30 The equation

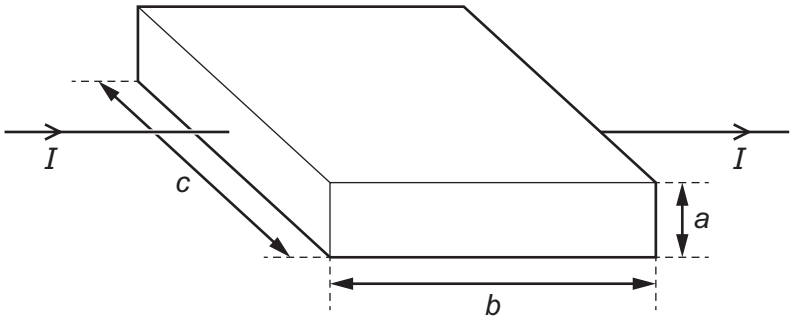
$$\lambda = \frac{d \sin\theta}{n}$$

is used to calculate the wavelength λ of light in an experiment that uses a diffraction grating. The light from the diffraction grating is displayed on a screen.

What do the symbols *n* and *d* represent?

	n	*d*
A	number of slits in the grating	distance between adjacent slits in the grating
B	number of slits in the grating	distance from grating to screen
C	order of intensity maximum	distance between adjacent slits in the grating
D	order of intensity maximum	distance from grating to screen

31 The diagram shows a metal block.



The block has sides of length *a*, *b* and *c* as shown, and its volume is *V*. Each charge carrier has a charge –*q* and the number density of the charge carriers in the metal is *n*. It takes each charge carrier an average time of *t* to pass through the block.

What is an expression for the current *I*?

A $I = nqabc$ **B** $I = \frac{nqV}{t}$ **C** $I = \frac{nqbc}{t}$ **D** $I = nqaV$