

Volcano and Earthquake Webquest

Name _____ period _____ date _____

Go to each of the web sites indicated below. Answer the questions or complete the requested responses about each of those sites. Make your explanations to the answers as complete as possible.

A. What is an earthquake? <http://earthquake.usgs.gov/4kids/>

1. Click on "Become an earthquake scientist." Read this and then explain what research geophysicists study. _____

2. Go back a page by clicking on the back arrow button. Then click on "Today in Earthquake History." Write something that happened on today's date in history. Then pick at least one other date and write what happened on that day in history.

date _____ event _____

date _____ event _____

B. Plate tectonic animation <http://www.odsn.de/odsn/services/paleomap/animation.html>

Watch the plate tectonic animation. The large land mass that is at time zero is referred to as Pangaea. Watch it change through time.

3. What happened to Pangaea between the beginning of the simulation and present time? _____

4. Note the red lines. What do you suppose these represent? _____

C. Plates and boundaries <http://pubs.usgs.gov/publications/text/understanding.html>

Summarize what happens at the three major types of plate boundaries and give an example of each.

5. Summary of divergent _____

Example of divergent _____

6. Summary of convergent _____

Example of convergent _____

7. Summary of transform _____

Example of transform _____

8. There is a 4th possible type -- this is the one that is not mentioned in your book. These are called "Plate boundary zones". Define/explain this zone.

D. Richter magnitude <http://www.seismo.unr.edu/ftp/pub/louie/class/100/magnitude.html>

9. The Richter Scale is one way to measure the magnitude of an earthquake. Describe the result of an earthquake with a magnitude under level 6 on the Richter Scale. _____

10. At what level can damage across several hundred kilometers occur? _____

E. The basic facts of seismology <http://www.data.scec.org/Module/module.html>

(note: you MUST capitalize the "M" in the first Module noted in address) Click on "Section 1: What is an earthquake?" Read through this. You will need to click on the arrow buttons on the bottom of the page to go to the next page. After you have clicked onto the 2nd page, answer these questions.

11. What are seismic waves? _____

12. What is meant by a sudden slip as related to earthquakes? _____

13. Click on the arrow at the bottom of the page so that you are now on "page 3". Explain why there are forces which cause the stress resulting in a sudden slip -- make sure to refer to tectonic plates in your answer. _____

14. Click on the footnote question, "Are any earthquakes caused by something other than tectonic forces? Summarize this page in 2 - 3 sentences. _____

F. Savage Earth - PBS online <http://www.thirteen.org/savageearth/index.html>

15. Click on "The Restless Planet: Earthquakes". Scroll down to the three green boxes showing the surface wave, primary wave and secondary wave animations. Click on the start button of each of these and summarize the wave action for each.

surface wave _____

primary wave _____

secondary wave _____

16. Click on the back arrow button (or close the pop-up screen depending on how this came up on the site). Then click on "Out of the Inferno: Volcanoes." Read the first two paragraphs then answer in at least two sentences why volcanoes occur. _____

G. Can we predict volcanoes? <http://www.learner.org/exhibits/volcanoes/forecast.html>

17. Earthquakes as well as volcanoes are common along or near the edges of plate boundaries. Because there is movement along the boundaries, not only can tremors be felt as the plates jolt but also magma can escape from below the earth's surface. It is possible to monitor these and other activities along the plate boundaries. Based on the monitoring, what are some warning signs of a possible volcanic eruption? _____

18. What are some problems that occur which interfere with accurate predictions? _____

H. Geology of the Earth's Past

<http://www.doc.ic.ac.uk/~kpt/terraquest/va/science/geology/geology.html>

Click on Gondwanaland and read the information related to this giant southern hemisphere land-mass. Note the evidence here that helps support Alfred Wegner's theory of Continental Drift.

19. What evidence about Africa, South America, India, Australia, and New Zealand led Wegner to propose his Theory of Continental Drift?

20. What is suggested that the plates move upon? _____

21. Briefly explain what happened to the tectonic plates about 200 million years ago.

extra credit:

Plate tectonics

<http://volcano.und.nodak.edu/vwdocs/vwlessons/lessons/Pangea/Pangea1.html>

Once you are at the site, read and click through the site to find out more about what happened to Pangaea.

EX. #1. The thin, fragile plates slide very slowly on the mantle's upper layer. This sliding of the plates is caused by the _____ convection currents slowly turning over and over. This overturn is like a conveyor belt that moves the plates of the crust.

These plates are in constant motion causing earthquakes, mountain building, volcanism.

EX #2 In what year did **Alfred Wegner** introduced his theory? _____

EX #3 Just before the days of the dinosaurs the Earth's continents were all connected into one huge land-mass called **Pangaea**. The huge supercontinent of Pangaea was surrounded by one gigantic ocean called _____.

EX #4 It is believed that the original supercontinent which we call Pangaea separated into two major continents called _____ and _____ which later separated into the current continents.

This assignment addresses the following Wisconsin State Science Standards:

E. Earth and Space Science Content Standard: Students in Wisconsin will demonstrate an understanding of the structure and systems of earth and other bodies in the universe and of their interactions.

E.12.2 Analyze* the geochemical and physical cycles of the earth and use them to describe* movements of matter

G. Science Applications Content Standard: Students in Wisconsin will demonstrate an understanding of the relationship between science and technology and the ways in which that relationship influences human activities.

G 12.2 Design, build, evaluate, and revise models and explanations related to the earth and space, life and environmental, and physical sciences.