Worksheet: Properties of Electric Charge

Q1: To start a car engine, the car's battery moves 3.75×10^{21} electrons through the starter motor. How many coulombs of charge are moved?

Question Video

A 1 060 C

B 601 C

C 771 C

D 1 600 C

E 167 C

Q2: Static electric charges are commonly measured in microcoulombsμ C and in nanocoulombs (nC).

- How many electrons are required to produce a charge of -2.00 nC?

A 1.25×10^{10} electrons

B 1.19×10^{10} electrons

C 8.68×10^{9} electrons

D 9.81×10^{9} electrons

E 1.08×10^{10} electrons

How many electrons must be removed from an initially neutral object for the object to have a net charge of $+0.500\ \mu C$?

A 3.12×10^{12} electrons

B 2.11×10^{13} electrons

C 4.82×10^{12} electrons

D 8.28×10^{12} electrons

E 1.34×10^{13} electrons

Q3: If 2.90×10^{20} electrons move through a pocket calculator during a full day's operation, how many coulombs of charge move through it?

A 96.2 C

B 40.1 C

C 46.4 C

D 12.6 C

E 46.3 C

Q4: In an electric storm, a lightning bolt transfers electrons between some clouds and the ground. The total charge of these electrons is 65.0 C. How many electrons are transferred?

Question Video

A 23.6×10^{20}

B 2.36×10^{20}

C 2.21×10^{20}

D 4.06×10^{20}

E 9.06×10^{19}

Q5: A copper penny with a mass of 4.8 g is given a net positive charge of 4.0×10^{-9} C. To determine the change in the number of electrons in the penny during the charging process, use a value of 63.5 g/mol for the atomic mass of copper and a value of 29 for the atomic number of copper.

How many more protons than electrons are there in the atoms of the penny?

A 2.5×10^{7}

B 1.3×10^{10}

C 2.3×10^{10}

D 36×10^{10}

E 2.5×10^{10}

What is the ratio of the total number of electrons in the penny before the charging process to the number of electrons removed from the penny during the charging process?

A 1.0×10^{13}

B 3.6×10^{20}

C 36×10^{12}

D 15×10^{12}

E 5.3×10^{13}

Q6: An amoeba contains 5.5×10^{15} protons and has a net positive charge of 0.400 pC. What is the ratio of protons to electrons in the amoeba?

A 12×10^{15}

B 89×10^{13}

C 36×10^{14}

D 87×10^{15}

E 2.2×10^{9}