Electrostatics problems solutions

Using Coulomb’s Law F = K(q1)(q2) K = 9 x 109 (N·m2/C2)

 r2

1. F = (9 x 109)(2 x 10-6 C)2/(.7)2 = 0.073 N repulsion (same charge)
2. q = [4x 10-23/(0.03)2(9 x 109)]1/2 = 2.22 x 10-15 C
3. F = (9x 109)(3 x 10-11)2/(8 x 10-5)2 = 0.00127 N
4. F = (9 x 109)(2 x 10-7)2/(0.5)2 = 0.00144 N
5. F = (9 x 109)(9x 10-9)2/(0.07)2 = 0.00149 N
6. x = [(9 x 109)(4 x 10-14)2/(2 x 10-12)]1/2 = 0.00268 m
7. x = [(9 x 109)(3 x 10-5)2/(8.1 x 10-2)]1/2 = 1235 N
8. q = (8.64 x 10-8)(2000 m)2/(9x 109)(0.085) = 4.52 x 10-10 C
9. 2 x 10-6N = (9x 109)(q)(3q)/(3.39)2 🡪 (2 x 10-6)((3.39)2/(9 x 109) = 3q2

[2.55 x 10-15/3]1/2 = q = 2.9 x 10-8 C

1. q = [1.0(2.4 x 1022)2/(9 x 109)]1/2 = 2.52 x 1017 C
2. F = (9 x 109)(2 x 10-9)(2.8 x 10-9)/(1034)2 = 4.7 x 10-14 N
3. F = (9 x 109)(1 x 105)2/(7 x 1011)2 = 1.84 x 10-4 N