10 Electric charge, force, and field – Part 1 — Answers

Answers

Work through these after you have tried the questions yourself.

2.1 (a) a push (repulsion). \ (b) a pull (attraction).

2.2 $F = \dfrac{kq_1q_2}{r^2} = \dfrac{9.0 \times 10^9 \times (4.0 \times 10^{-6})(1.0 \times 10^{-6})}{(0.20)^2} = \dfrac{0.036}{0.04} = 0.90$ N.

2.3 conductor: any metal (e.g. copper); insulator: plastic (or rubber, glass).

2.4 $F = qE = 2.0 \times 10^{-6} \times 500 = 1.0 \times 10^{-3}$ N.

2.5 the distance doubles, so the force becomes **four times smaller** (inverse-square law).