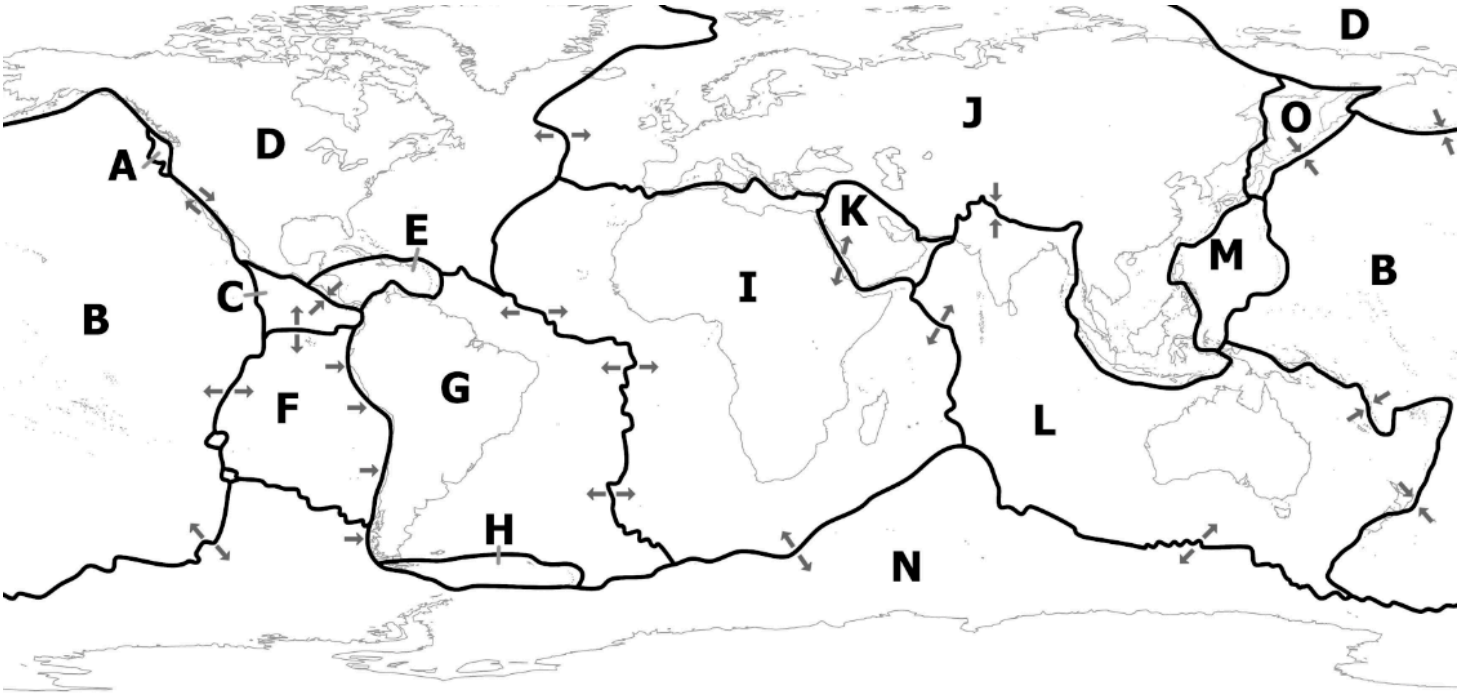
Dynamic Planet Test

1. Label the plates on the map: (1 point each)



A:	B:	C:	D:	E
F:	G:	H:	I:	J
K:	L:	M:	N:	O:

Fill in the blanks. (1 point each)

2. The boundary between plate B and plate D is a _____ plate boundary

3. The boundary between plate F and plate G is a _____ plate boundary

4. The boundary between plate I and plate J is a _____ plate boundary

5. The boundary between plate I and plate K is a _____ plate boundary

6. Which plate boundary is responsible for the San Andreas Fault? (List 2 plates) (1 point)

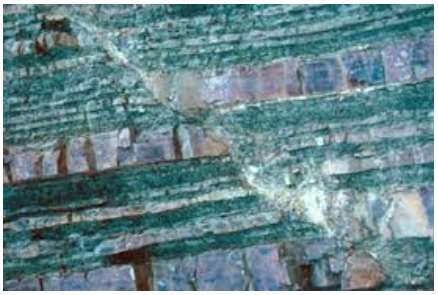
7. For each of the following events, give an approximate date of occurrence in mya (millions of years ago) (10 points, 1 point each for being within 50 million years of correct)

Example: Formation of the Ural Mountains: 300 mya (answers between 250 mya to 350 mya accepted)

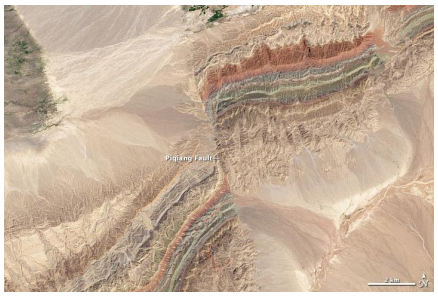
A. Breakup of Gondwanaland:
B. Breakup of Rodinia:
C. Breakup of Pangea:
D. Breakup of Pannotia:
E. Formation of Gondwanaland:
F. Formation of the Rocky Mountains:
G. Formation of the Himalayas:
H. Separation of Australia from Antarctica:
I. Separation of Laurasia from Gondwanaland:
J. Separation of North America from Eurasia:

Label the following types of faults: (1 point each)

8. _____



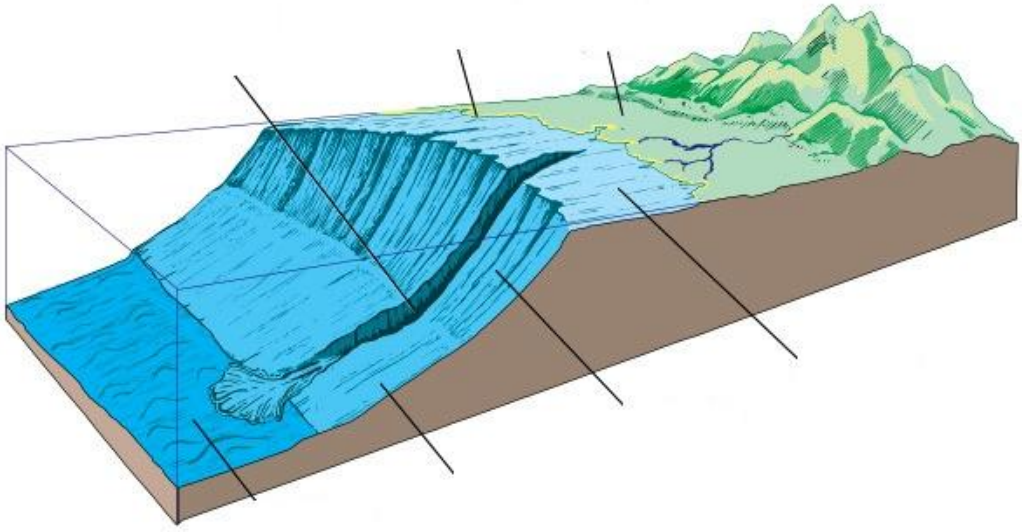
9. _____



(note: looking from above here)

10. _____

11. Label the areas on this continental margin: (7 points, 1 point each)



For questions 12 – 14, circle the features that could form at each of the following boundaries:
(1 point per correctly circled feature, -1 point per incorrectly circled feature)

12. Continental-continental convergent boundary:

mountains volcanoes trenches subduction zones island arc chains

13. Continental-oceanic convergent boundary:

mountains volcanoes trenches subduction zones island arc chains

14. Oceanic-oceanic convergent boundary:

mountains volcanoes trenches subduction zones island arc chains

15. Which type of lava would each of these places most likely have? (Felsic, Mafic, Ultramafic, Intermediate)
(2 points each)

A) a shield volcano:

B) a stratovolcano:

C) a cinder cone volcano:

D) a mid ocean ridge:

E) a subduction zone:

16. The Earth's upper 2 layers are classified in 2 different ways: physically and chemically. List these layers.
(4 points, 1 point per blank)

A. Physical classification: _____ and _____
B. Chemical classification: _____ and _____

17. What drives the process of tectonic plates moving? (What makes them move?) (2 points)

18. What major evidence do we have that shows how the Earth's poles have moved over time? (2 points)

19. Why are Bouguer anomalies (elevation-corrected gravity anomalies) negative in mountains? (2 points)

Multiple Choice Section: 30 questions, 1 point each

20. Which of the following was NOT used as evidence for the continental drift theory?
    a. Shapes of some continents appear to fit together
    b. Fossil similarities between geographically separate areas
    c. Glacier Sedimentation at low latitudes
    d. Measurements of the current movement of continents
    e. Positions of mountain ranges

21. Who came up with the theory of continental drift?
    a. Henry Hess
    b. Galileo Galilei
    c. Alfred Wegener
    d. Sylvia Earle

22. The oldest crust is found:
    a. In the farthest parts of the ocean from land
    b. Along the mid oceanic ridge
    c. In Trenches
    d. On Continental Shields

23. As plates age, they become:
    a. More dense
    b. Less dense
    c. Plate age has no effect on density

24. What percentage of earthquakes occurs along the Ring of Fire?
    a. 45%
    b. 60%
    c. 80%
    d. 90%

25. Which of these hazards is NOT caused by seismic activity?
    a. Intraplate earthquakes
    b. Cryoseisms
    c. Tsunamis
    d. Interplate earthquakes

26. Which of the following would be first to crystallize as magma cools?
    a. Amphibole
    b. Pyroxene
    c. Olivine
    d. Quartz

27. What is the primary cause of delamination?
    a. The instability caused by the difference in density of the lithosphere and asthenosphere
    b. Accretion due to interplate forces
    c. Stress built up from plate movement
    d. Erosion of the lithosphere by convection currents

28. The Mid Ocean Ridge is found along what type of plate boundary?
    a. Convergent
    b. Divergent
    c. Transform
    d. None of the above

29. Which of the following conditions would result in the most brittle rock?
    a. High pressure and high temperature
    b. High pressure and low temperature
    c. Low pressure and high temperature
    d. Low pressure and low temperature

30. Which of the following is NOT a force that impacts place movement?
    a. Basal Drag
    b. Isostasy
    c. Slab Suction
    d. Hypsometric Pressure

31. Hot spots are formed by which of the following?
    a. Mantle Plumes
    b. Rifting
    c. Subduction
    d. Earthquakes

32. Which of the following is true regarding seismic waves?
    a. P waves and S waves can both travel through solids and liquids
    b. P waves and S waves can both travel through solids but not liquids
    c. P waves can travel through solids and liquids, but S waves can only travel through solids
    d. S waves can travel through solids and liquids, but P waves can only travel through solids

33. After glaciers retreated from North America, the average height of the land left behind
    a. Increased
    b. Decreased
    c. Stayed constant

34. The above situation is an example of which principle?
    a. Convection
    b. Isostasy
    c. Hypsometry
    d. Delamination

35. What type of lava would be most likely produced from an explosive eruption?
    a. Felsic
    b. Intermediate
    c. Mafic
    d. Ultramafic

36. The Orogenic Cycle describes the process of forming
    a. Oceans
    b. Supercontinents
    c. Rift Valleys
    d. Mountains

37. Which of the following is formed primarily due to tension force?
    a. Normal Fault
    b. Reverse Fault
    c. Thrust Fault
    d. Strike-Slip Fault

38. Which of the following characteristics favor an **effusive** eruption?
    a. High pressure and high lava viscosity
    b. High pressure and low lava viscosity
    c. Low pressure and high lava viscosity
    d. Low pressure and low lava viscosity

39. Which of the following characteristics favor an **explosive** eruption?
    a. High pressure and high lava viscosity
    b. High pressure and low lava viscosity
    c. Low pressure and high lava viscosity
    d. Low pressure and low lava viscosity

40. Which of the following types of magma is most viscous?
    a. Andesitic
    b. Basaltic
    c. Rhyolitic

41. What forms island arc chains?
    a. Hot Spots
    b. Subducting Plates
    c. Earthquakes
    d. Land Breakaway from Continental Crust
    e. all of the above
    f. a and b
    g. a and d

42. Which of the following is a passive margin?
    a. The western coast of North America
    b. The eastern coast of North America
    c. The western coast of South America
    d. The eastern coast of Japan

43. About how many times more energy would be released by a 5.0 earthquake than a 4.0 earthquake measured using the richter scale?
    a. 2 times
    b. 10 times
    c. 30 times
    d. 50 times

44. An earthquake that causes most people to feel it and some indoor objects to shake or fall but not buildings to be damaged would likely be of about which magnitude on the richter scale?
    a. 2.0
    b. 4.0
    c. 6.0
    d. 8.0

45. What type of tectonic basin occurs between trenches and volcanic island arcs?
    a. Rift Valley
    b. Forearc Basin
    c. Foreland Basin
    d. Backarc Basin

46. What marks the boundary between the Earth's crust and mantle?
    a. Mohorovicic Discontinuity
    b. Gutenbertg Discontinuity
    c. Lehmann-Bullen Discontinuity
    d. Conrad Discontinuity

47. Which of the following minerals primarily makes up the Earth's crust?

a. Feldspar
b. Quartz
c. Pyroxene
d. Mica

48. 90% of the Earth's crust (by volume) is composed of which of the following types of rock?

a. Igneous
b. Sedamentary
c. Metamorphic
d. Basaltic

49. Which of the following gives the correct order of events labeled A-G on the diagram below from oldest to youngest?

a. EGDBCAF
b. EDGCBAF
c. EGBDAFC
d. EGBDFAC