

1. (a) We use Eq. 29-3: $F_B = |q|vB \sin \phi = (+3.2 \times 10^{-19} \text{ C})(550 \text{ m/s})(0.045 \text{ T})(\sin 52^\circ) = 6.2 \times 10^{-18} \text{ N}$.
(b) $a = F_B/m = (6.2 \times 10^{-18} \text{ N})/(6.6 \times 10^{-27} \text{ kg}) = 9.5 \times 10^8 \text{ m/s}^2$.
(c) Since it is perpendicular to \vec{v} , \vec{F}_B does not do any work on the particle. Thus from the work-energy theorem both the kinetic energy and the speed of the particle remain unchanged.