

Wavelength, frequency and how waves behave

Physics grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

Answer all questions. Show your working and include units where needed. A calculator is allowed. The paper is marked out of 20, and the marks for each question are shown in brackets.

Level: Physics grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** HS-PS4-1, GCSE P6

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

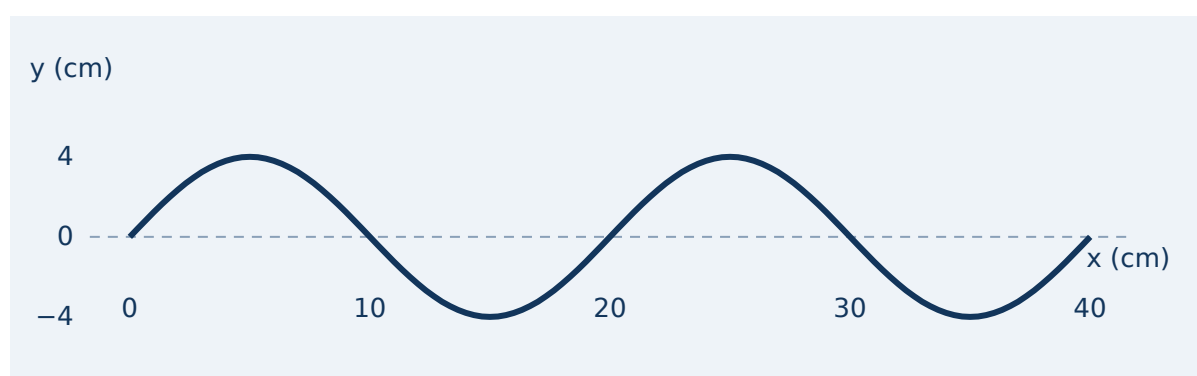
Question 1 Two types of wave (2 marks)

- State what is meant by a transverse wave. (1 mark)
- Name one example of a longitudinal wave. (1 mark)

Question 2 Wave speed (3 marks)

A water wave has a frequency of 12 Hz and a wavelength of 0.35 m. Calculate its speed. (3 marks)

Question 3 Wave on a spring (4 marks)



Wave on a spring for Question 3.

The wave travels at 40 cm/s.

- State the amplitude. (1 mark)
- State the wavelength. (1 mark)
- Calculate the frequency. (1 mark)
- Calculate the period. (1 mark)

Question 4 Moving into shallow water (3 marks)

Water waves move from deep to shallow water in a ripple tank. Describe what happens to (a) the speed, (b) the wavelength, (c) the frequency. (3 marks)

Question 5 Reflection angle (3 marks)

Wavefronts hit a straight barrier so that they make an angle of 25° with it. Calculate the angle of incidence and the angle of reflection, and state the law you used. (3 marks)

Question 6 Diffraction (2 marks)

Explain what happens when water waves of wavelength 2 cm pass through a gap 2 cm wide, and why a gap 20 cm wide has a different effect. (2 marks)

Question 7 Counting waves (2 marks)

A wave has a frequency of 0.20 Hz. Calculate its period and the number of waves passing a point in one minute. (2 marks)

Question 8 Unchanged quantity (1 mark)

State the quantity that does not change when a wave is refracted. (1 mark)