How To Use the Right Hand Rule to Find the Direction of Magnetic Force

This Right Hand Rule relates magnetic force $\vec{F}_B$, magnetic field $\vec{B}$ and velocity $\vec{v}$ of a moving charge (equivalently, current, since current is just moving charge.) Essentially, the RHR gives the direction of the vector cross-product $\vec{F}_B = q\vec{v} \times \vec{B}$.

There are at least three ways to apply the Right Hand Rule. You can use whichever one you like best, or even make one up. But I suggest that you *pick one way and stick to it* to avoid getting confused.

1. **"Finger curling way"**: First draw (or imagine) the vectors. Align your fingers along vector $\vec{v}$ (the first one in the cross product). Arrange your hand in such a way that your fingers can curl naturally around to vector $\vec{B}$. Then your thumb points in the direction of the cross product (the magnetic force in our case).

   Here's a link I found where this curling action is animated!
   `http://www.perry-lake.k12.oh.us/phs/Classdept/sciencedept/physics/tutorials/e_m/mag1/rhr.htm`

2. **"Finger pointing way"**: Align your index finger along $\vec{v}$ and your third finger along $\vec{B}$. Then your thumb points in the direction of the cross-product $\vec{F}_B$.

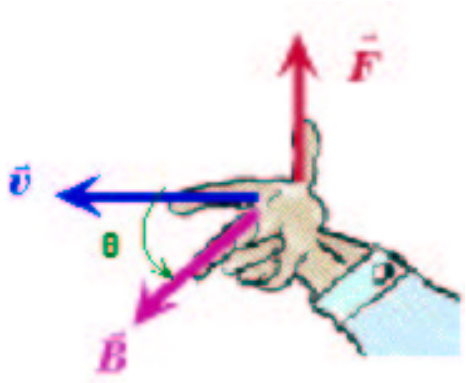

Figure 1: The "finger pointing way".

3. **"Palm way"**: Point your thumb in the direction of $\vec{v}$, your fingers in the direction of $\vec{B}$, and your palm points in the direction of the cross-product.

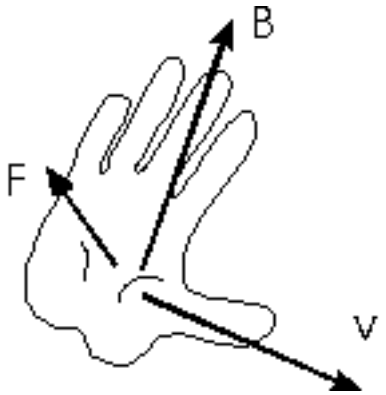

Figure 2: The "palm way".

Don't forget the RHR gives the direction for a *positive* particle, and that if q is negative the force is in the opposite direction!

Of course, you can use the RHR "backwards", if you know the force and you need to find one of the other quantities.