27 An experiment is set up to demonstrate the diffraction of water waves in a ripple tank.

The waves pass through a gap of width w and some diffraction of the waves is observed.

The wavelength of the waves is now doubled.

What is the new gap width needed to cause the same amount of diffraction as before?

A $0.5w$ **B** w **C** $2w$ **D** $4w$

28 Two coherent electromagnetic waves are travelling in a vacuum. The two waves meet at a point. At this point, the two waves have different intensities.

Which statement about the waves is **not** correct?

A They have a constant phase difference at the point.

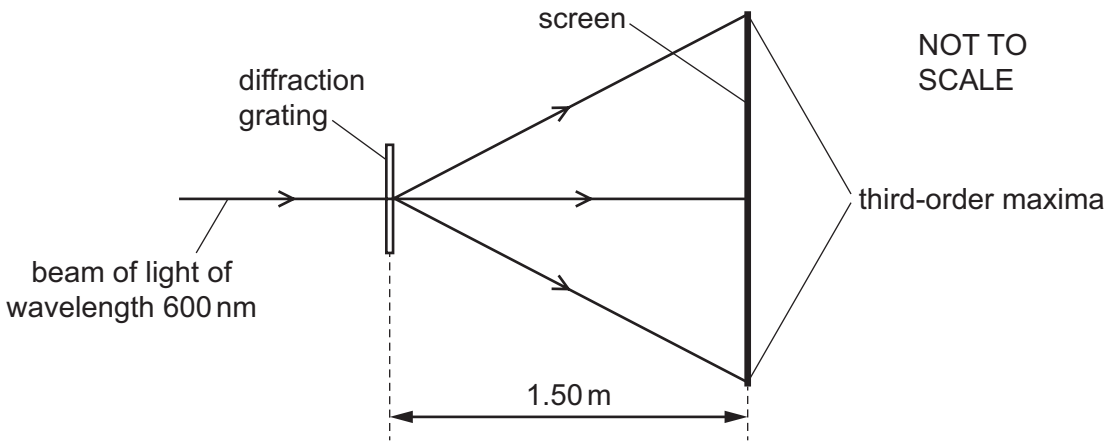
B They have the same amplitude at the point.

C They have the same frequency.

D They travel at the same speed.

29 A parallel beam of light of wavelength 600 nm is incident normally on a diffraction grating.

The distance between adjacent slits in the grating is 2.0×10^{-6} m. A screen is placed parallel to the grating, at a distance of 1.50 m from the grating. **Third**-order diffraction maxima are observed at the two ends of the screen, as shown.



What is the distance between the two ends of the screen?

A 1.4 m **B** 2.7 m **C** 3.1 m **D** 6.2 m