

# Static Electricity Review Sheet

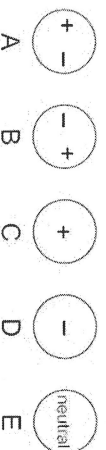
## Word Bank

positive	negative	neutral	resistance	friction
conduction	polarization	neutron	conductor(s)	insulator(s)
lightning rod	attract	repel	proton(s)	electron(s)
ohm(s)	Faraday cage	grounding	opposite	the same

- Electricity is due to the movement of this particle: Electron.
- If an object has the same number of protons and electrons, it is electrically Neutral.
- If you charge something by conduction, both objects get charges that are The Same.
- If you charge two objects by friction, they get charges that are Opposite.
- A neutral object becomes Positively charged if electrons are removed from it.
- Unlike (different) charges Attract one another.
- Rubber, wood, and plastic are examples of Insulators.
- The process of charging a neutral object by touching a charge to it is called charging by Conduction.
- Similar charges will Repel one another.
- Electrical resistance is measured in units of Ohms ( $\Omega$ ).
- This particle is found in the nucleus of atoms and has a positive charge: Proton.
- When two objects are rubbed together, this is charging by Friction.
- Removal of charge from an object by connecting it to water or the Earth is called Grounding.
- How easily charge flows through an object is its Resistance.
- An object designed to attract lightning strikes is called a Lightning Rod.
- Bringing a charged object near (but not touching) a neutral will charge the neutral object by Polarization.
- If you are inside a hollow conductor shell, you are safe from electricity, the shell is functioning as a(n) Faraday Cage.
- A special class of materials with very low resistance are known as Conductors.
- Adding electrons to an object will give it a Negative charge.
- This particle is in the nucleus of atoms but is electrically neutral: Neutrons.

## Methods Of Charging

Pick which situation is the result of each charging method below.  
All of the spheres started as neutral.



- A sphere is charged by conduction by a positive rod. C
- A sphere is charged by conduction by a negative rod. D
- A positively charged rod is brought near the left side of the sphere. B
- A positively charged rod is brought near the right side of the sphere. A
- A sphere has been grounded. E
- A sphere is charged by friction by rabbit fur, and the fur gets a positive charge. D
- A sphere is charged by friction by a balloon, and the balloon gets a negative charge. C

## Conducting Spheres

- What charges result when these two spheres are brought together?
  - +6C, +12C +9C
  - 4C, -6C -5C
  - +4C, 0C +2C
  - +2C, -10C +6C

$$Q = ne \quad e = 1.6 \times 10^{-19}$$

- 1.5E19 electrons have been added to an object. What is the charge on it?

$$Q = (1.5 \times 10^{19}) (1.6 \times 10^{-19}) = \boxed{-2.4 \text{ C}}$$

- An object has a charge of +8C. How many electrons have been taken out?

$$8 = n (1.6 \times 10^{-19}) \quad \boxed{5 \times 10^{19} \text{ e}^-}$$

## Multi-Object Charge Interactions

- Object D is positive. Object E repels Object D. Object F attracts Object E. Object G repels Object F. What charge(s) are possible for Objects D, E, F, and G?

