

electric charge - practice problems

1. Two plastic strips are rubbed with the same wool cloth during a dry winter day, and both strips gain electrons. Would the strips attract, repel, or have no electric force on each other?

2. A neutral metal knob loses 9 electrons to a dry cloth after being rubbed. What is the knob's final charge?

3. A balloon gains 16 electrons from a sweater. What is the balloon's charge?

4. A tiny dust grain floating near a screen has charge -0.64 aC . Since 1 aC is $1 \times 10^{-18} \text{ C}$, how many extra electrons does the dust grain have?

5. A tiny oil droplet in a charge experiment has charge $+4.80 \times 10^{-18} \text{ C}$. The droplet is too small to see clearly without a microscope. How many electrons are missing from the droplet?

6. A small bead starts neutral and is rubbed for 5.0 s. Its mass is 0.20 g. What is its final charge?

7. Which of these measured charges are possible for an isolated object? $+4.8 \times 10^{-19} \text{ C}$, $-5.0 \times 10^{-19} \text{ C}$, $-8.0 \times 10^{-19} \text{ C}$, $+2.4 \times 10^{-19} \text{ C}$

8. A neutral sweater loses 6 electrons to a neutral balloon. What is the final charge on each object?

9. A sensor measures $+0.0032 \text{ fC}$ on a tiny droplet. Since 1 fC is $1 \times 10^{-15} \text{ C}$, how many electrons are missing?

10. Which material lets charge move most easily: copper wire, glass, salt water, or dry air?

11. A small bead starts with charge $+2.40 \times 10^{-18} \text{ C}$. After rubbing, its charge is $-8.00 \times 10^{-19} \text{ C}$. How many electrons did the bead gain or lose?