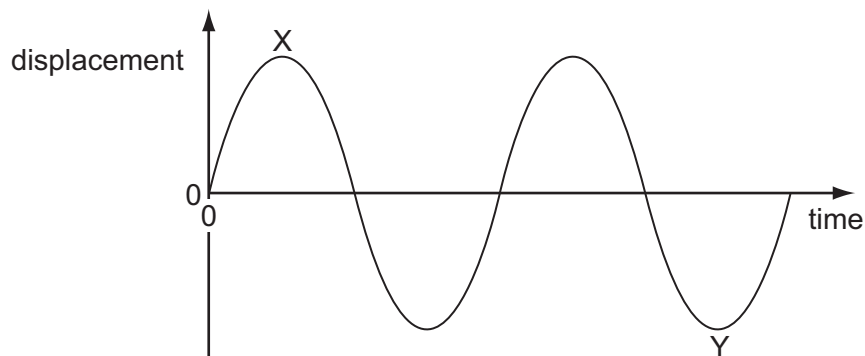25 A displacement-time graph for a transverse wave is shown in the diagram.

The phase difference between X and Y can be expressed as $n\pi$.

What is the value of n?

A   1.5   B   2.5   C   3.0   D   6.0

26 Continuous water waves are diffracted through a gap in a barrier in a ripple tank.

Which change will cause the diffraction of the waves to increase?

A   increasing the frequency of the waves

B   increasing the width of the gap

C   reducing the wavelength of the waves

D   reducing the width of the gap

27 The interference patterns from a diffraction grating and a double slit are compared.

Using the diffraction grating, yellow light of the first order is seen at 30° to the normal to the grating.

The same light produces interference fringes on a screen 1.0 m from the double slit. The slit separation is 500 times greater than the line spacing of the grating.

What is the fringe separation on the screen?

A $2.5 \times 10^{-7}\,\text{m}$

B $1.0 \times 10^{-5}\,\text{m}$

C $1.0 \times 10^{-3}\,\text{m}$

D $1.0 \times 10^{-1}\,\text{m}$