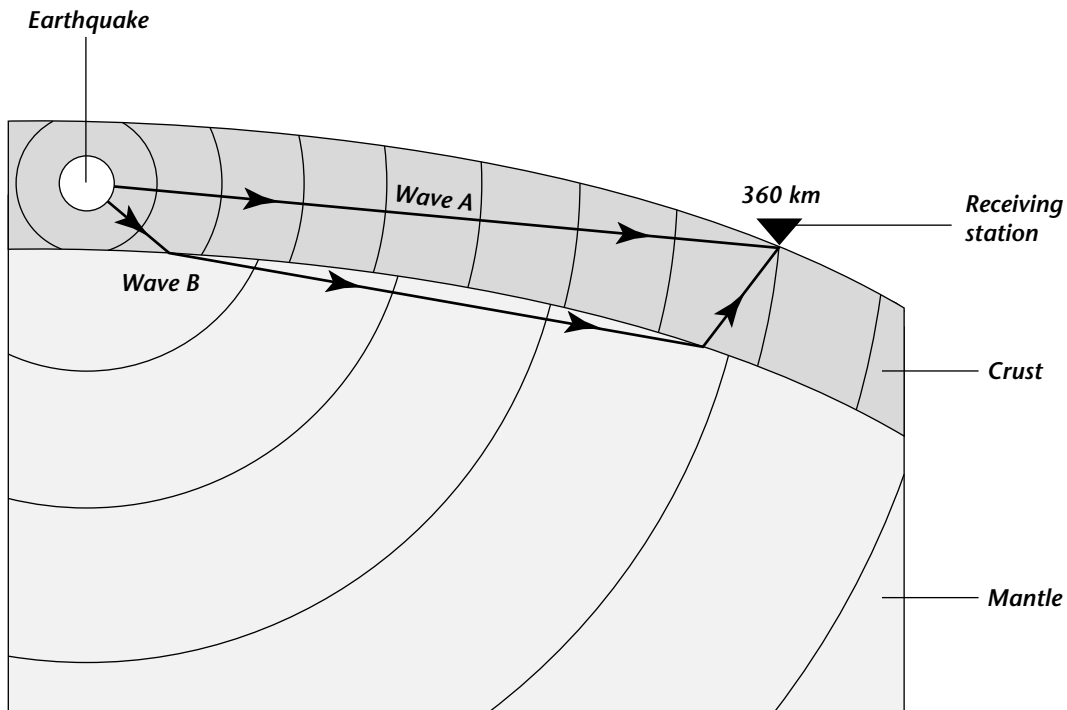


Plate Tectonics ▪ *Enrich***Differences in Arrival Time**

Geologists have learned a great deal about Earth's interior by carefully studying the waves created by earthquakes, called seismic waves. Like light waves and sound waves, seismic waves travel through different kinds of materials at different rates. For example, a type of seismic wave called a P wave travels through crust material at an average speed of 6 km/sec. But through the uppermost mantle material, P waves travel at an average speed of 8 km/sec. Geologists use their knowledge of this difference in speeds to explore the interior of Earth. They have set up thousands of receiving stations to record the arrival of seismic waves. Computers then help in analyzing the data and creating a picture of Earth's interior.

The figure below shows two P waves from an earthquake whose travel times are recorded by a receiving station. Use the figure to answer the questions that follow.



Answer the following questions on a separate sheet of paper.

1. How far away from the earthquake is the receiving station?
2. Which P wave takes a more direct route to the receiving station, Wave A or Wave B?
3. How long does Wave A take to reach the station?
4. Wave B took 51 seconds to arrive at the station. What accounts for the difference in arrival times between Wave A and Wave B?
5. Can you infer why P waves travel faster through the upper mantle than they do through the crust?