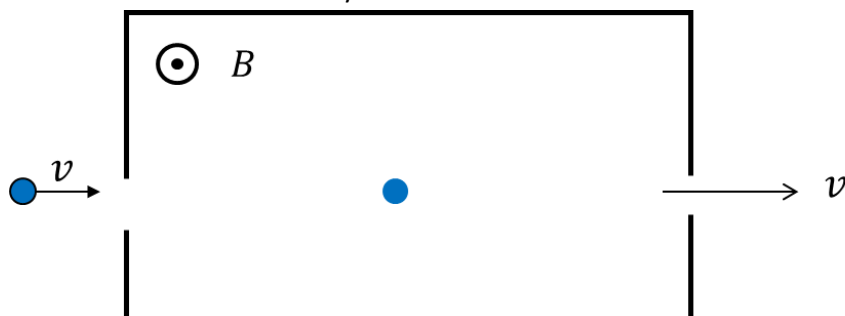Name: _____   DISC: _____   Score: _____ / 20

Instructions:
- Do your own work.
- Answer the questions below in the space provided.
- Make sure you show all your work and any equations that you use.
- Please place a box around your answers.
- Remember to give the correct units with all numerical answers

Q1	Q2	Q3	Q4
5	10	5	5

FORCE	$F = qvB \sin \theta$
	$F = qE$
	$F = IBL \sin \theta$
TORQUE	$\tau = FR \sin \theta$
	$\tau = IAB \sin \theta$
RADIUS OF CURVATURE	$R = \dfrac{mv}{qB}$

Useful Information for All Problems

1. Consider the velocity selector below where B is directed out of the page:

$\odot$ B

v →

$\longrightarrow$ v

CHARGE (q)	$-5\mu C$
MAGNETIC FIELD (B)	$0.05\ T$
VELOCITY	$2 \times 10^5\ m/s$

Information for Problem 1

Force (2 pt):

a. On the diagram draw the direction in which the _force from the magnetic field_ is pushing the particle when it moves into the box. Use the information in the table to help you.

Field (2 pt):

b. On the diagram, draw the direction of the _Electric Field_ required for the particle to travel straight through to the other side. Use the information in the table to help you.

Force (2 pt):

c. Using the information in the table what is the magnitude of the _force_ the particle experiences _from the magnetic_ field B?
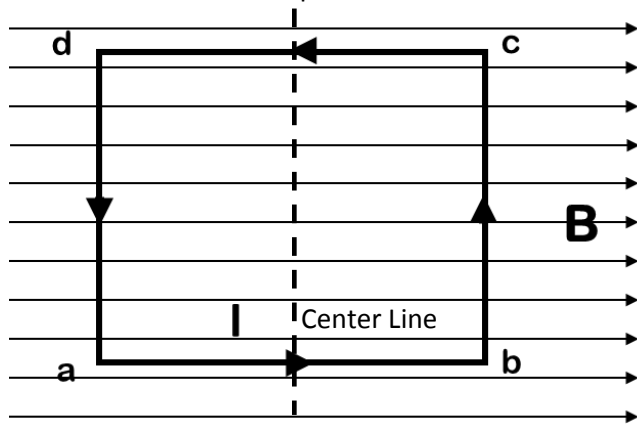
E-Field (2 pt):

d. What is the magnitude of the _electric field_ needed to keep the particle going in a straight line?

E-Field (2 pt):

e. If the electric field is removed, the particle travels a circular path of radius $R = 0.2\ m$. What is the particle mass?

2. Consider the current loop shown below:

I	$10\mu A$
B	$5\,mT$
L	$0.25\,m$
Useful Information	

Fill in the following table:

Table (10 pts):
1 pt for each force
1pt for each direction
2 pts for the torque

WIRE SEGMENT	FORCE	DIRECTION (choose one)	TORQUE ON LOOP
ab		Into page Out of page Neither	
bc		Into page Out of page Neither	
cd		Into page Out of page Neither	
da		Into page Out of page Neither	

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