28 A parallel beam of red light of wavelength 700 nm is incident normally on a diffraction grating that has 400 lines per millimetre.

What is the total number of intensity maxima from the grating?

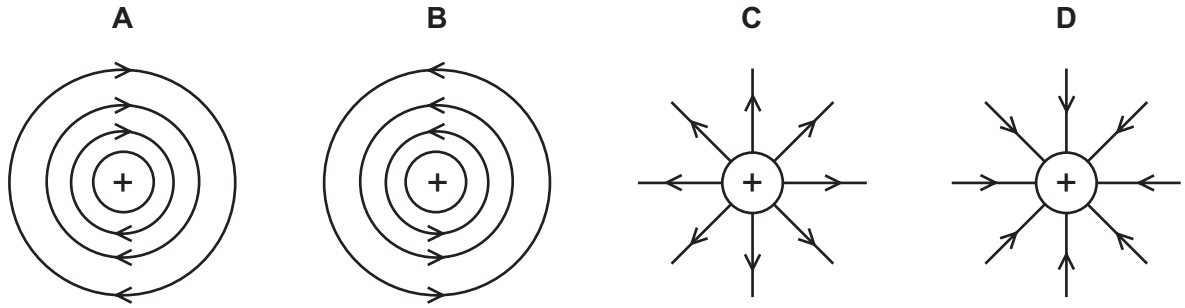
A 6 **B** 7 **C** 8 **D** 9

29 Two wave sources are oscillating in phase. Each source produces a wave of wavelength λ. The two waves from the sources meet at point X with a phase difference of 90°.

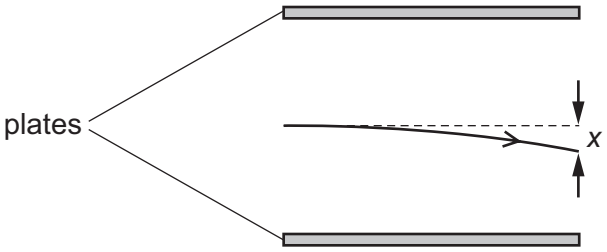
What is a possible difference in the distances from the two wave sources to point X?

A $\frac{\lambda}{8}$ **B** $\frac{\lambda}{4}$ **C** $\frac{\lambda}{2}$ **D** λ

30 Which diagram best illustrates the electric field around a positive point charge?



31 The path of an electron with initial speed v in the uniform electric field between two parallel plates is shown.



The vertical deflection x is measured at the right-hand edge of the plates.

The distance between the plates is halved. The potential difference between the plates remains the same.

What will be the new deflection of the electron with the same initial speed v?

A x **B** $\sqrt{2}x$ **C** $2x$ **D** $4x$