

Seismic Waves *(Physics only · Higher)*

What is a seismic wave?

Definition

KEY WORDS TO USE

☐ earthquake ☐ travels through the Earth ☐ P-waves ☐ S-waves

Primary waves and secondary waves

Remember: **S**-waves are **S**econdary, **t**ransverse, **s**lower, **s**olids only

	P-waves	S-waves
The letter stands for		
Type of wave		
Speed		
Travels through		
When the density changes		

CHOOSE FROM THESE

<input type="text" value="Primary"/>	<input type="text" value="Secondary"/>
<input type="text" value="Longitudinal"/>	<input type="text" value="Transverse"/>
<input type="text" value="Fast — arrives first"/>	<input type="text" value="Slow — arrives second"/>
<input type="text" value="Solids only"/>	<input type="text" value="Solids and liquids"/>
<input type="text" value="Refracts"/>	

"Refracts" goes in both columns.

How do seismic waves give information about the structure of the Earth?

4 marks

- 1

- 2

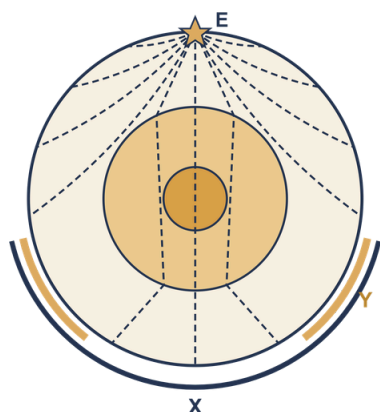
- 3

- 4

KEY WORDS TO USE

☐ P-waves	☐ S-waves
☐ solids	☐ liquids
☐ refract	☐ density
☐ outer core	☐ detected
☐ cannot observe directly	

Exam-style question — evidence for the Earth's core



The diagram shows P-waves from an earthquake at **E**. No S-waves are detected in region **X**, and no P-waves are detected in region **Y**.

- (a) Give **two** differences between P-waves and S-waves. [2]
- (b) Explain why the paths of the P-waves through the mantle are curved. [2]
- (c) Explain why no S-waves are detected in region X. [2]
- (d) Explain why no P-waves are detected in region Y. [2]
- (e) In 1914, Beno Gutenberg used seismic waves to show the outer core is liquid. Suggest why this was **new evidence**. [1]

[Total: 9 marks]

ANSWER
