

Name: \_\_\_\_\_

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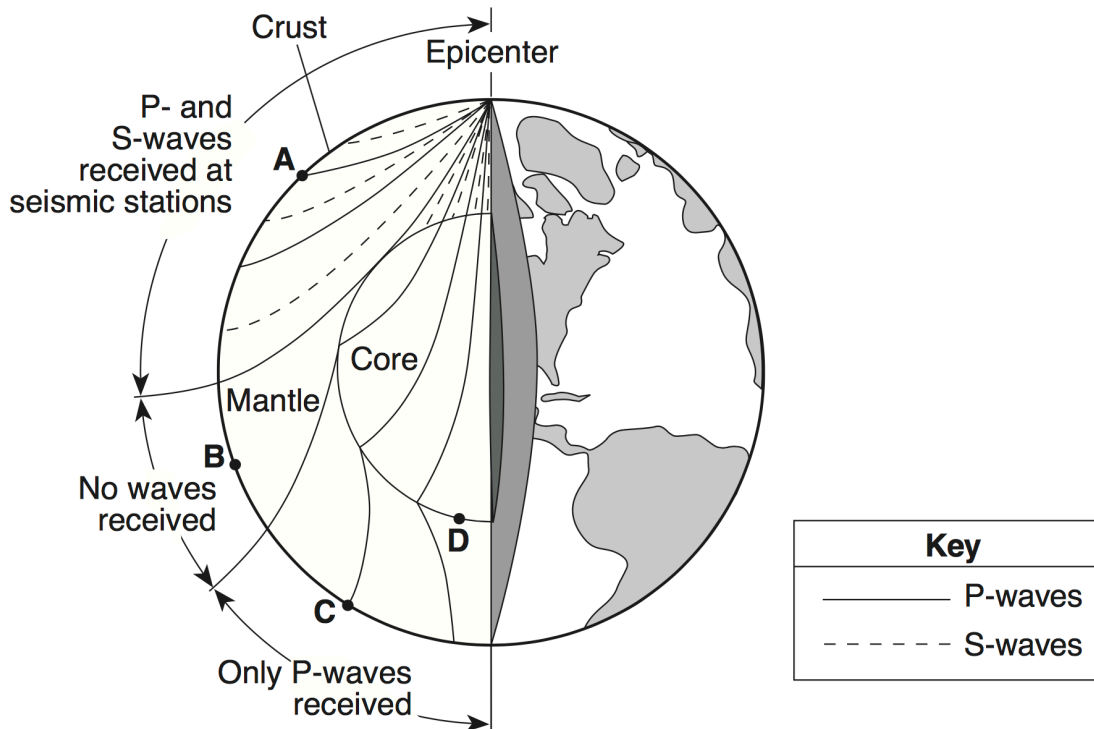
## Regents Review: Earthquakes

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1. The pressure at the interface between Earth's outer core and inner core is inferred to be
  - a. 0.2 million atmosphere
  - b. 1.5 million atmospheres
  - c. 3.1 million atmospheres
  - d. 3.6 million atmospheres
2. A strong earthquake that occurs on the ocean floor could result in the formation of
  - a. a tsunami
  - b. a delta
  - c. an El Niño event
  - d. an ocean current
3. The convection currents responsible for moving tectonic plates occur in which Earth layer?
  - a. crust
  - b. rigid mantle
  - c. stiffer mantle
  - d. asthenosphere
4. If a seismic station is 3200 km from an earthquake epicenter, what is the time needed for an S-wave to travel from the epicenter to the seismic station?
  - a. 4 min 40 sec
  - b. 6 min 0 sec
  - c. 10 min 40 sec
  - d. 11 min 10 sec
5. Earthquakes generate compressional waves [P-waves] and shear waves [S-waves]. Compared to the speed of shear waves in a given earth material, the speed of compressional waves is
  - a. always faster
  - b. always slower
  - c. always the same
  - d. sometimes faster and sometimes slower
6. The time that an earthquake occurs can be inferred by knowing the
  - a. distances between seismograph stations
  - b. epicenter distance and arrival time of the P-waves
  - c. travel time of the S-waves
  - d. arrival time of P-waves
7. If the epicenter of an earthquake is located near Massena, New York, where would the greatest difference in arrival times of the P- and S-waves for this earthquake occur?
  - a. Utica, New York
  - b. Binghamton, New York
  - c. Plattsburgh, New York
  - d. Albany, New York

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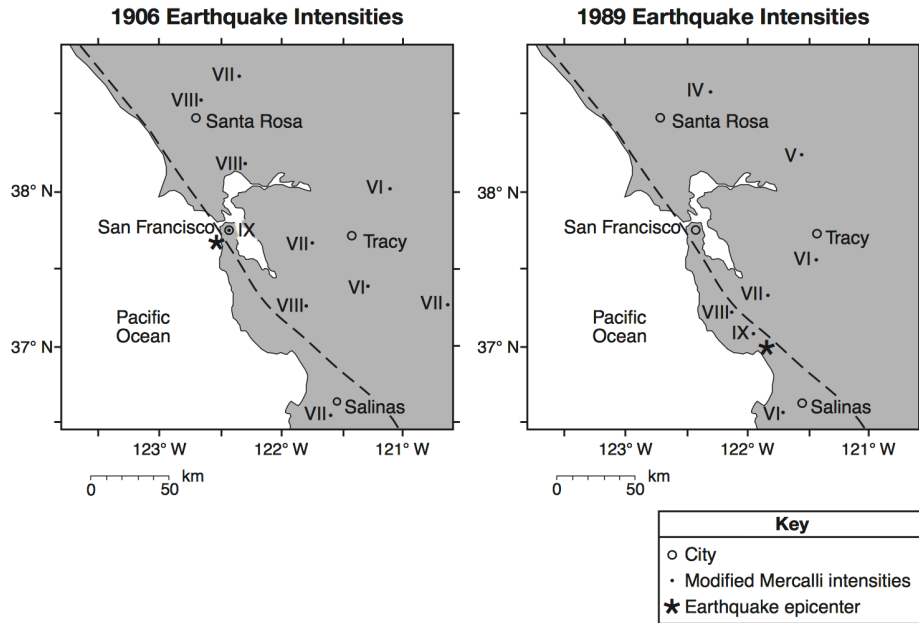
Base your answers to questions 8 through 10 on the diagram below and on your knowledge of Earth science. The diagram represents a cut-away view of Earth's interior and the paths of some of the seismic waves produced by an earthquake that originated below Earth's surface. Points A, B, and C represent seismic stations on Earth's surface. Point D represents a location at the boundary between the core and the mantle.



8. Seismic station A is 5000 kilometers from the epicenter. What is the difference between the arrival time of the first P-wave and the arrival time of the first S-wave recorded at this station?
  - a. 2 minutes 20 seconds
  - b. 6 minutes 40 seconds
  - c. 8 minutes 20 seconds
  - d. 15 minutes 00 second
  
9. Which process prevented P-waves from arriving at seismic station B?
  - a. refraction
  - b. reflection
  - c. convection
  - d. conduction
  
10. Only P-waves were recorded at seismic station C because P-waves travel
  - a. only through Earth's interior, and S-waves travel only on Earth's surface
  - b. fast enough to penetrate the core, and S-waves travel too slowly
  - c. through iron and nickel, while S-waves cannot
  - d. through liquids, while S-waves cannot

# Regents Review: Earthquakes

Base your answers to questions 13 through 14 on the maps and table below and on your knowledge of Earth science. The maps show earthquake intensities (IV to IX), according to the table of the Modified Mercalli Intensity Scale, for the 1906 and 1989 earthquakes at several locations in California. The asterisk (\*) on each map is the location of each epicenter. The dashed line represents the location of a major fault.



**Modified Mercalli Intensity Scale**

Level of Intensity	IV	V	VI	VII	VIII	IX
Perceived shaking	light	moderate	strong	very strong	severe	violent
Observed damage	none	very light	light	moderate	moderate to heavy	heavy

13. Name the major fault along which both of these earthquakes occurred and identify the type of plate tectonic boundary that is located along this fault.

14. Based on the Modified Mercalli Intensity Scale, identify the perceived shaking and the observed damage that occurred in the San Francisco area during the 1906 earthquake.