can escape to the surface; The mountain that is formed from volcanic buildup..
 - b. Volcano- an opening in the mantle in which molten rock called magma and gases can escape to the surface. Volcano- the mountain that is formed from colliding continental plates.
 - c. An opening in the crust of the Earth in which molten rock called magma and gases can escape to the surface; the mountain that is formed from volcanic eruptions.
- Question #3. **Write definitions in your own word for the following terms:**
 - (13) a. Active volcano-
 - A). are either currently erupting or have erupted in recorded history
 - B). are not currently erupting but are considered likely to do so
 - C). have not erupted in recorded history and are not expected to erupt again.
 - (14) b. Dormant volcano-
 - A). are either currently erupting or have erupted in recorded history
 - B). are not currently erupting but are considered likely to do so
 - C). have not erupted in recorded history and are not expected to erupt again.
 - (15) c. Extinct volcano-
 - A). are either currently erupting or have erupted in recorded history
 - B). are not currently erupting but are considered likely to do so
 - C). have not erupted in recorded history and are not expected to erupt again.

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Lesson 6:

Question #1. Label the following parts of the volcano. Matching the terms from COLUMN B to the parts in COLUMN A: HINT: the last one is done for you

COLUMN A

- (16) Website list this as letter "A"
(17) Website list this as letter "B"
(18) Website list this as letter "C"
(19) Website list this as letter "D"
(20) Website list this as letter "E"

COLUMN B

- a) Conduit
b) Crater
c) Dike
d) magma chamber
e) Side vent
• Tuff

(F) Tuff

Lesson 7:

Question #1. Describe pahoehoe and aa lava flows

(21) **a. Pahoehoe:**

- A). *lava flows* are very hot, thin and runny:
B). *lava flows* are very hot, chunky and thick:
C). *lava flows* are formed when the lava is produced in a manner that allows it to cool quickly
D). *lava flows* are formed when the lava is produced in a manner that allows it to cool slowly

(22) **b. Aa:**

- A). *lava flows* are very hot, thin and runny:
B). *lava flows* are very hot, chunky and thick:
C). *lava flows* are formed when the lava is produced in a manner that allows it to cool quickly
D). *lava flows* are formed when the lava is produced in a manner that allows it to cool slowly

Question #2. What is a pyroclastic and how does it form?

(23) **a. Pyroclastic is...**

- A). Fragmented or broken pieces of magma.
B). Fragmented or broken pieces of rock spinning with a mixture of pyroclastic material (small pieces of obsidian, ash, pumice, and cinders) and very hot gases.
C). fluidized masses of rock fragment and magma

(24) **b. How does it form?**

- A). Particles that come from the eruption column collapsing.
B). Particles that ooze out during a volcanic eruption.
C). Particles that are ejected during a volcanic eruption.

Question #3. Write a definition for the following;

(25) **a. High viscosity-**

- A). Thick and pasty lava with a high gas and silica content
B). Measure of the resistance of flow of a which is begin deformed by either shear stress or of extensional stress.
C). Runny lava with a low gas and silica content

(26) **b. Low Viscosity-**

- A). Thick and pasty lava with a high gas and silica content
B). Measure of the resistance of flow of a which is begin deformed by either shear stress or of extensional stress.
C). Runny lava with a low gas and silica content

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Lesson 8:

Question #1. Name the six eruption types and the three cone shape volcanoes:

- (27) a. **least explosive to the most explosive;**
A). Plinian, Pelean, Vulcanian, Strombolian, Hawaiian, and Icelandic
B). Icelandic, Hawaiian, Strombolian, Vulcanian, Pelean, and Plinian.
C). Vulonican, Pelean, Plinia, Icelandic, Hawaiian, and Strombolian
- (28) b. **The three cone shapes are**
A). Cinder, Shield, and Strato.
B). Flood basalt plains, Calderas, and Lava Domes
C). Subduction Zones, Mid-Ocean Rifts, Hot Spots

Question #2. Describe how a Shield cone form; Cinder cone forms; and Strato forms

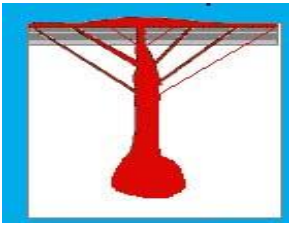
- (29) a. **Shield forms:**
A). Form from hot, runny lava that is erupted from the volcano through its summit and the many side vents and fissures throughout the volcano's flanks (Sides)
B). Form from explosions of red, hot magma cinders and ash. These cinders and ash settle around the main vent and build a steep sided cone
C). Formed from a combination of eruptions
- (30) b. **Cinder forms:**
A). Form from hot, runny lava that is erupted from the volcano through its summit and the many side vents and fissures throughout the volcano's flanks (Sides)
B). Form from explosions of red, hot magma cinders and ash. These cinders and ash settle around the main vent and build a steep sided cone
C). Formed from a combination of eruptions
- (31) c. **Strato forms**
A). Form from hot, runny lava that is erupted from the volcano through its summit and the many side vents and fissures throughout the volcano's flanks (Sides)
B). Form from explosions of red, hot magma cinders and ash. These cinders and ash settle around the main vent and build a steep sided cone
C). Formed from a combination of eruptions

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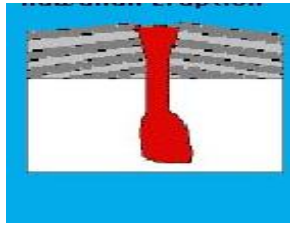
Question #3. MATCH the diagrams to the eruption type.

(32)

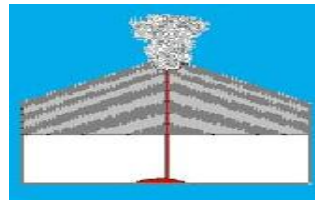
a. Hawaiian Eruption



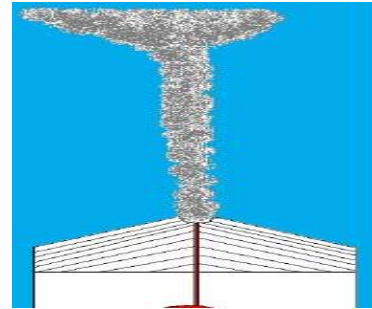
(A)



(B)



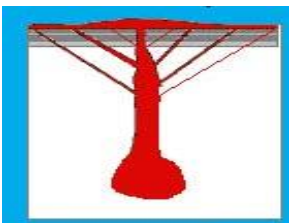
(C)



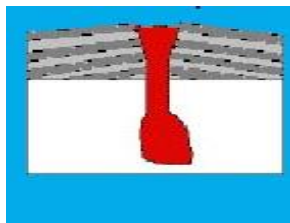
(D)

(33)

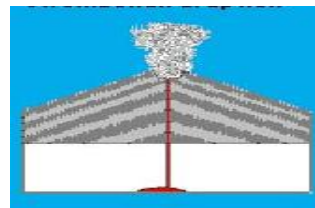
b. Icelandic Eruption



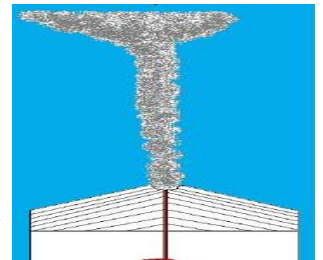
(A)



(B)



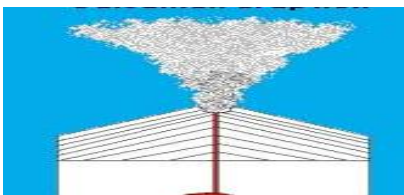
(C)



(D)

(34)

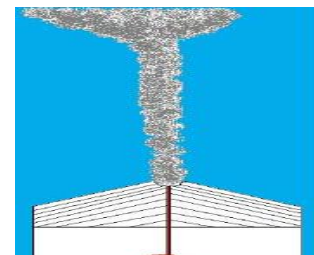
c. Pelean Eruption



(A)



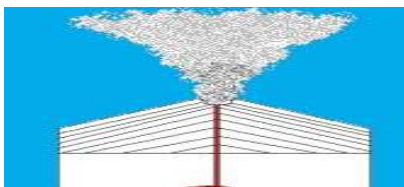
(B)



(C)

(35)

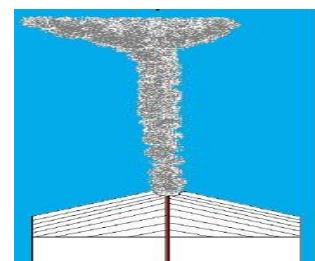
d. Plinian Eruption



(A)



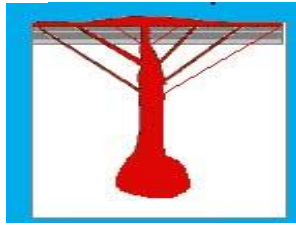
(B)



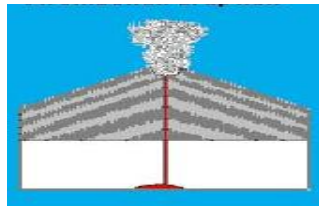
(C)

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(36) e. **Strombolian Eruption**



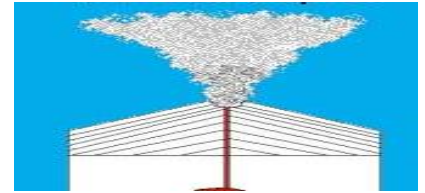
(A)



(B)

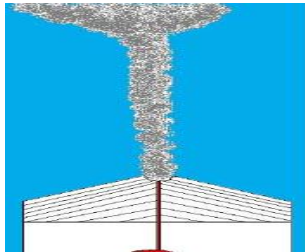


(C)



(D)

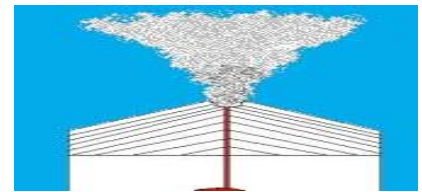
(37) f. **Vulcanian Eruption**



(A)



(B)



(C)

Lesson 9

(38) **Question #1. What is a Hot Spot?**

- Most hot spots are located at mid-ocean ridges, but there are a few located in the middle of plates, like Hawaii and Yellowstone.
- Most hot spots are located at subduction zones, but there are a few located at the edge of plates, like Mid Oceanic Ridge.
- Where hot magma currents rise from deep within the earth and melt rock along the mantle.

(39) **Question #2. How does a hot spot form?**

- Hot spot occurs because of the intense heat of the inner core. This heat radiates through the mantle bringing hot solid rock upward to the hot spot. These areas of rising magma are called *core plumes*. Because of high pressure in the lower region of the mantle the rock begins to melt. This forms lava which rises inch by inch until it reaches the surface forming a volcano.
- Hot spots form when magma rises from the middle of the earth and when too much pressure builds up it erupts.
- Hot spot occurs because of the intense heat of the outer core. This heat radiates through the mantle bringing hot melt rock upward to the hot spot. These areas of rising solid rock are called *mantle plumes*. Because of lower pressure in the upper region of the mantle the rock begins to melt. This forms magma which rises inch by inch until it reaches the surface forming a volcano.

(40) **Question #3. How does a caldera form?**

- Caldera* is a large U-shaped crater that is formed by the collapse of a volcanic neck after an eruption.
- Caldera* is a large bowl-shaped crater that is formed by the collapse of a volcanic cone after an eruption.
- Caldera* comes to the surface and creates a magma chamber. The volcano forms this way because of the successive eruptions.