

A small sphere of mass  $1.0 \times 10^{-6}$  kg carries a total charge of  $2.0 \times 10^{-8}$  C. The sphere hangs from a silk thread between two large parallel conducting plates. The excess charge on each plate is equal in magnitude, but opposite in sign. If the thread makes an angle of  $30^\circ$  with the positive plate as shown, what is the magnitude of the charge density  $q/A$  on each plate?

