GCSE and IGCSE Physics: Waves Worksheet

Year 10-11 · GCSE (AQA 4.6) and Cambridge IGCSE 0625 topics 3 and 2 · Exam-style questions

Name: ..... **Class:** ..... **Date:** ..... **Score:** / 47

Section A: Wave properties [12 marks]

v = f × ? | 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?. **[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]**

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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 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]**

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]**

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

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

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]**

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