

Chapter 2

The Electric Force

- 2.1 (a) 9.8×10^{-3} N, (b) 7.4×10^{-14} N, (c) The force of gravity due to the earth, (d) 8.25×10^{-8} m, (e) About 825 atomic radii, which is really small.
- 2.2 There are several ways, the simplest being to take two balloons, each of which were rubbed by the hair
- 2.3 (a) neutral, (b) should be between 1.4×10^{27} and 4.2×10^{27} , depending on your mass (which should be between 45 kg and 130 kg, for most people), (c) the same as (b), since you are neutral
- 2.4 (a) amount of charge, (b) the electric force
- 2.5 (a) 3.2×10^8 C, (b) 2.9×10^9 C, (c) removing 90% of the protons produces more of a charge imbalance.
- 2.6 (a) 9×10^9 N, repulsive, (b) 2.2×10^9 N, (c) zero, (d) 4.2×10^{11} N toward the right
- 2.7 (a) 4881 N, (b) 2.65×10^{-32} N, (c) Electric force, they will fly away
- 2.8 The nuclear force
- 2.9 That they reside on the surface, not distributed uniformly within it.

- 2.10 (a) The left sphere, (b) free electrons moving away from that region
- 2.11 It would also be around the surface but more concentrated at the points
- 2.12 (a) Zero, (b) Zero
- 2.13 Yes, toward the left (toward the sphere)
- 2.14 An insulator
- 2.15 (a) Bring a negatively charged object toward it while it is grounded,
(b) Part [b]