30 A beam of light of a single wavelength is incident normally on a diffraction grating.

The angle of diffraction θ is measured for each order of diffraction n. The distance between adjacent slits in the diffraction grating is d.

A graph is plotted to determine the wavelength of the light.

Which graph should be plotted and how is the wavelength determined from the graph?

	y-axis	x-axis	wavelength
A	n	$d \sin \theta$	gradient
B	n	$d \sin \theta$	1 / gradient
C	$\sin \theta$	d / n	gradient
D	$\sin \theta$	$d \times n$	1 / gradient

31 A particle has a charge of +2.0 mC and is in a vertical uniform electric field. An electric force of 1.0×10^{-2} N acts upwards on the particle.

What is the electric field strength?

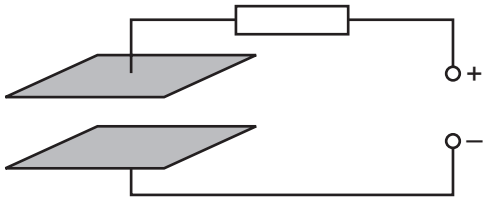
A $0.20\,\text{V m}^{-1}$ downwards

B $0.20\,\text{V m}^{-1}$ upwards

C $5.0\,\text{V m}^{-1}$ downwards

D $5.0\,\text{V m}^{-1}$ upwards

32 The diagram shows two parallel metal plates connected to a d.c. power supply through a resistor.



There is a uniform electric field in the region between the plates.

Which change would cause a **decrease** in the strength of the electric field?

A a small increase in the distance between the plates

B a small increase in the potential difference between the plates

C a small increase in the resistance of the resistor

D a small increase to the area of both plates