

Part A: BasicsSubatomic Particles

Particle	Charge	Location	Able to move?
Electron	Negative	Outside of nucleus	YES!
Proton	Positive	Nucleus	NO!
Neutron	Neutral (no charge)	Nucleus	NO!

Charge Rules

Opposite Charges ATTRACT
Like Charges REPEL

For **A.1-A.6**, say whether the charges attract or repel:

A.1 positive and positive

A.2. positive and negative

A.3. negative and negative

A.4. proton and proton

A.5. proton and electron

A.6. a pile of electrons (do they attract or repel each other?)

A.7. Why do electrons usually stay near the nucleus of an atom? [but, are able to leave if a better option comes along.]

A.8 Answer using the words “protons, electrons, and/or neutrons”

An object has a positive charge if there are more _____ than

A.9 Answer using the words “protons, electrons, and/or neutrons”

An object has a negative charge if there are more _____ than

A.10 How can something acquire a negative charge? (What needs to happen?)

A.11 How can something acquire a positive charge? (Remember that some of the subatomic particles *cannot move!*)

Insulators and Conductors

Conductor
A material that allows electrons to move easily. Made from metal.
Insulator
A material that does not allow electrons to move easily. Most everything not made of metal is an insulator.

For **A.8 – A.14** say whether the material is a conductor or an insulator.

A.12 Copper wires

A.13 Rabbit fur

A.14 Plastic

A.15 A metal doorknob

A.16 Rubber gloves

A.17 A metal bookshelf

A.18 Hair