

Magnetism: Electricity and Magnetism

⚠ This is a preview of the draft version of the quiz

Started: Nov 20 at 2:03pm

Quiz Instructions

Question 1

1 pts

An electron moving through a magnetic field B with a velocity v experiences a force F . If the strength of the magnetic field is doubled, what will happen to the force on the charge?

- the force is cut in half
- the force doesn't change
- the force decreases, but not by half
- the force doubles

Question 2

1 pts

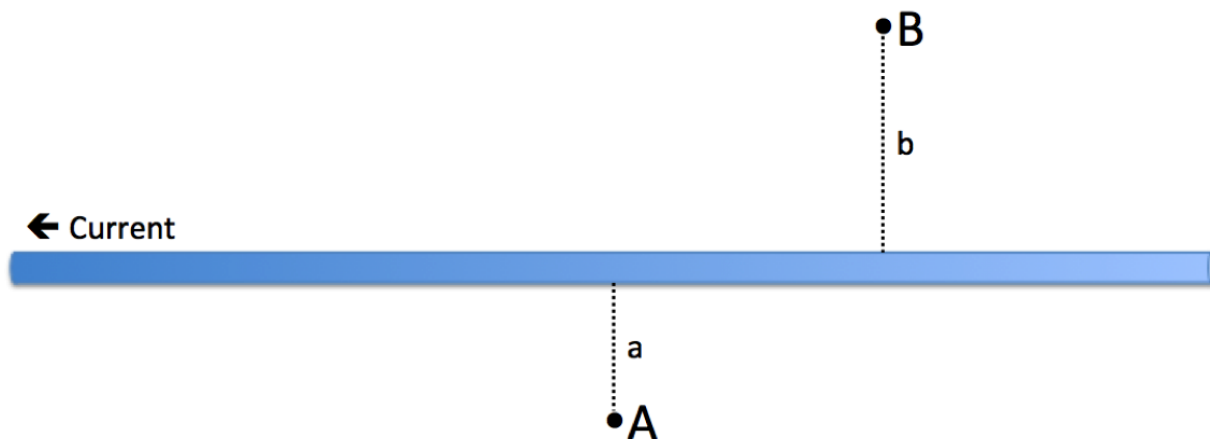
The right hand rule that describes force on a charge in a magnetic field uses the fingers to _____ and the palm to _____.

- point in the direction of the moving charge, point in the direction of the force
- point in the direction of the force, point in the direction of the moving charge
- point in the direction of the magnetic field, point in the direction of the force
- point in the direction of the force, point in the direction of the magnetic field

Question 3

1 pts

The particles in the diagram below if they are both moving to the right with a velocity of 0.2 m/s parallel to the wire. Consider the current in the wire to be 0.5 A. Charge A is an electron and located 0.2 m from the wire. Charge B is a proton and is located 0.3 m from the wire. Force on A in Newtons.

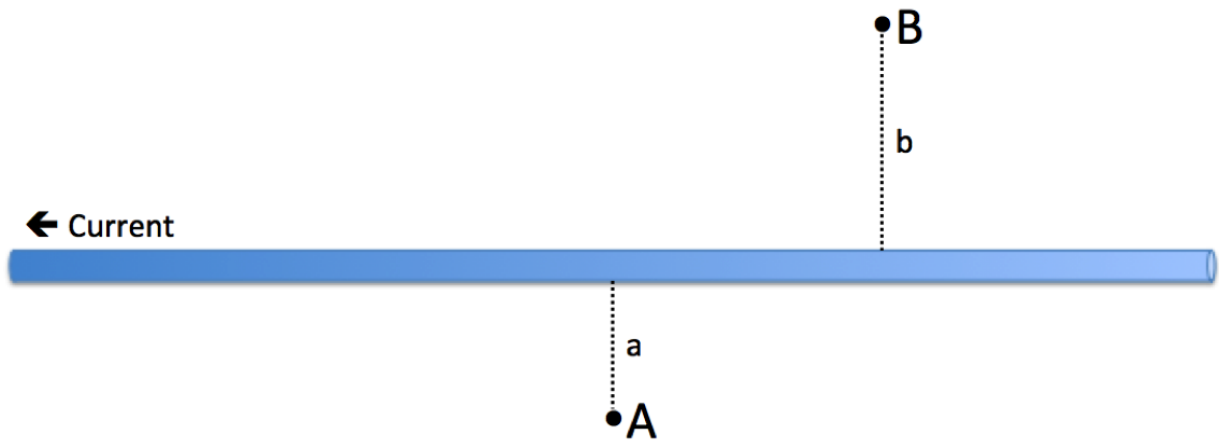


- 1.07×10^{-25}
- 1.07×10^{-26}
- 1.6×10^{-25}
- 1.6×10^{-26}

Question 4

1 pts

The particles in the diagram below if they are both moving to the right with a velocity of 0.2 m/s parallel to the wire. Consider the current in the wire to be 0.5 A. Charge A is an electron and located 0.2 m from the wire. Charge B is a proton and is located 0.3 m from the wire. Force on B in Newtons.



- 1.07×10^{-26}
- 1.6×10^{-25}
- 1.07×10^{-25}
- 1.07×10^{-27}

Question 5

1 pts

An electron moving at a constant speed v enters a magnetic field B that is perpendicular to the motion of the electron. The electron will do which of the following?

- slow down as it enters the magnetic field
- continue in a straight line path
- speed up as it enters the magnetic field
- follow a circular arc once it enters the magnetic field

Question 6

1 pts

A long, thin wire carries a current of 1.5 A. What is the strength of the magnetic field at a point 0.2 m from the wire?

- $1.0 \times 10^{-6} \text{ T}$
- $1.5 \times 10^{-6} \text{ T}$
- 7.5 T
- 12 T

Question 7**1 pts**

An electron is shot at a speed of $3.0 \times 10^4 \text{ m/s}$ through a magnetic field such that it enters the field perpendicular to the magnetic field. What magnitude of force does the electron experience if the magnetic field strength is 0.40 T ?

- $5.7 \times 10^{-15} \text{ N}$
- $3.8 \times 10^{-15} \text{ N}$
- $1.9 \times 10^{-15} \text{ N}$
- $2.4 \times 10^{-15} \text{ N}$

Question 8**1 pts**

Two long wires are fixed so that they run parallel to each other and cannot move from their positions. One wire carries a current of I_1 and the other carries a current of I_2 . The wires exert a force F on each other. If the current in both wires is doubled, what is the force between the wires?

- F
- $3F$
- $2F$
- $4F$

Question 9

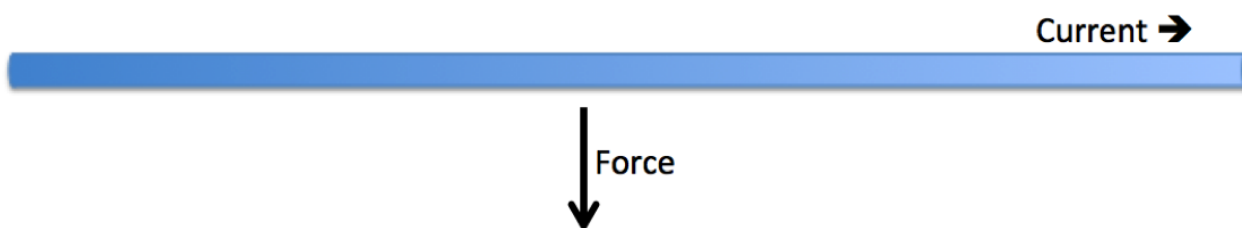
1 pts

An electron is moving with a speed of 3.00×10^6 m/s through a region with a 4.00 T magnetic field perpendicular to the plane of motion. What is the radius of the circular motion of the electron?

- 8.98×10^{-6} m
- 4.26×10^{-6} m
- 0.34 m
- 4.26 m

Question 10

1 pts

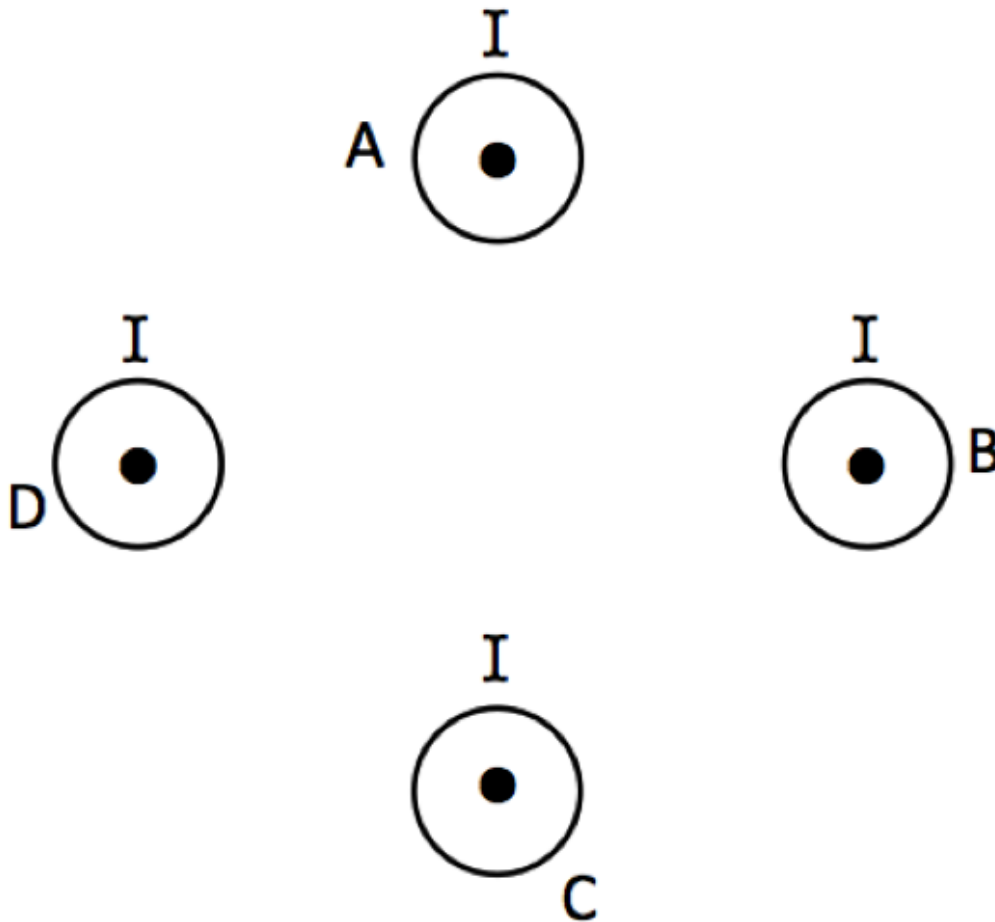


In the diagram above, there is a current-carrying wire that experiences a force due to a magnetic field. What is the direction of the magnetic field?

- to the left
- to the right
- out of the screen
- into the screen

Question 11

1 pts

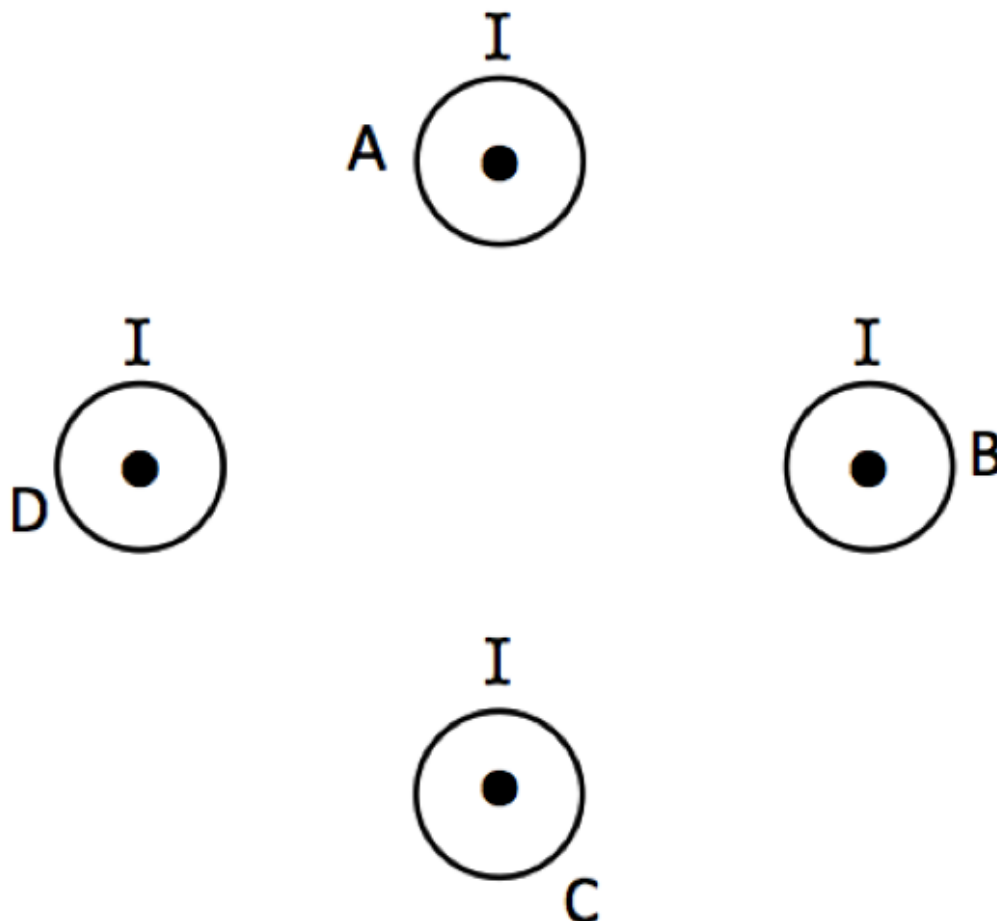


Consider 4 very long wires arranged perpendicular to each other and running out of the plane of the screen. All four wires carry the same amount of current running in the direction indicated. What is the direction of the force being exerted on Wire B by the other 3 wires?

- to the right
- toward the bottom of the screen
- to the left
- toward the top of the screen

Question 12

1 pts



What would happen to the direction of the force on Wire B if the current in all 4 wires is reversed so that it now runs into the screen?

- the force would also be reversed and is now to the right
- the force would still be to the left
- the force would be out of the screen
- the force would be into the screen

Quiz saved at 2:03pm

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