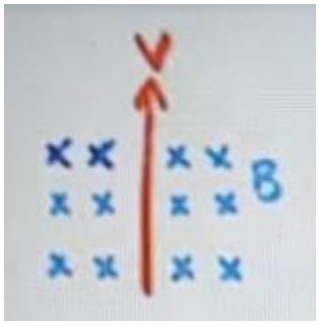
General Physics 2 | 4th Quarter
WW1: Magnetic Force, Magnetic Field, Right Hand Rule
March 3 2022

A. Problem Solving
   1. A current $15A$ flows west through a $75\ cm$ long wire. A magnetic field of $12\ Tesla$ is directed out of the page. What is the magnitude and direction of the magnetic force acting on a wire?

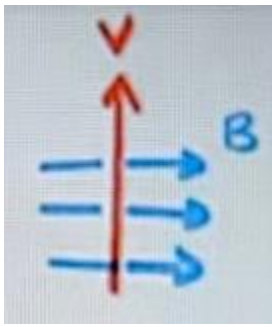
      $F_B = I \cdot L \cdot B \cdot sin\ \theta = 15\ A \cdot 0.75\ \text{m} \cdot 12\text{T} \cdot \sin 90°$
      $F_B = 135\ N = -135\ j$

   2. A proton moves south with a speed of $300000\frac{m}{s}$. A $20\ Tesla$ magnetic field is directed west. Determine the magnitude and direction of the magnetic force acting on a proton.

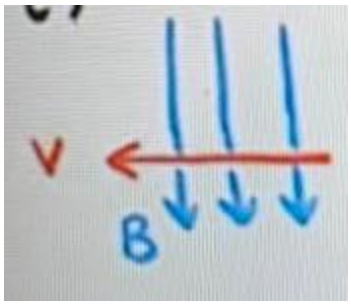
      $F_B = qvB \cdot sin\theta = 1.6 \times 10^{-19}\ \text{C} \cdot 300000\ \frac{m}{s} \cdot 20\ T \cdot sin\ 90$
      $F_B = 9.6 \times 10^{-13} N = -9.6 \times 10^{-13}\ k$

B. Right Hand Rule
   1.
      a. 

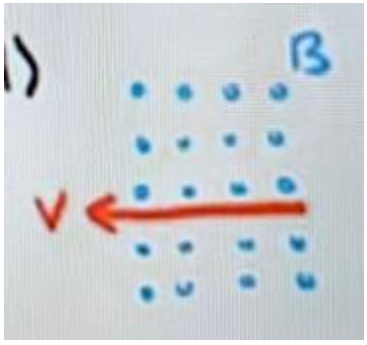
      $F_B = -i$

      b. 

      $F_B = +k$

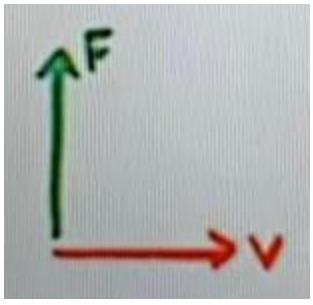
c. 

$F_B = -k$

d. 

$F_B = +j$

2.

a. 

$B_B = -k$

b. 

$B_B = +i$