27 Monochromatic light is directed onto a pair of slits. Interference fringes that are 2.0 mm apart are observed on a distant screen.

The frequency of the light used is then doubled and the slit separation is halved.

How far apart are the new interference fringes?

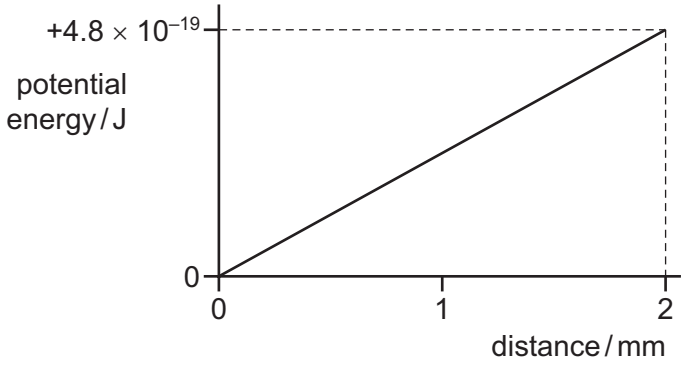
A 0.50 mm **B** 2.0 mm **C** 4.0 mm **D** 8.0 mm

28 A diffraction grating has N lines per unit length and is placed at 90° to monochromatic light of wavelength λ.

What is the expression for θ, the angle to the normal to the grating at which the third order diffraction peak is observed?

A $\sin\theta = \frac{1}{3N\lambda}$ **B** $\sin\theta = \frac{N\lambda}{3}$ **C** $\sin\theta = 3N\lambda$ **D** $\sin\theta = \frac{3\lambda}{N}$

29 Two parallel plates R and S are 2 mm apart in a vacuum. An electron with charge -1.6×10^{-19} C moves along a straight line in the electric field between the plates. The graph shows how the potential energy of the electron varies with its distance from plate R.



Which deduction is **not** correct?

A The electric field between R and S is uniform.

B The electric field strength is 3000 N C^{-1}.

C The force on the electron is constant.

D The magnitude of the potential difference between R and S is 3 V.