

How waves carry energy without matter

Grade 7 science (Year 8 · Class 7) · Test

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

This test checks waves, frequency, wavelength and speed. Use a calculator and show every step for the calculations. Write units with your answers, and give explanations in full sentences. Marks are shown beside each part.

Level: Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-PS4-1

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

Question 1 Wave terms (3 marks)

- State what is meant by the wavelength of a wave. (1 mark)
- Name the unit of frequency. (1 mark)
- State the wave property that is linked to the energy carried. (1 mark)

Question 2 Types of wave (2 marks)

- Name the type of wave made by pushing and pulling the end of a spring along its length. (1 mark)
- Name the type of wave made by flicking a rope up and down. (1 mark)

Question 3 Counting at the jetty (3 marks)

Chiamaka in Lagos counts 36 crests passing a jetty post in 12 s.

- Calculate the frequency. (2 marks)
- Calculate the period, to 2 decimal places. (1 mark)

Question 4 Ripple tank (3 marks)

In a ripple tank the frequency is 6.0 Hz and the wavelength is 0.25 m.

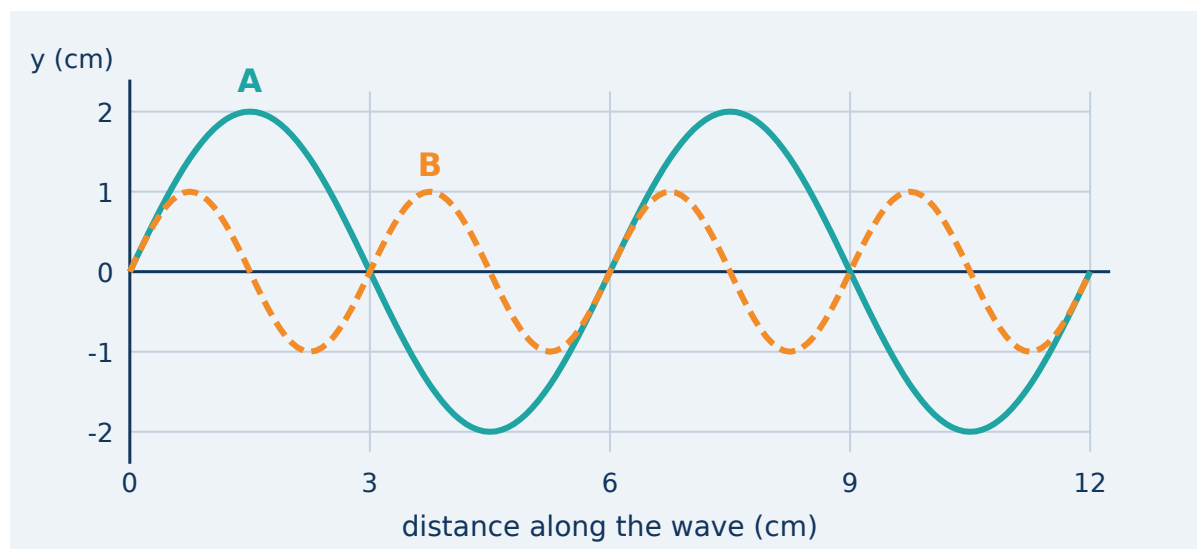
- Calculate the wave speed. (2 marks)
- Calculate the time for a ripple to cross a tank 0.90 m wide. (1 mark)

Question 5 Floating cork (2 marks)

A cork floats on a pond. Ripples pass it and it bobs up and down but stays in the same area. Explain why.

Question 6 Reading two waves (3 marks)

The figure shows waves A (solid) and B (dashed) on the same grid.



Waves A and B on a centimetre grid.

- State the amplitude of wave A. (1 mark)
- State the wavelength of wave B. (1 mark)
- Both waves travel at the same speed. State which has the higher frequency. (1 mark)

Question 7 Two drum beats (2 marks)

A drummer hits a drum softly and then hard. Describe how the wave from the hard hit differs and explain why it sounds louder.

Question 8 Sound wavelength (2 marks)

A note of frequency 170 Hz travels through air at 340 m/s. Calculate its wavelength.