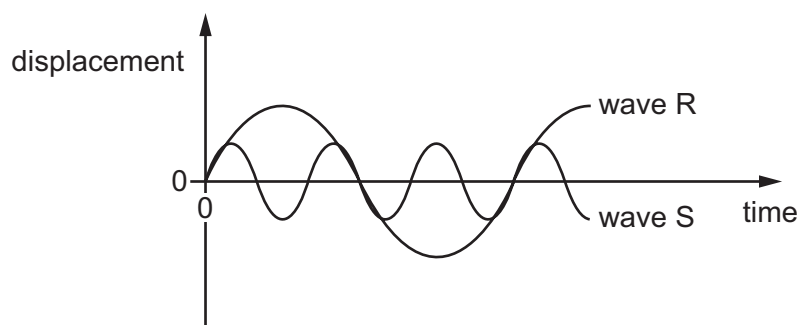**22** What is the relationship between the amplitude of a wave and its intensity?

**A** amplitude $\propto$ intensity

**B** amplitude $\propto$ (intensity)$^2$

**C** amplitude $\propto \sqrt{\text{intensity}}$

**D** (amplitude)$^2 \propto \sqrt{\text{intensity}}$

**23** Which statement about light waves and sound waves is correct?

**A** Both light waves and sound waves show the Doppler effect.

**B** Light waves can be diffracted but sound waves cannot be diffracted.

**C** Sound waves are transverse waves and light waves are longitudinal waves.

**D** Sound waves can travel in a vacuum but light waves cannot travel in a vacuum.

**24** The diagram shows two waves R and S.



Wave R has an amplitude of 8 cm and a period of 30 ms.

What are the amplitude and the period of wave S?

|   | amplitude / cm | period / ms |
|---|---|---|
| **A** | 2 | 10 |
| **B** | 2 | 90 |
| **C** | 4 | 10 |
| **D** | 4 | 90 |