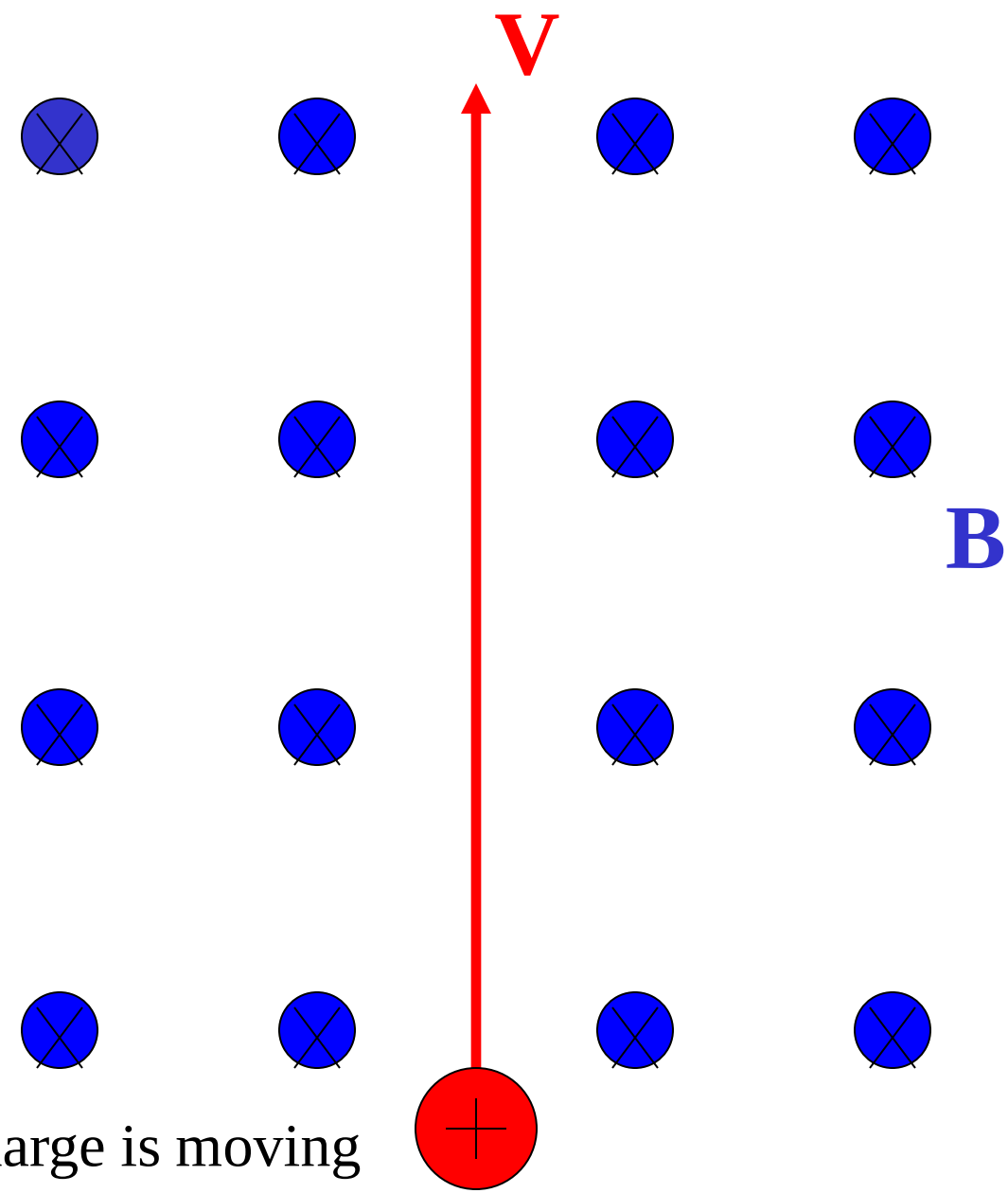
$$F=BIL$$

Or is it…..

$$F=qvB$$

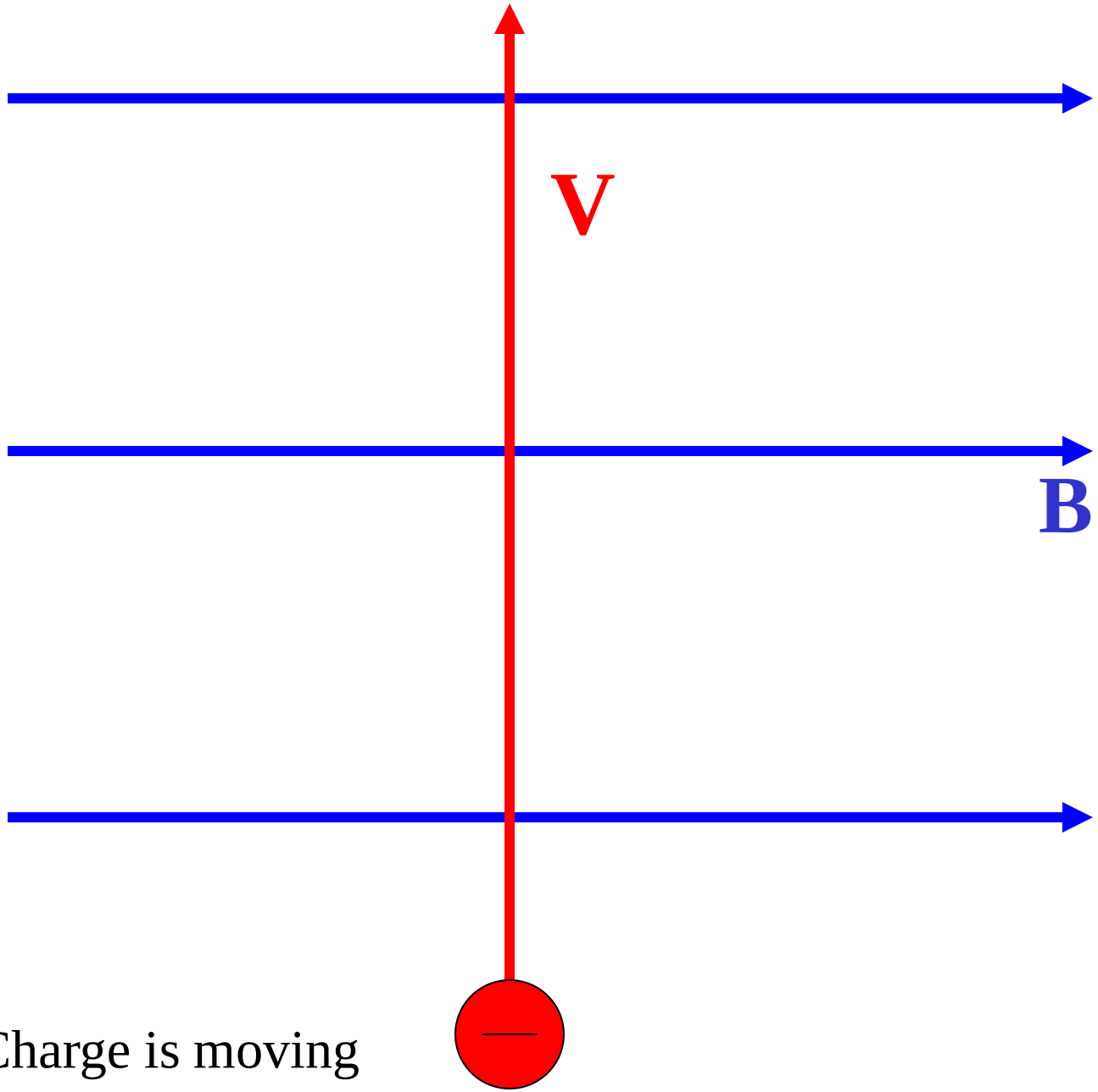
Also Determine the direction of the Force! ☺



Positive Charge is moving

Use: F=qvB

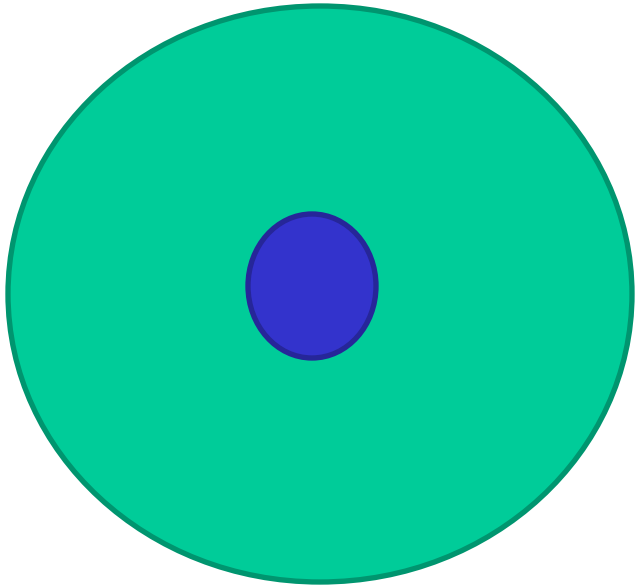
Force is going:

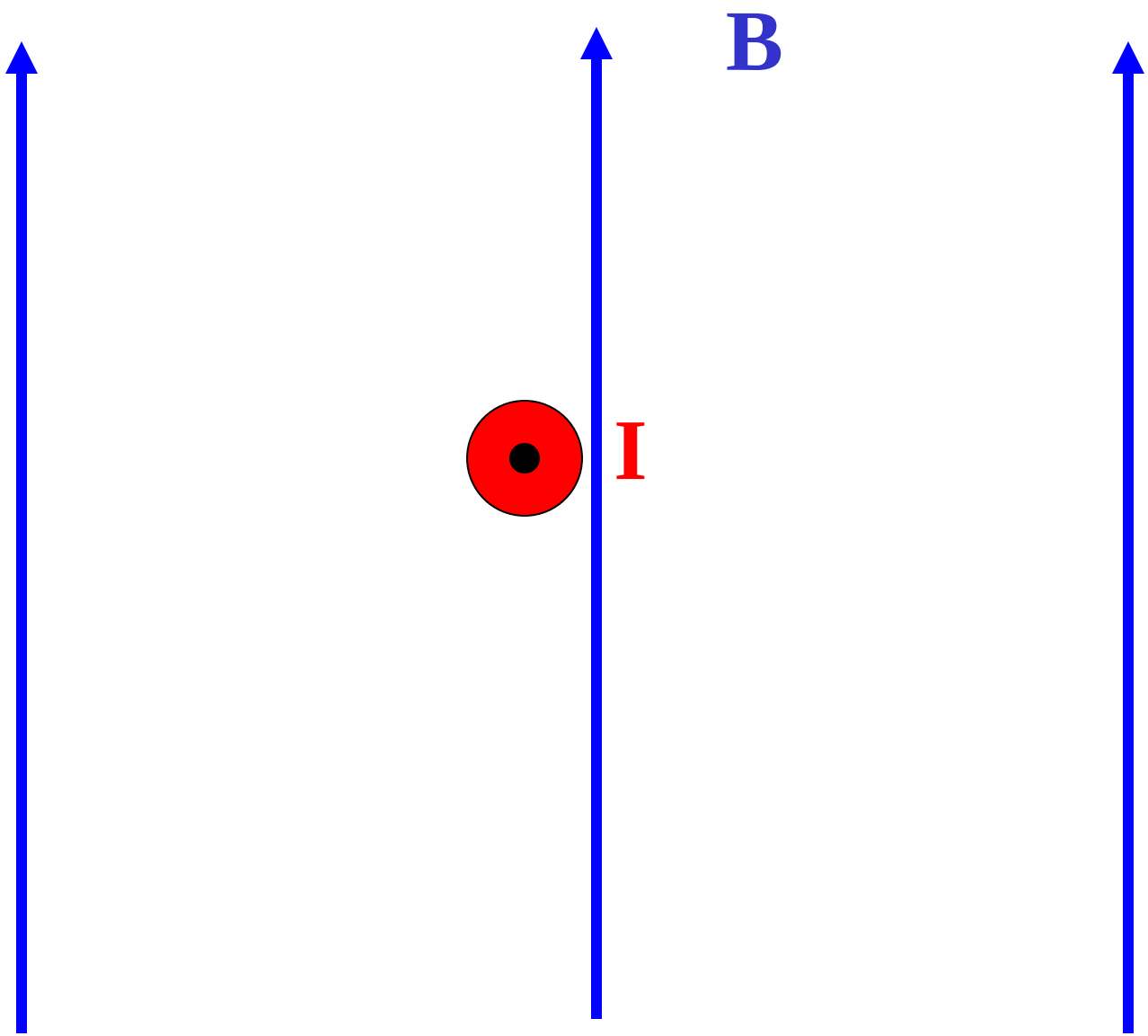


Negative Charge is moving

Use: F=qvB

Force is going: Coming out of the page!

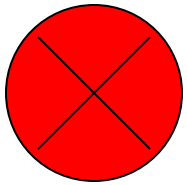



B
I

Use: F=BiL

Force is going:

$F = 1.5 \times 10^{-12}$ N



$V = 2.0 \times 10^{7}$ m/s

Electron

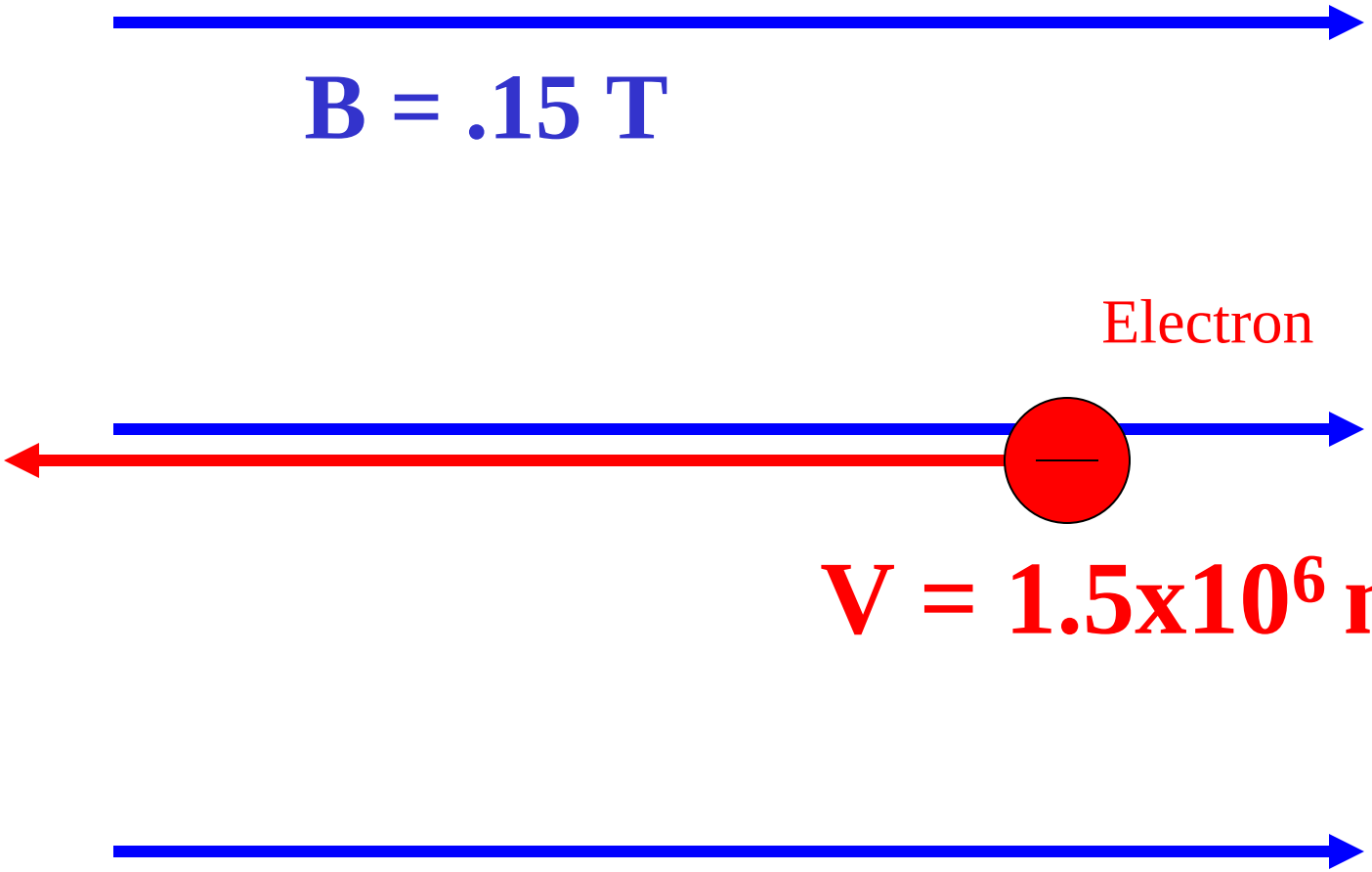
B = ?

Use: F=qvB

$1.5 \times 10^{-12} = (1.6 \times 10^{-19} C) \times (2.0 \times 10^{7}\ m/s) \times B$

B= .46875 T

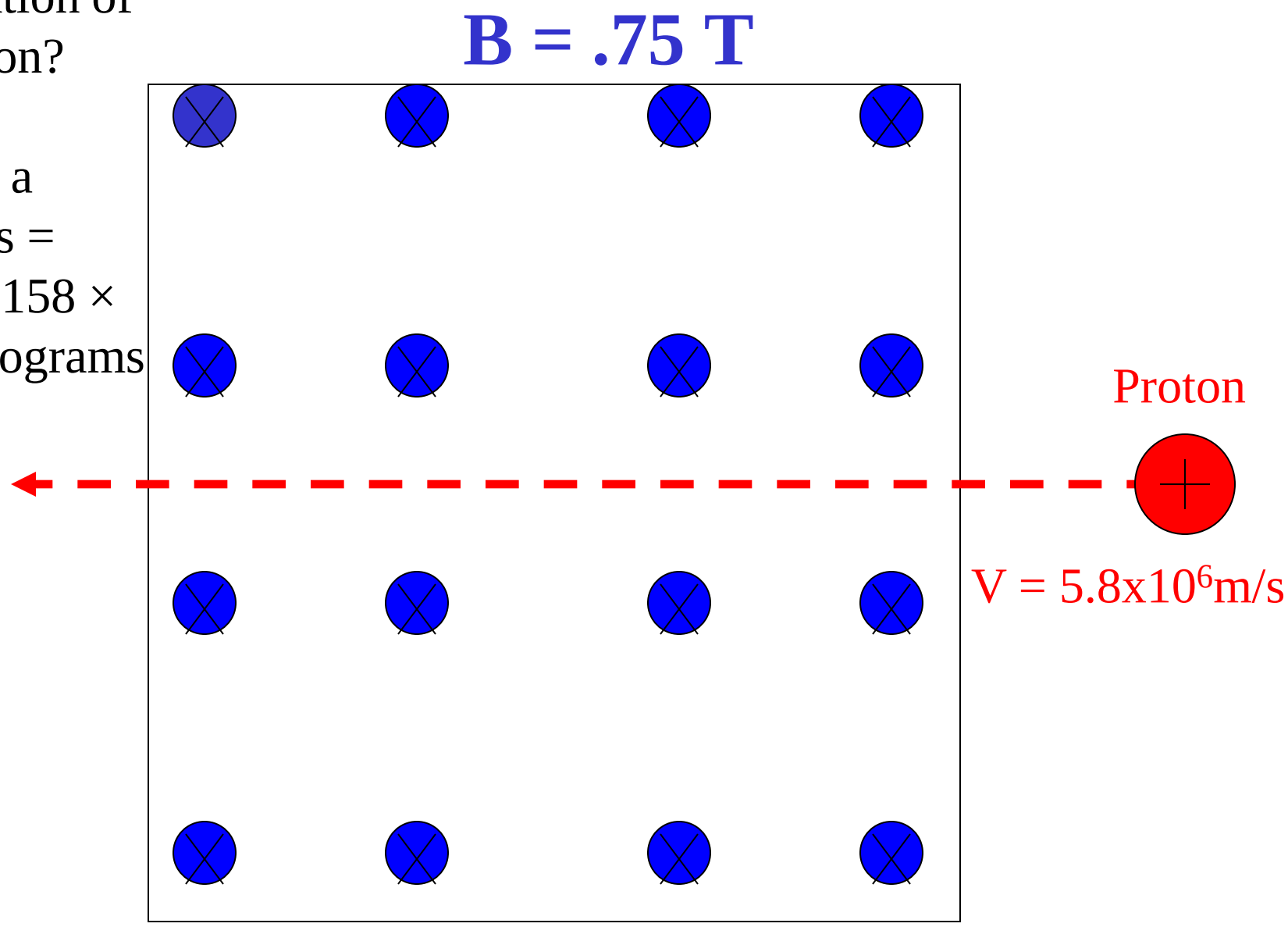
Force is going:


B = .15 T
Electron
V = 1.5x10^6 m/s
F = ?

You would break your hand trying this one so the charge will not feel any force

What is the acceleration of the proton?

Mass of a proton is = $1.67262158 \times 10^{-27}$ kilograms



Use: F=qvB

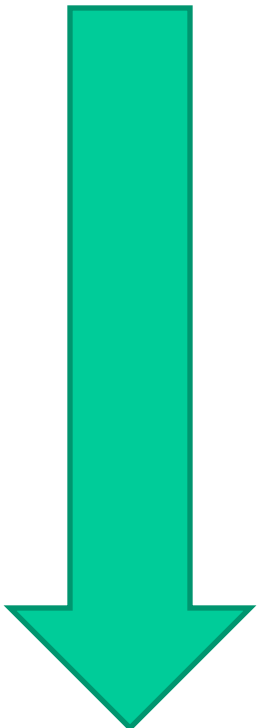
F=ma

ma=qvB

$(1.67262158 \times 10^{-27}\ kg)x\ a = (1.6 \times 10^{-19}C) \times (5.8x10^{6}m/s) \times .75\ T$

$a = 4.167 \times 10^{14}\ m/s/s$

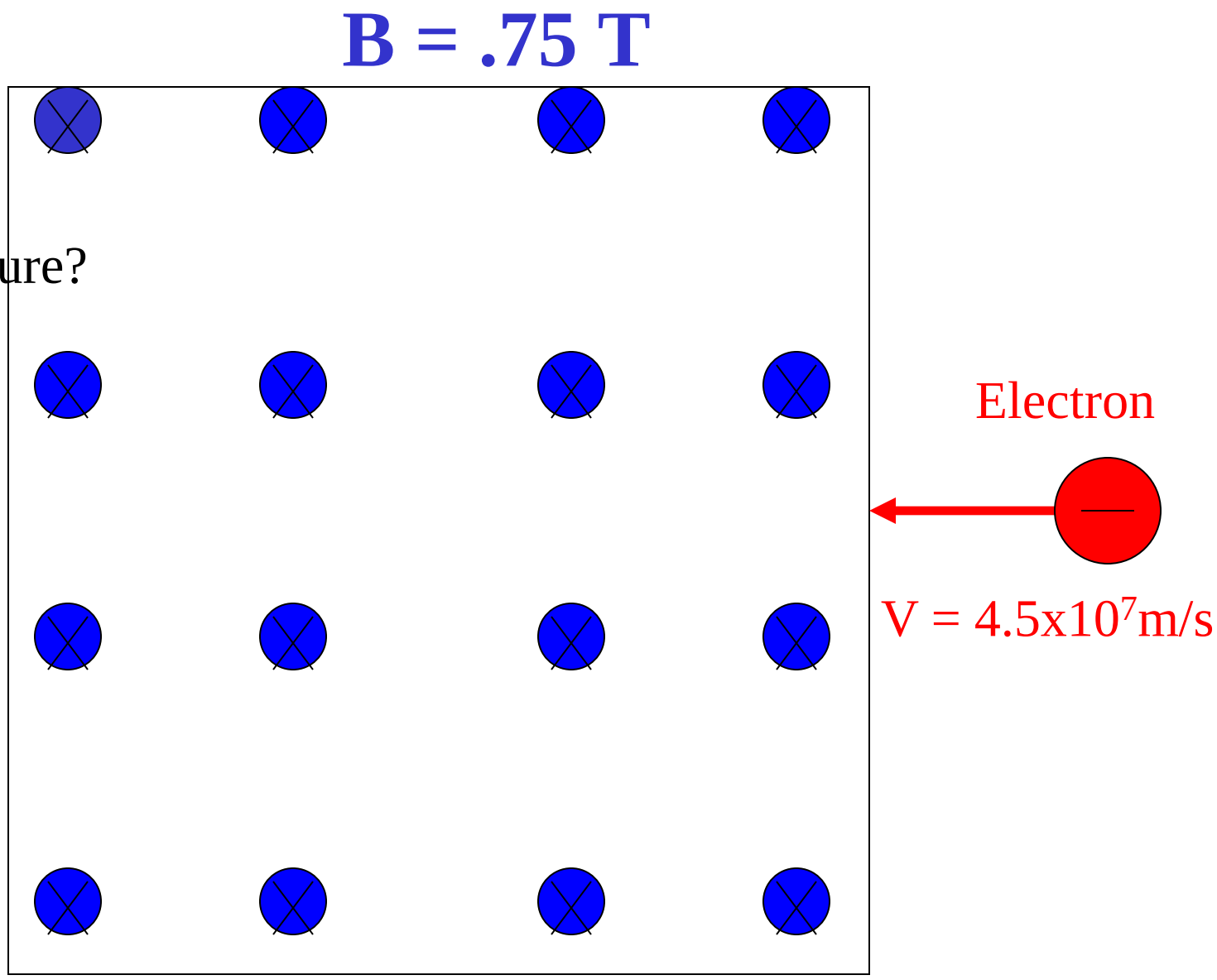
Force is going:



1. What is the acceleration of the electron?

2. What is the radius of curvature?

Hint: $a_c = v^2/r$



Use: $F=qvB$

$F=mv^2/r$

$mv^2/r=qvB$

$(9.11 \times 10^{-31}\ kg)(4.5x10^7 m/s)^2/r= (1.6 \times 10^{-19} C) \times (4.5x10^7 m/s) \times .75\ T$

$r = 3.4 \times 10^{-4}\ m$

Force is going: