

Earth Revealed Plate Dynamics Video Exercise

Watch the video and answer the following questions.

1. What is a tectonic plate?
2. What types of geologic features are associated with tectonic plate boundaries?
3. What is it important for geologists to understand plate tectonics?
4. List the two types of crustal rock compositions that comprise tectonic plates?
5. True or False: tectonic plates are only formed on either continents or oceans.
6. How many major tectonic plates are identified on planet earth?
7. What types of geologic process occurs at rifts along divergent plate boundaries.
8. True or False: divergent plate boundaries are zones where tectonic plates push together.
9. True or False: Africa is separating from the Arabian Peninsula via divergent plate boundaries.
10. Describe and sketch the process of seafloor spreading.
11. Describe and sketch the process of subduction.
12. List the three types of convergent plate boundaries.
13. What mountain range is the volcanic rock type "Andesite" named after? Where is it located.
14. True or False: volcanism occurs at both divergent and convergent plate boundaries.
15. What type of plate boundary has caused uplift of the Himalayan Mountain range between India and China?
16. True or False: oceanic crust is less dense than continental crust.
17. What are the two processes by which oceanic crust is subducted beneath continental crust.
18. True or False: subduction zones are associated with deep seated earthquakes.
19. True or False: subduction zones are associated with volcanic arc and volcanic island systems.
20. Why are convergent zone volcanoes more explosive than seafloor volcanoes at seafloor spreading centers.
21. True or False: continental-continental collisions occur at subduction zones.

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22. What are the two types of transform fault boundaries that occur at plate boundaries.
23. What type of tectonic plate boundary occurs along the San Andreas fault zone in California.
24. True or False: the causes of plate tectonic motion are very well known and agreed upon by Geoscientists.
25. True or False: the asthenosphere is very rigid, hard, brittle rock material.
26. What is the ultimate energy source that causes the tectonic plates to move.
27. What is the heat transfer process that is the most widely accepted explanation of plate tectonic movement?
28. True or False: heat transfer by convection is associated with the transfer of mass/material along with the heat energy.
29. True or False: rocks are always hard, brittle solids that are not capable of flowing under the influence of gravity.
30. True or False: near-surface, cold rocks are brittle and are associated with fracture.
31. True or False: at depth in the Earth, rocks are warm and capable of plastically deforming like silly putty.
32. What is the source of the geothermal heat inside the earth?
33. True or False: the mantle of the earth is very static and stationary, with no vertical movement of rock material.
34. What are the two primary push-pull hypotheses that explain why tectonic plates move?
35. Why are there so many hypotheses and theories about the driven mechanisms of plate tectonics? Explain the reasons why geoscientists don't know for sure?
36. What is the deepest depth below the Earth's surface at which brittle fracture and earthquakes occur?
37. True or False: the upper mantle and lower mantle are undergoing the same geologic processes.
38. True or False: the core of the Earth is comprised of solid and brittle rock material.
39. Draw a sketch with arrows showing the direction of motion associated with mantle plumes.
40. What geologic features are associated with "hot spots"?
41. True or False: Hot spots are moving rapidly around the Earth over time.
42. True or False: The Hawaiian islands are associated with a plate tectonic subduction zone.
43. True or False: cold seafloor volcanic rocks are dense and sink over time.
44. How many years are predicted before Hawaii will gain a new volcanic Island as part of the State?
45. True or False: the Theory of Plate Tectonics suggests that the Planet Earth is very dynamic and constantly experiencing change over geologic time.