

Water Waves

KS3 Physics · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A duck floats on a pond pass. What does it do?

Step 1 · Observe

The duck bobs up and down; it is not carried across the pond.

Step 2 · Explain

The wave transfers energy across the water, but the water itself only moves up and down.

Answer: It bobs up and down

Check: Waves transfer energy, not matter.

2. Now try one with the steps

12 waves pass a post in 4 seconds. What is the frequency?

Step 1 · Frequency

Step 2 · Calculate

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What do water waves transfer from place to place? [1]

2. Water waves are transverse. What does 'transverse' mean? [1]

3. What is the amplitude of a wave? [1]

4. What is the wavelength of a wave? [1]

5. What is frequency, and what is its unit? [2]
-
-
6. 12 waves pass a post in 4 seconds. What is the frequency, in Hz? [1]
-
-
7. The distance from the 1st crest to the 5th crest is 2 m. What is the wavelength, in metres? [2]
-
-
8. A ripple travels 6 m across a pond in 3 s. What is its speed, in m/s? [1]
-
-
9. The vertical distance from a crest to a trough is 0.8 m. What is the amplitude, in metres? [2]
-
-
10. Describe what happens to a floating cork wave passes. [1]
-
-
11. Two waves meet crest to crest. Their amplitudes are 0.3 m and 0.2 m. What is the height of the combined crest, in metres? [2]
-
-
12. Two identical waves meet so that each crest meets a trough. What happens to the water there? [1]
-
-
13. What happens when water waves hit a straight harbour wall? [1]
-
-
14. Explain why the water at the edge of a pond does not pile up, even though waves keep arriving. [2]
-
-

4. Before you hand it in

Measuring amplitude from the top of a crest to the bottom of a trough.

Measure amplitude from the middle (rest) line to the top of a crest.

"Water moves along with the wave."

Floating objects bob up and down; the wave passes through the water.

Counting crests instead of gaps when finding wavelength.

Wavelength = distance $\div$ number of gaps between crests.