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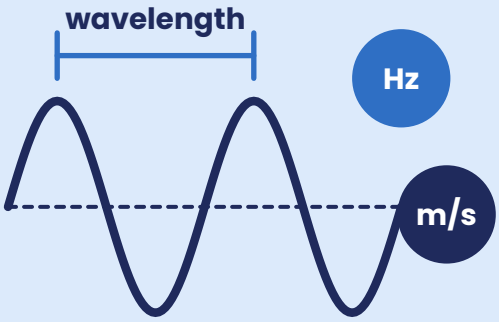
Year 10–11 • GCSE & IGCSE Physics



Waves

Exam-Style Worksheet

Exam-style questions on wave properties, reflection, refraction, the electromagnetic spectrum, sound and seismic waves.

Wave terms | Wave equation | Reflection | Refraction | EM spectrum | Sound

KEY IDEAS IN THIS WORKSHEET — YEAR 10–11

Name: _____ Class: _____

Date set: _____ Date due: _____

What's inside

Section A	Wave properties	**12 marks**
Section B	Reflection and refraction	**13 marks**
Section C	Electromagnetic spectrum	**13 marks**
Section D	Sound, ultrasound and seismic waves	**9 marks**

Instructions

- Answer all questions in the spaces provided.
- Show your working in calculations.
- Marks for each question are shown in [ ].
- Use the word and equation boxes to help you.

Total score

/ 47

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Waves Worksheet

Year 10–11 • GCSE (AQA 4.6) and Cambridge IGCSE 0625 topics 2 and 3 • Exam-style questions. Show your working in calculations.

Section A — Wave properties [12 marks]

Equations v = f × λ | f = 1 ÷ T | frequency (Hz) | wavelength (m) | period (s)

1 Complete the table of wave terms. **[4]**

Term	Definition
Amplitude	
Wavelength	
Frequency	
Period	

2 State **one** difference between transverse and longitudinal waves, with one example of each. **[3]**

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3 Calculate each missing quantity using v = f λ. **[3]**

Speed (m/s)	Frequency (Hz)	Wavelength (m)
	50	4
340		0.5
3×10^8	1.5×10^{14}	

4 A wave has a period of 0.025 s. Calculate its frequency. **[2]**

.....

.....

frequency = ... Hz

Section B Reflection and refraction [13 marks]

5 Describe how to show that the angle of incidence equals the angle of reflection using a ray box and a plane mirror. [4]

6 A ray travels from air into a glass block at an angle. Describe and explain what happens. [3]

7 Explain why a ray entering a glass block along the normal does not change direction. [2]

8 Describe what happens at the critical angle and during total internal reflection. Give **one** use. [4]

Section C Electromagnetic spectrum [13 marks]

9 List the electromagnetic waves in order of increasing wavelength, starting with gamma rays. [3]

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.....

10 Give **one** use of each type of electromagnetic wave. [5]

Wave	Use
Radio waves	
Microwaves	
Infrared	
X-rays	
Gamma rays	

11 State **two** properties that are the same for all electromagnetic waves. [2]

.....

.....

12 Explain the danger of ultraviolet light, X-rays and gamma rays. [3]

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Section D Sound, ultrasound and seismic waves [9 marks]

13 Explain how ultrasound is used to scan an unborn baby. [3]

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14 A ship uses sonar. The signal returns after 0.60 s. Sound travels at 1500 m/s in water. Calculate the depth of the sea. **[3]**

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depth = ... m

15 Describe the differences between P waves and S waves in earthquakes. **[3]**

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END OF WORKSHEET **Total: _____ / 47**