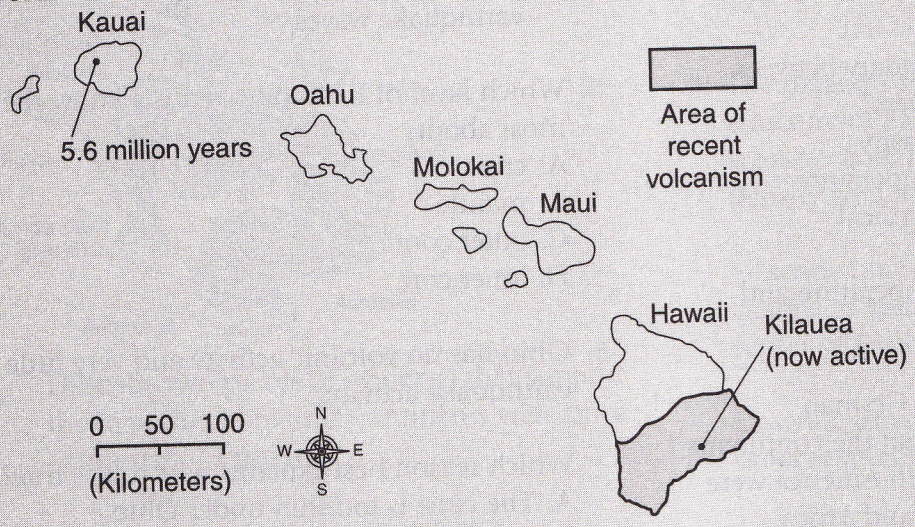
Process Skill 11-1—Determining the Rate of Plate Motion

Use the information and diagram below to answer questions 1–3.

The Hawaiian Islands are located over a volcanic "hot spot" in the middle of the Pacific Plate. A hot spot is a volcanic area in the middle of a plate where you would not expect to find volcanic activity. As the plate moves over the hot spot, new islands form. The old islands erode and become seamounts (mountains that do not break the ocean surface) on the ocean floor. A chain of underwater seamounts can be found in the Pacific Ocean between the Hawaiian Islands and the Aleutian Trench.

The map below shows Kilauea Volcano directly above the hot spot on the eastern side of Hawaii. Kilauea has been continuously active since 1983. The islands get progressively older as you move northwest of Hawaii. Kauai, a western island, contains rocks that are 5.6 million years old.



Questions

1. Describe the motion of Kauai from where it originated (Kilauea) to its present position. Be sure to identify the distance and the amount of time it took Kauai to move. (2 points)

2. Kauai is on the Pacific Plate. What is the Pacific Plate's rate of motion? (*Hint*: speed = distance/time.)
   A. 0.1 km/10,000 yr
   B. 1 km/10,000 yr
   C. 10 km/10,000 yr
   D 100 km/10,000 yr

3. Describe how the island of Hawaii formed. Explain how the Hawaii Islands provide evidence that the Pacific Plate is moving toward the northwest. (2 points)