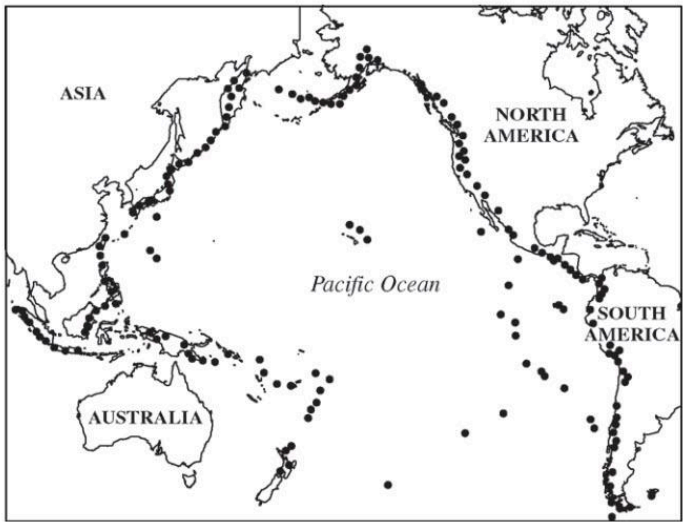
Directions: Answer each part of the question in your notebook.

Plate-tectonic theory states that the Earth's lithosphere is broken into very slowly moving pieces or plates. Plate movements over vast stretches of time have led to the current orientation of our continents and oceans. Individual events along plate boundaries, such as earthquakes and volcanic eruptions, pose periodic threats to human activity and ecosystems. The "Ring of Fire" is a term that describes the location of increased seismic and volcanic activity around the margins of the Pacific Ocean basin. On the map above, each dot represents a volcano or an earthquake.



a. Japan, Indonesia, and the Philippines are examples of volcanic island chains that have formed along subduction zones between plates in the western Pacific.
    i. Describe what happens when two tectonic plates collide along a subduction zone.
    ii. Explain how subduction leads to volcanic activity.

b. Although the landscape following a volcanic eruption may appear unable to support ecological communities, over time the area can be transformed through succession.
    i. What is primary succession?
    ii. Explain how primary succession can lead to soil formation on a newly formed volcanic landscape.

c. In addition to volcanic activity, highly destructive tsunamis are generated along Pacific Plate subduction zones.
    i. Explain how a tsunami is generated along a subduction zone.
    ii. Describe one negative ecological impact that tsunamis have on coastal environments.

d. Southern California experiences periodic devastating earthquakes along the San Andreas Fault, which is a transform boundary located along the eastern edge of the Pacific Plate.
    i. Describe what happens to the tectonic plates along a transform boundary at the moment when an earthquake occurs.
    ii. Describe what happens to the tectonic plates along a transform boundary during the time between earthquakes.