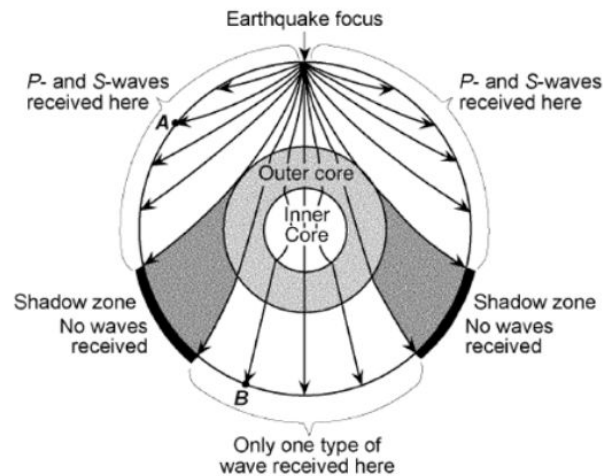


Directions: Answer the following question(s).

Section 1

1

The cross-sectional view of Earth below shows seismic waves traveling from the focus of an earthquake. Points *A* and *B* are locations on Earth's surface.



Which statement is true based on the diagram above?

- A. All waves are absorbed by the outer core
- B. Some waves are refracted as they pass through the inner core
- C. All waves are reflected as they pass through Earth's inner core
- D. Waves only travel in one direction

Master ID: 2263902 Revision: 1
Correct: B
Standards: SCI.8.ESS.1.1

2

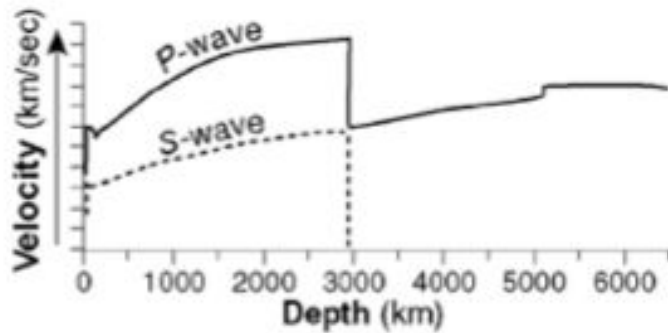
Which statement correctly compares P-waves and S-waves?

- A. P-waves travel slower, and can only travel through solid layers
- B. S-waves travel faster, and can only travel through liquid layers
- C. P-waves travel slower, and travel only through liquid layers
- D. S-waves travel slower, and travel only through solid layers

Master ID: 2363362 Revision: 1
Correct: D
Standards: SCI.8.ESS.1.1

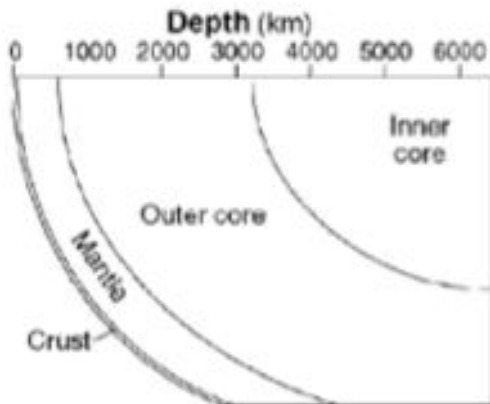
Directions: Answer the following question(s).

- 3 The graph below shows the speeds of P-waves and S-waves in the earth's interior.

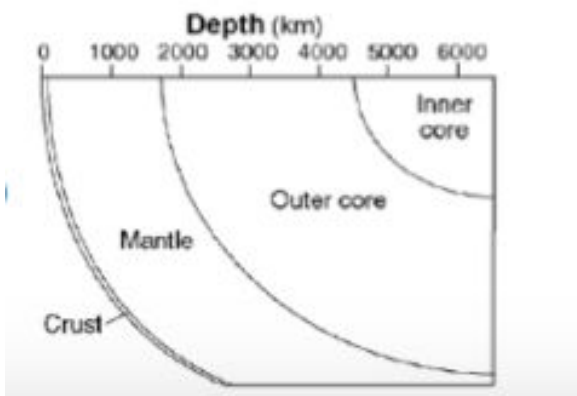


Which cross section BEST shows the thickness of different layers of earth based on the graph above?

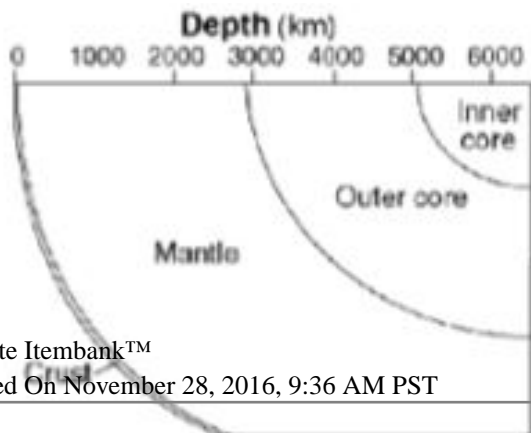
A.



B.



C.



Directions: Answer the following question(s).

Master ID: 2363386 Revision: 1

Correct:

Rubric: 2 Point(s)

2 Responses: C

1 Responses:

0 Disqualifier: A,B,D

Standards:

SCI.8.ESS.1.1

4 Which layer of the earth has the highest density?

- A. Crust
- B. Mantle
- C. Outer Core
- D. Inner Core

Master ID: 2363395 Revision: 1

Correct: D

Standards:

SCI.8.ESS.1.1

5 A student tells their teacher, "Seismic waves come from earthquakes." Evaluate whether you agree with the student, giving evidence for your answer. (2 points)

Master ID: 2363403 Revision: 1

Rubric: 2 Point(s)

2 Says that this is not fully correct, because other things can make seismic waves, like explosions, landslides, volcanoes, storms, jumping in a football stadium, ect.

1 Agrees with the statement and also says that earthquakes make seismic waves.

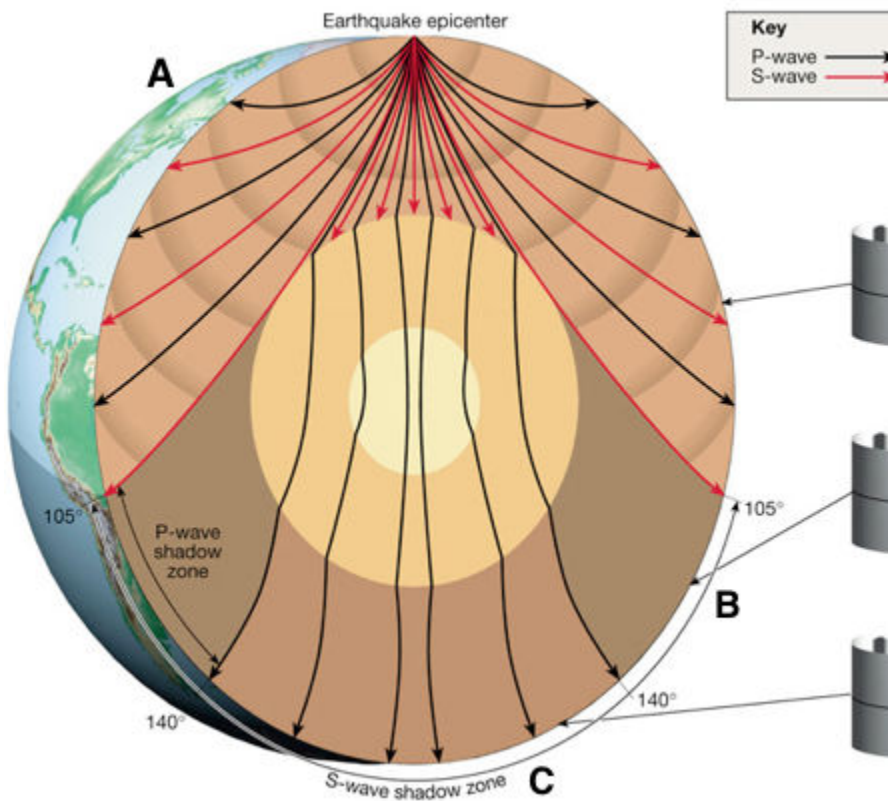
0

Standards:

SCI.8.ESS.1.1

Directions: Answer the following question(s).

6



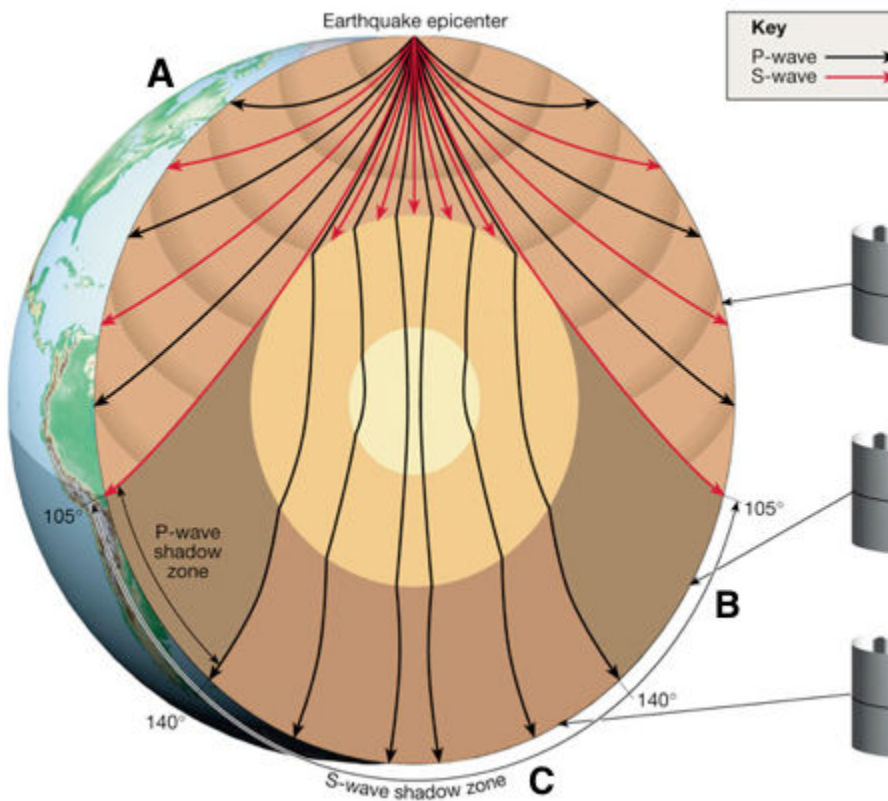
According to the diagram above, which of the locations would receive all types of seismic waves?

- A. A
- B. B
- C. C
- D. All locations would receive all waves

Master ID: 2363409 Revision: 1
Correct: A
Standards: SCI.8.ESS.1.1

Directions: Answer the following question(s).

7



According to the diagram above, which location would be the first to receive S-waves?

- A. A
- B. B
- C. C
- D. All locations would receive all waves

Master ID: 2363411 Revision: 1
Correct: A
Standards: SCI.8.ESS.1.1

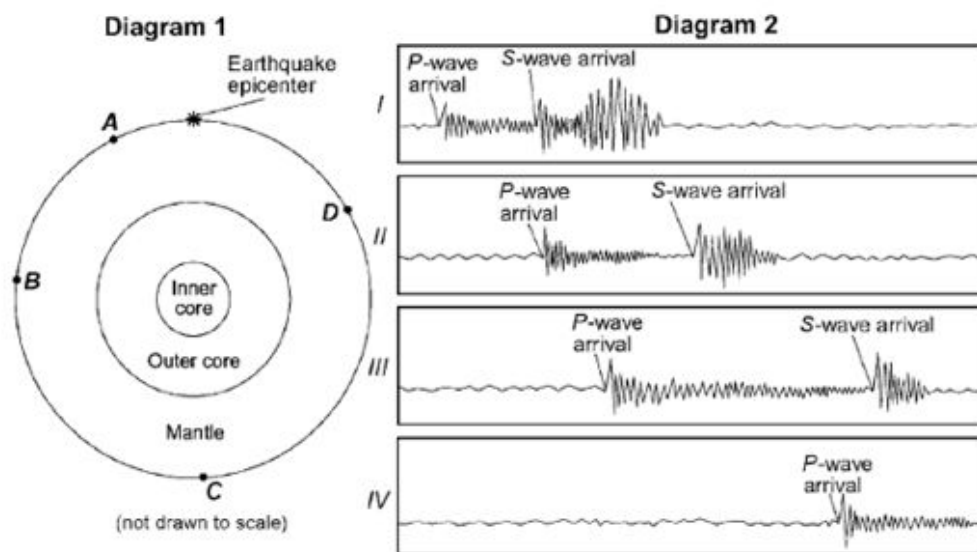
Directions: Answer the following question(s).

Section 2

8

Diagram 1 below 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.



Which of the seismograms came from station C? Explain two reasons why you know this is true. (3 points)

Master ID: 2363375 Revision: 1

Rubric: 3 Point(s)

3 Seismogram IV, because it takes longer for the P-waves to arrive there and there are no S waves due to the liquid outer core creating a Shadow zone.

2

1

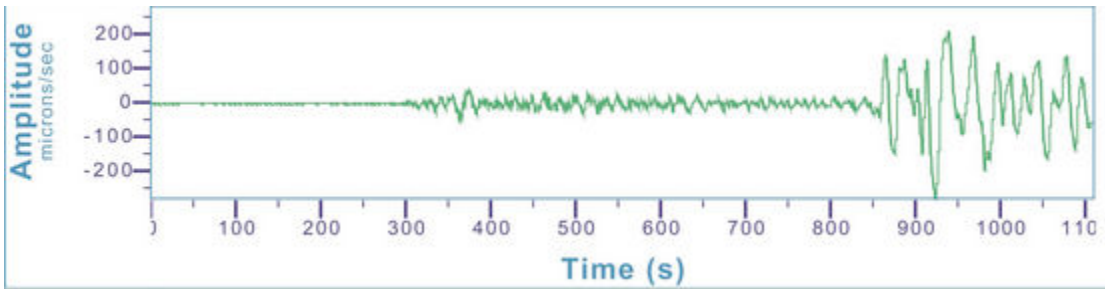
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Standards:

SCI.8.ESS.1.1

Directions: Answer the following question(s).

9

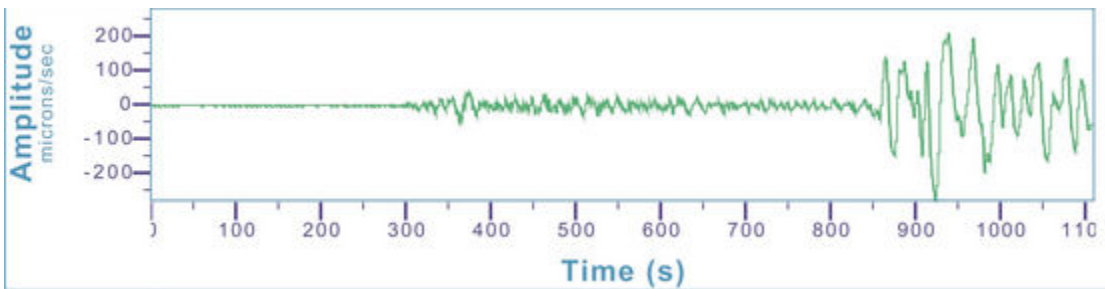


In the seismogram above, at what time do the S-waves begin?

- A. 0 Seconds
- B. 300 Seconds
- C. 850 Seconds
- D. 600 seconds

Master ID: 2363426 Revision: 1
Correct: C
Standards: SCI.8.ESS.1.1

10



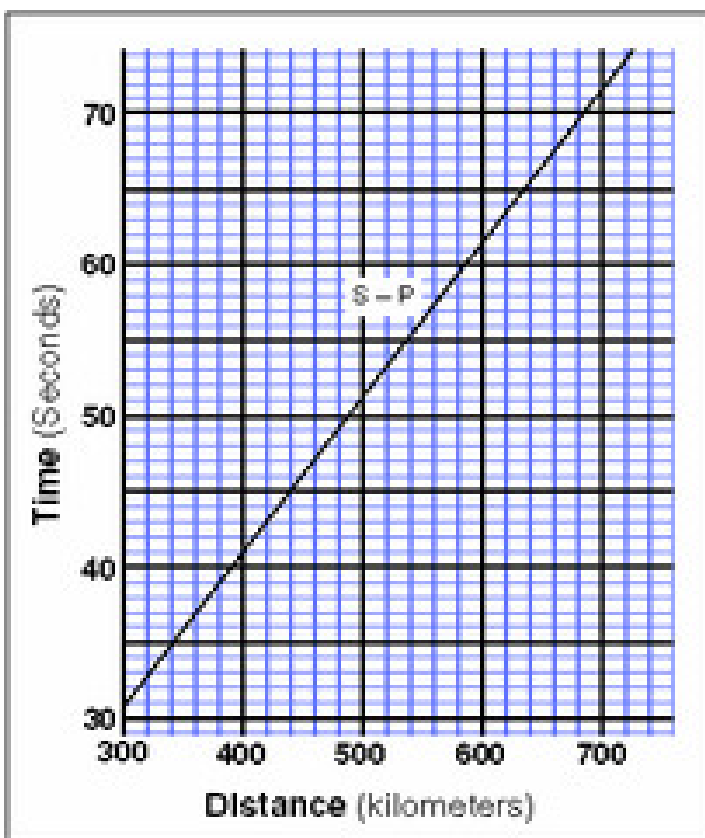
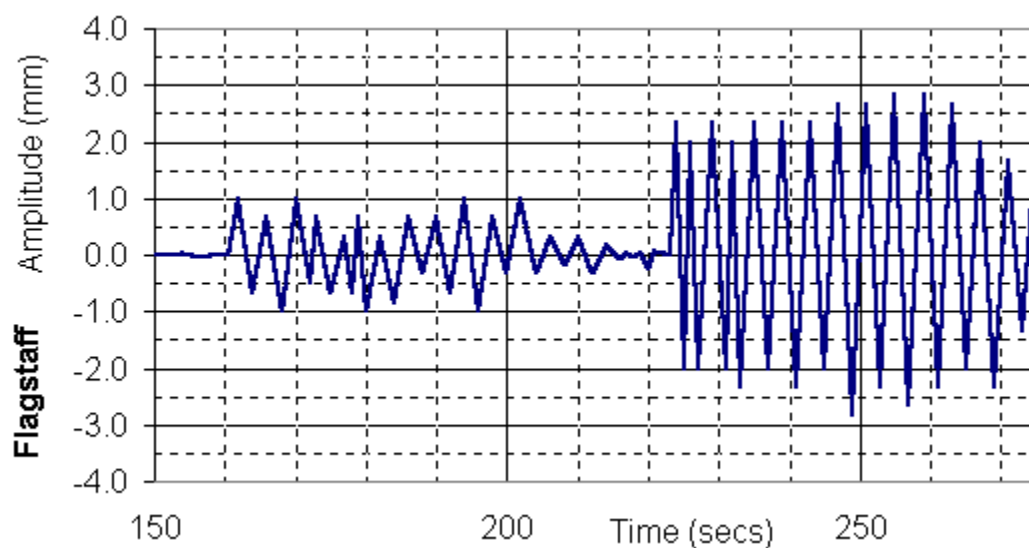
In the seismogram above, at what time do the P-waves begin?

- A. 0 Seconds
- B. 300 Seconds
- C. 850 Seconds
- D. 600 seconds

Master ID: 2363430 Revision: 1
Correct: B
Standards: SCI.8.ESS.1.1

Directions: Answer the following question(s).

11



Use the Seismogram above to calculate the S-P gap. Show your work. Then, use the graph to the right and determine how far the seismograph station was from the earthquake (2 points).

Directions: Answer the following question(s).

Master ID: 2363431 Revision: 1

Rubric: 2 Point(s)

2 223-160= 63 s.

620 km away.

1

0

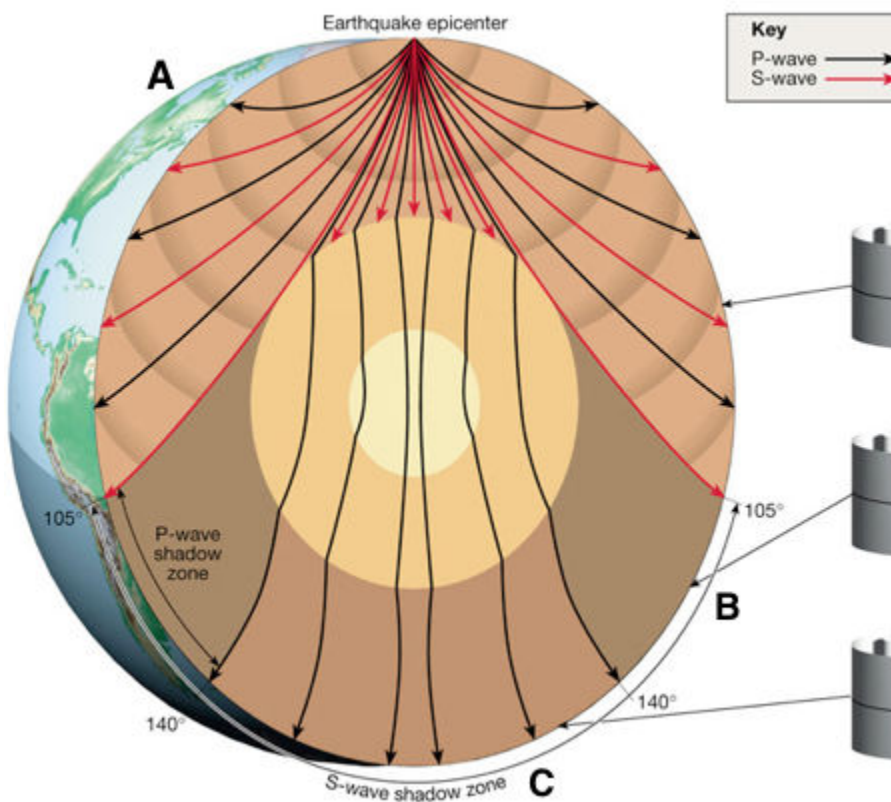
Standards:

SCI.8.ESS.1.1

Directions: Answer the following question(s).

Section 3

12



Directions: Answer the following question(s).

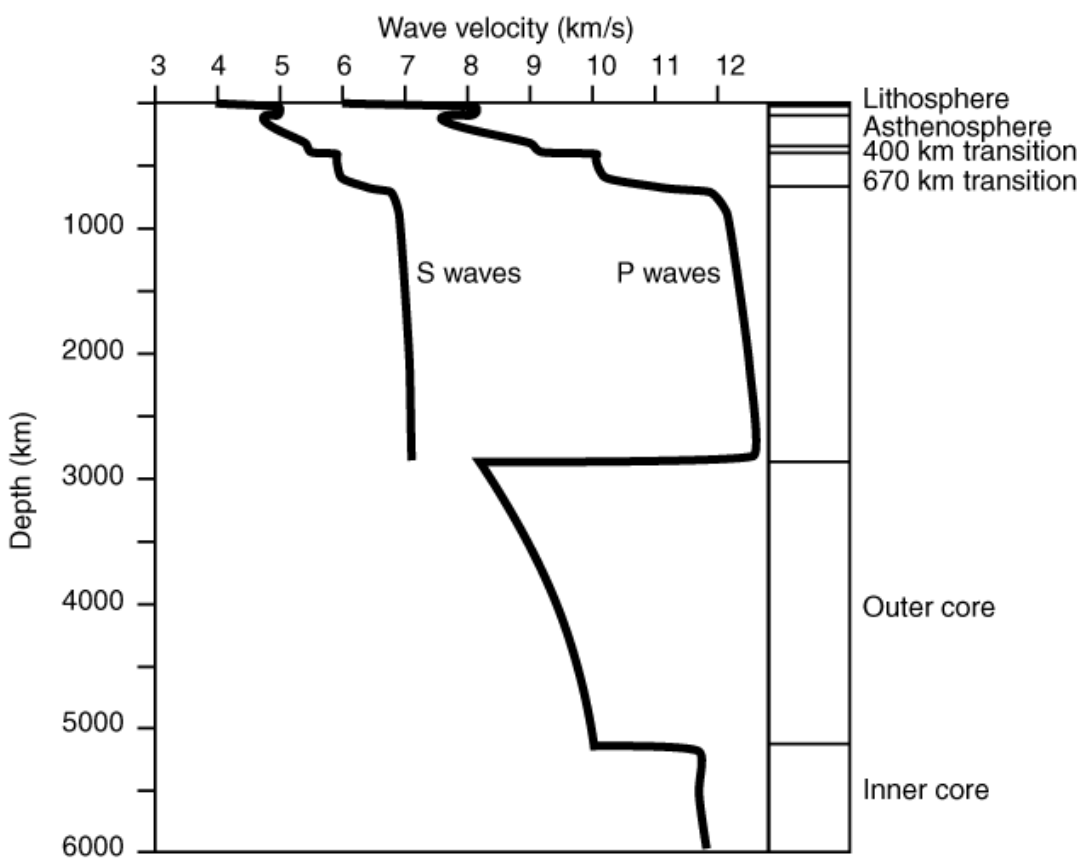


Diagram 1

Diagram 2

Choose one layer of the earth. Using the diagrams above, write a claim about two properties of the layer you chose, and cite two pieces of evidence to support your claim. Then explain how your evidence supports your claim. (9 points)

Directions: Answer the following question(s).

	0	1	2	3
Claim	No claim is stated OR The claim is actually an observation	The claim is stated, but does not address most of the data, and it does not restate the question in the response. The claim may ignore major sections of data. OR The claim is incorrect/false.	The claim is stated and correctly addresses a majority of the data observed. Restates the question in the response. OR The claim is stated and addresses the data, but it may have some minor inaccuracies OR The claim is stated correctly, but doesn't restate the question in the statement.	The claim is stated and correctly addresses all observations of the data. Restates the question in the correct format.
Evidence	No Evidence is cited OR Only one piece of evidence is cited and it is incorrect	Two pieces of evidence are cited, but neither correctly connect to the claim OR Only one piece of evidence is correctly connected to the claim	Two pieces of evidence are cited, but one may not correctly connect to the claim.	Correctly cites 2 pieces of evidence from the stimulus that correctly connect to the claim.
Reasoning	No reasoning is present for any evidence given from the stimulus.	Reasoning for only one piece of evidence is correct and present OR Reasoning for both pieces of evidence are incorrect scientifically	Reasoning for both pieces of evidence are present, but only one is scientifically correct	Both pieces of evidence are correctly explained and reasoning is scientifically correct

Directions: Answer the following question(s).

Master ID: 2363421 Revision: 1

Rubric: 9 Point(s)

9

8

7

6

5

4

3

2

1

0

Standards:

SCI.8.ESS.1.1