

- 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?

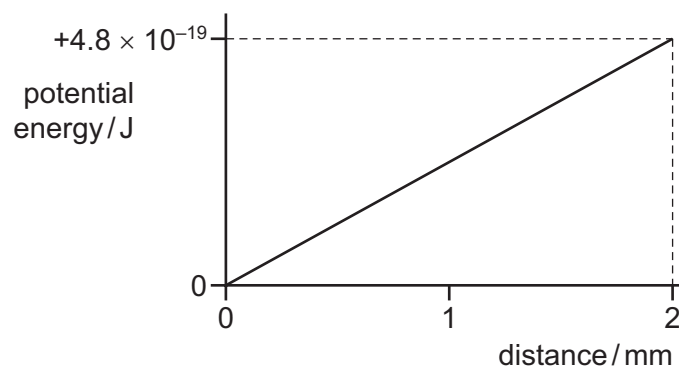
- A 0.50 mm B 2.0 mm C 4.0 mm D 8.0 mm

- 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 $-1.6 \times 10^{-19} \text{ C}$ 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.