

Supplementary Problems (S-):

3. a) What is the magnitude of the gravitational force between the proton and the electron when they are separated by 1 nm? b) What is the electrical force between the proton and the electron when they are separated by 1 nm? c) Which force is the stronger? d) How many significant figures would have to be used before the weaker force would alter the net force from being equal to the stronger force? [EXAMPLE: if $F_1=1.000$ Nt and $F_2=0.01$ Nt, then $F_{\text{net}}=F_1$ to 2 significant figures (1.0), but the third significant figure would be changed (1.01 instead of 1.00).]

Answers to Supplementary Problems:

3. a) 1.01×10^{-49} Nt; b) 2.3×10^{-10} Nt; c) electrical; d) 39.