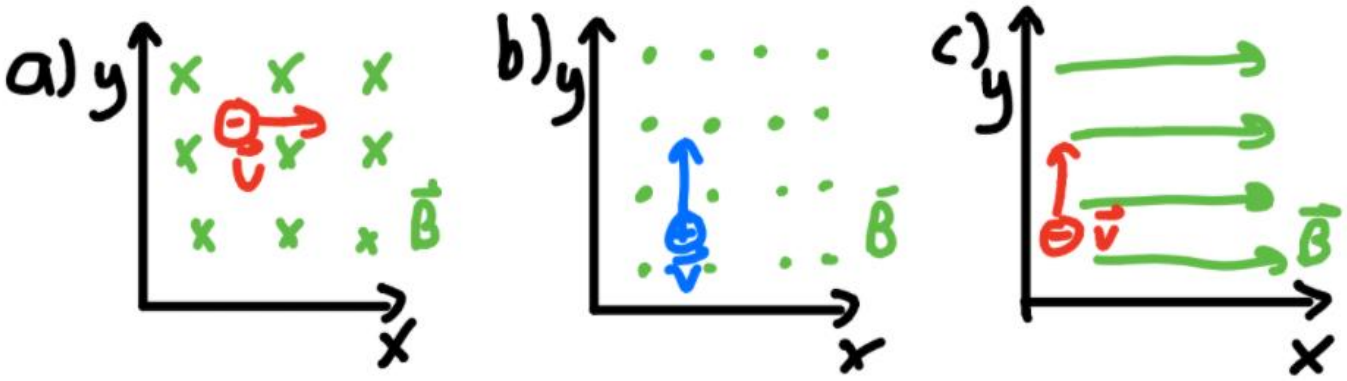
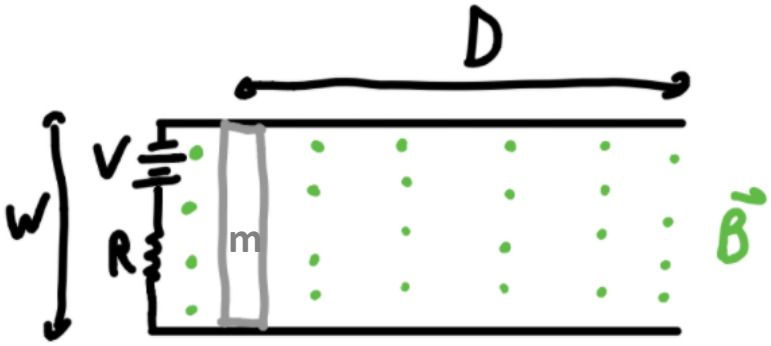
1. For each of the following, give the direction of the force on the particle.



2. A particle (mass = 2.0 mg, charge = –6.0 μC) moves in the positive direction along the *x* axis with a velocity of 3000.0 m/s. It enters a magnetic field of B = (2.0**i** + 3.0**j** + 4.0**k**) T. What is the magnitude of the acceleration of the particle?



3. A metal bar of mass $m = 0.8\ kg$ and length $w = 2.0\ m$ is place on a rail that is connected to a circuit as shown. The circuit has a battery of V = 20 V and a resistor of R = 40 Ω. All other wires have zero internal resistance. This entire strange thing is placed in a magnetic field that is directed out of this page, with a magnitude of $B = 3.0\ T$.
The bar is released at the point shown with an initial speed of $v_0 = 1.0\ m/s$. Find the speed of the bar after it travels a distance of D = 2.0 m.