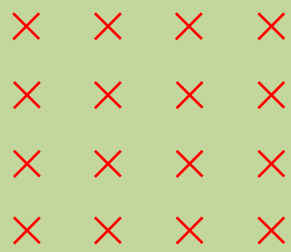
CONCEPT: CIRCULAR MOTION IN MAGNETIC FIELDS

● Remember**:** Magnetic Force on a moving charge is ALWAYS perpendicular **(**90º**)** to its velocity **(**RHR**).**

● Because of this, moving charges in a Magnetic Field experience CIRCULAR Motion**:**

→ $\sum \mathbf{F} = \mathbf{ma}$**:**



EXAMPLE**:** In an experiment, an electron enters a uniform 0.2 T magnetic field directed perpendicular to its motion. You measure the electron's deflection to have a circular arc of radius 0.3 cm. How fast must the electron be moving**?**

● If a charge moves PERPENDICULAR to the Magnetic Field → _____

- If a charge moves PARALLEL to the Magnetic Field → _____

- If a charge moves AT AN ANGLE to the Magnetic Field → _____

● Remember**:** Work done by ANY Force → $\mathbf{W_F = F\,\Delta x\cos\Theta}$

- Work done by Magnetic Force on a moving charge → $\mathbf{W_F =}$