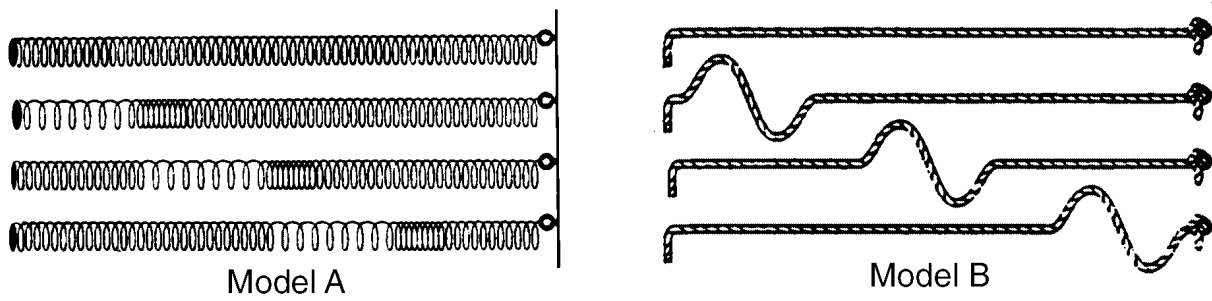


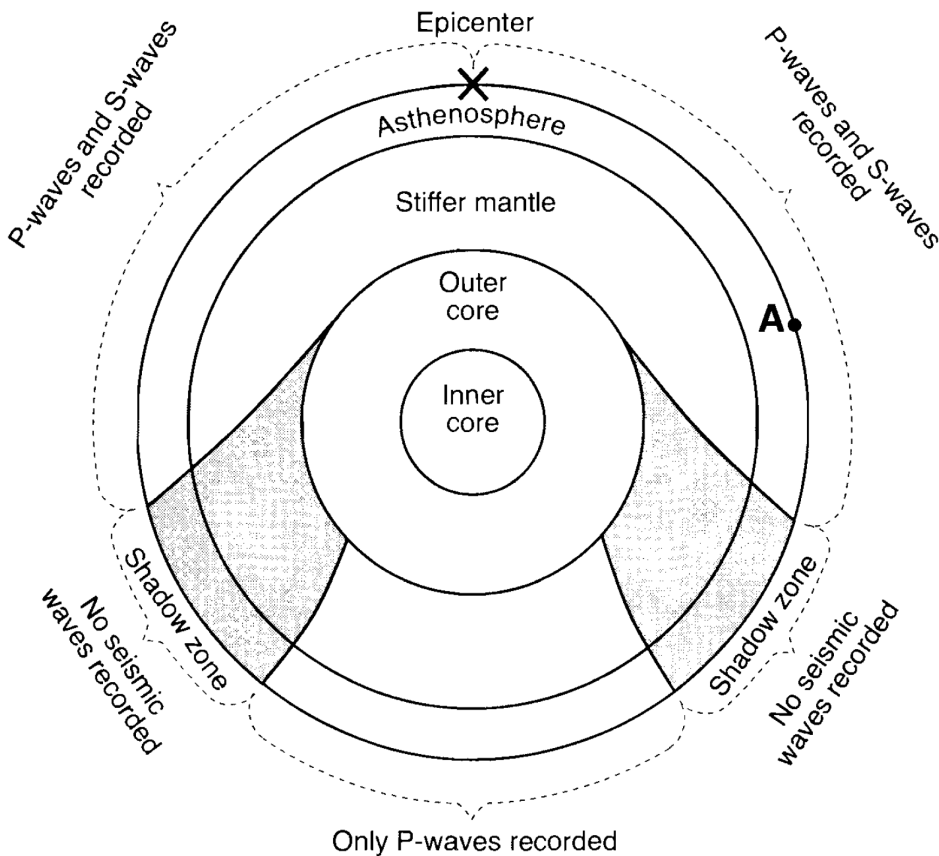
Practice Questions: Earthquakes

1. Base your answer to the following question on the diagram below, which shows models of two types of earthquake waves.



Model *A* best represents the motion of earthquake waves called

- A) *P*-waves (compressional waves) that travel faster than *S*-waves (shear waves) shown in model *B*
 B) *P*-waves (compressional waves) that travel slower than *S*-waves (shear waves) shown in model *B*
 C) *S*-waves (shear waves) that travel faster than *P*-waves (compressional waves) shown in model *B*
 D) *S*-waves (shear waves) that travel slower than *P*-waves (compressional waves) shown in model *B*
2. Base your answer to the following question on the cross section below, which shows the type of seismic waves recorded at various locations after an earthquake has occurred. Point *A* is a location on Earth's surface and *X* is the epicenter of the earthquake.

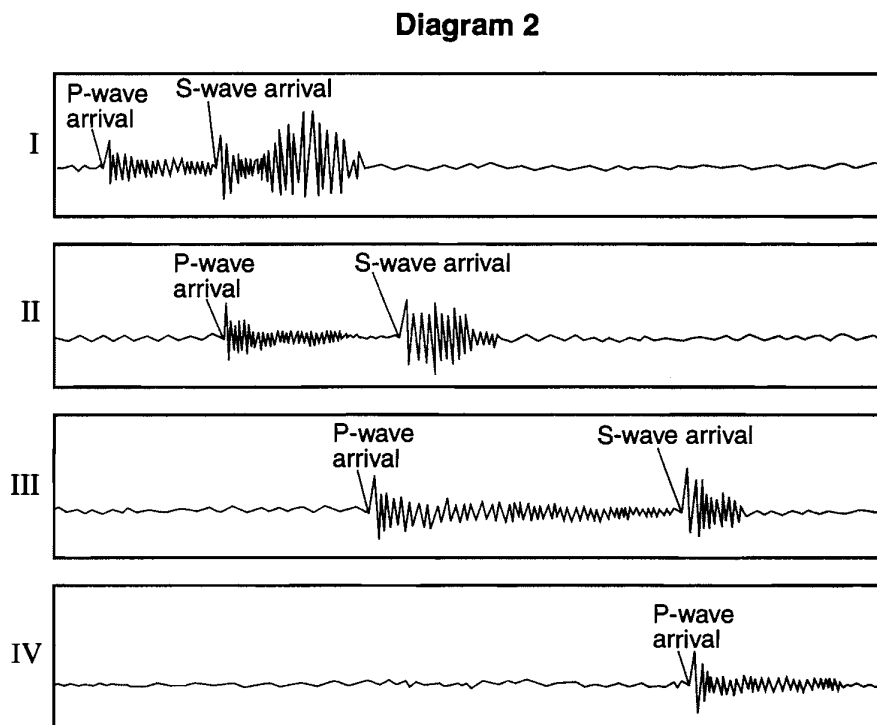
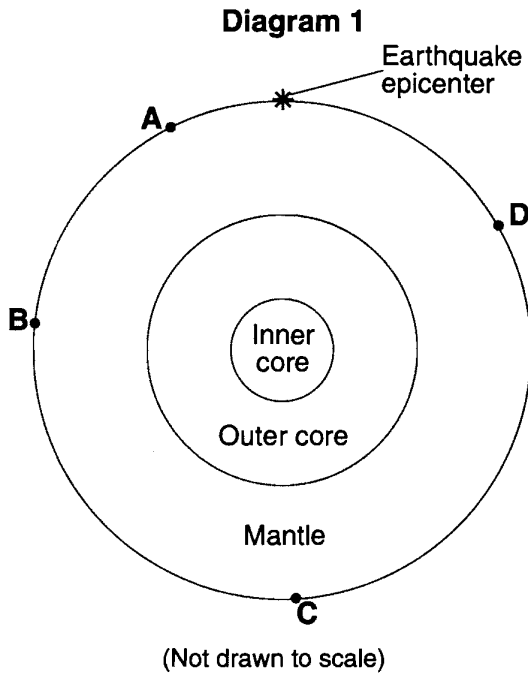


(Not drawn to scale)

Point *A* is located 7600 kilometers from the epicenter of this earthquake. How many minutes did it take the first *S*-wave to reach point *A*?

- A) 9 min B) 11 min C) 16 min D) 20 min

Base your answers to questions 3 and 4 on the diagrams below. Diagram 1 represents a cross section of Earth and its interior layers. The asterisk (*) shows the location of an earthquake epicenter. Letters *A* through *D* are seismic stations on Earth's surface. Diagram 2 shows four seismograms labeled I, II, III, and IV, which were recorded at seismic stations *A*, *B*, *C*, and *D* during the same time interval.



3. Station *D* is 8000 kilometers from the earthquake epicenter. How long did it take for the first *P*-wave to travel from the epicenter to station *D*?

- A) 9 minutes 20 seconds
- B) 11 minutes 20 seconds
- C) 20 minutes 40 seconds
- D) 4 minutes 20 seconds

4. Which list correctly matches the seismograms with the seismic stations where they were recorded?

A) seismogram I - station *A*

seismogram II - station *B*

seismogram III - station *C*

seismogram IV - station *D*

B) seismogram I - station *B*

seismogram II - station *D*

seismogram III - station *A*

seismogram IV - station *C*

C) seismogram I - station *C*

seismogram II - station *B*

seismogram III - station *D*

seismogram IV - station *A*

D) seismogram I - station *A*

seismogram II - station *D*

seismogram III - station *B*

seismogram IV - station *C*

5. The first *S*-wave arrived at a seismograph station 11 minutes after an earthquake occurred. How long after the arrival of the first *P*-wave did this first *S*-wave arrive?

A) 3 min 15 s

B) 4 min 55 s

C) 6 min 05 s

D) 9 min 00 s

6. Which statement correctly compares seismic *P*-waves with seismic *S*-waves?

A) *P*-waves travel faster than *S*-waves and pass through Earth's liquid zones.

B) *P*-waves travel faster than *S*-waves and do not pass through Earth's liquid zones.

C) *P*-waves travel slower than *S*-waves and pass through Earth's liquid zones.

D) *P*-waves travel slower than *S*-waves and do not pass through Earth's liquid zones.

7. An earthquake's first *P*-wave arrives at a seismic station at 12:00:00. This *P*-wave has traveled 6000 kilometers from the epicenter. At what time will the first *S*-wave from the same earthquake arrive at the seismic station?

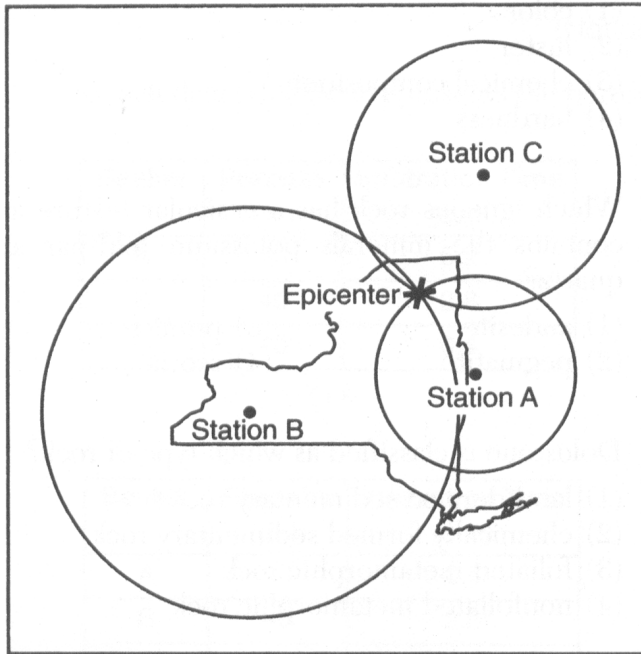
A) 11:52:20

B) 12:07:40

C) 12:09:20

D) 12:17:00

8. Base your answer to the following question on The map below shows the location of an earthquake epicenter in New York State. Seismic stations *A*, *B*, and *C* received the data used to locate the earthquake epicenter.



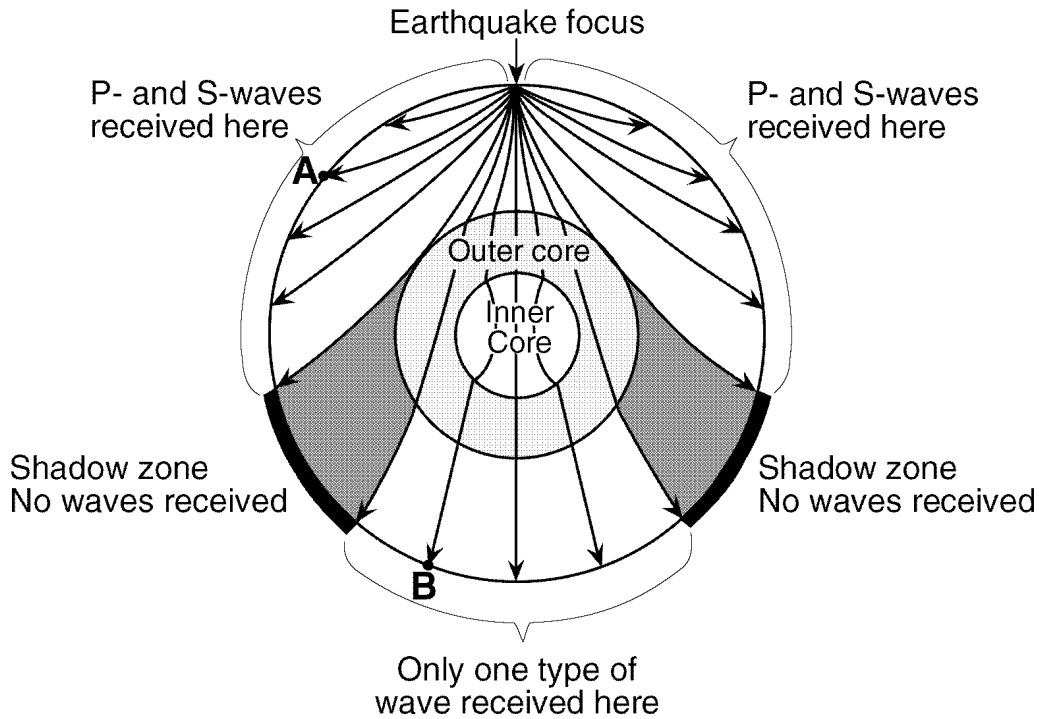
The seismogram recorded at station *A* would show the

- A) arrival of *P*-waves, only
B) earliest arrival time of *P*-waves
 C) greatest difference in the arrival times of *P*-waves and *S*-waves
 D) arrival of *S*-waves before the arrival of *P*-waves
9. A seismic station is recording the seismic waves produced by an earthquake that occurred 4200 kilometers away. Approximately how long after the arrival of the first *P*-wave will the first *S*-wave arrive?
- A) 1 min 05 sec **B) 5 min 50 sec**
 C) 7 min 20 sec D) 13 min 10 sec
10. A *P*-wave takes 8 minutes and 20 seconds to travel from the epicenter of an earthquake to a seismic station. Approximately how long will an *S*-wave take to travel from the epicenter of the same earthquake to this seismic station?
- A) 6 mm 40 sec B) 9 mm 40 sec
C) 15 mm 00 sec D) 19 mm 00 sec
11. A seismic station 4000 kilometers from the epicenter of an earthquake records the arrival time of the first *P*-wave at 10:00:00. At what time did the first *S*-wave arrive at this station?
- A) 9:55:00 **B) 10:05:40**
 C) 10:07:05 D) 10:12:40

12. How long would it take for the first *S*-wave to arrive at a seismic station 4,000 kilometers away from the epicenter of an earthquake?

- A) 5 min 40 sec B) 7 min 0 sec
C) 12 min 40 sec D) 13 min 20 sec

13. Base your answer to the following question on the cross-sectional view of Earth below, which shows seismic waves traveling from the focus of an earthquake. Points A and B are locations on Earth's surface.



Which statement best explains why only one type of seismic wave was recorded at location B?

- A) **S-waves cannot travel through the liquid outer core.**
- B) S-waves cannot travel through the liquid inner core.
- C) P-waves cannot travel through the solid outer core.
- D) P-waves cannot travel through the solid inner core.

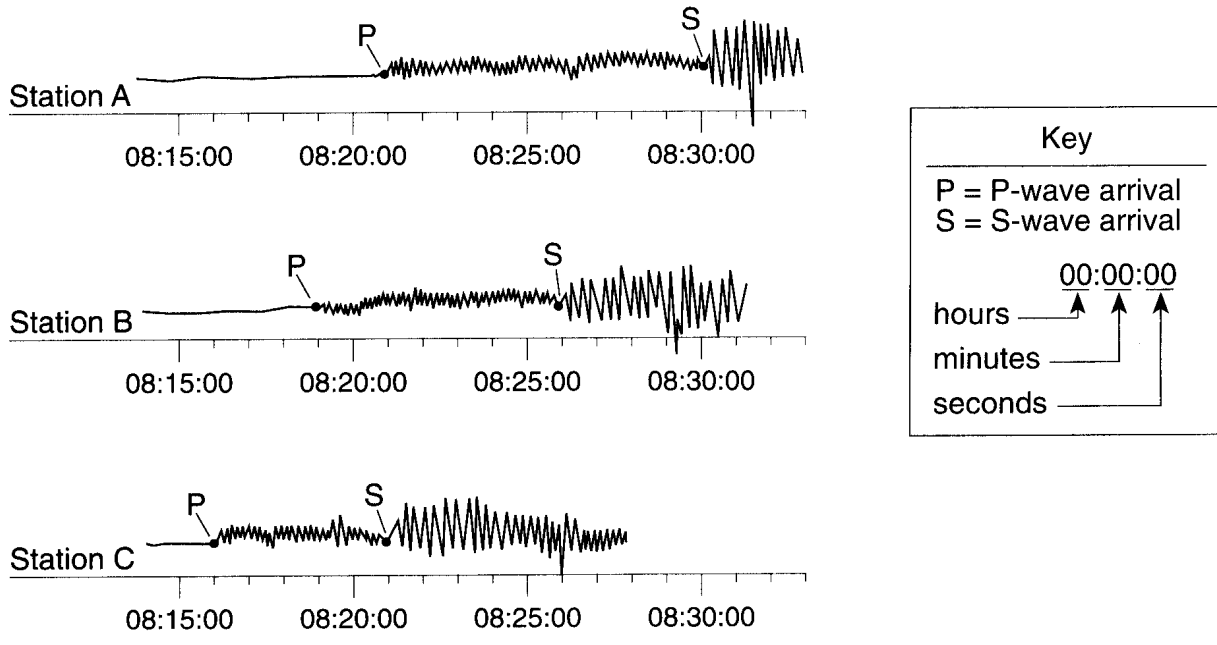
14. A huge undersea earthquake off the Alaskan coastline could produce a

- A) **tsunami**
- B) cyclone
- C) hurricane
- D) thunderstorm

15. The study of how seismic waves change as they travel through Earth has revealed that

- A) P-waves travel more slowly than S-waves through Earth's crust
- B) seismic waves travel more slowly through the mantle because it is very dense
- C) Earth's outer core is solid because P-waves are not transmitted through this layer
- D) **Earth's outer core is liquid because S-waves are not transmitted through this layer**

16. Base your answer to the following question on The diagram below represents three seismograms showing the same earthquake as it was recorded at three different seismic stations, *A*, *B*, and *C*.



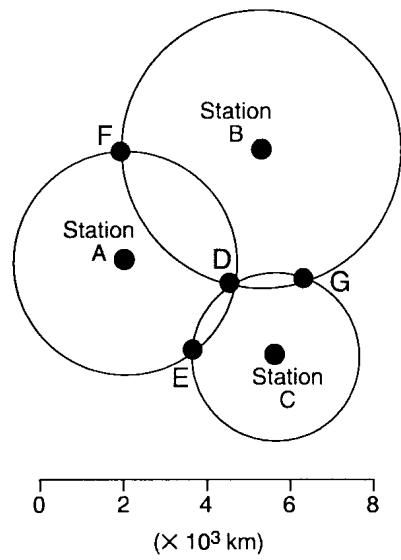
Which statement correctly describes the distance between the earthquake epicenter and these seismic stations?

- A) *A* is closest to the epicenter, and *C* is farthest from the epicenter.
- B) *B* is closest to the epicenter, and *C* is farthest from the epicenter.
- C) *C* is closest to the epicenter, and *A* is farthest from the epicenter.**
- D) *A* is the closest to the epicenter, and *B* is the farthest from the epicenter.

17. An earthquake's *P*-wave arrived at a seismograph station at 02 hours 40 minutes 00 seconds. The earthquake's *S*-wave arrived at the same station 2 minutes later. What is the approximate distance from the seismograph station to the epicenter of the earthquake?

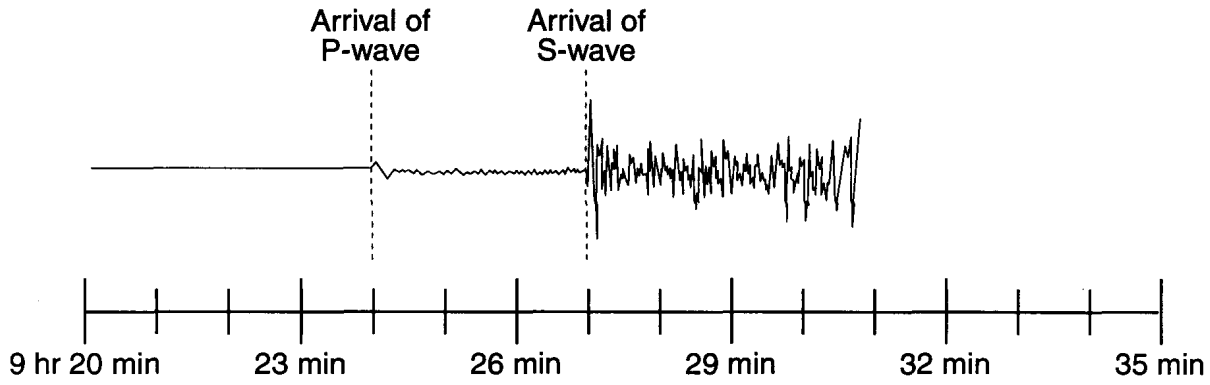
- A) 1,100 km**
- B) 2,400 km
- C) 3,100 km
- D) 4,000 km

18. Base your answer to the following question on the diagram below, which represents seismic stations *A*, *B*, and *C*. The distance from each station to an earthquake's epicenter is plotted.



The epicenter is closest to point
A) D B) *E* C) *F* D) *G*

-
19. The seismogram below shows the arrival times of an earthquake's *P*-wave and *S*-wave recorded at a seismic station in Portland, Oregon.



What was the distance from Portland to the earthquake's epicenter?

- A) 1800 km B) 2500 km C) 3200 km D) 4100 km
-

20. The epicenter of an earthquake is 6,000 kilometers from an observation point. What is the difference in travel time for the *P*-waves and *S*-waves?

- A) 7 min 35 sec B) 9 min 20 sec
C) 13 min 10 sec D) 17 min 00 sec
-

Answer Key
Regents Prep-Earthquakes

1. **A**
 2. **D**
 3. **B**
 4. **D**
 5. **B**
 6. **A**
 7. **B**
 8. **B**
 9. **B**
 10. **C**
 11. **B**
 12. **C**
 13. **A**
 14. **A**
 15. **D**
 16. **C**
 17. **A**
 18. **A**
 19. **A**
 20. **A**
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