

C: Recognize Insulators and Conductors

Level 1

Prerequisites: None

Points to: Know Circuit Vocabulary (Short Answer)

Objectives:

- Classify materials into insulators and conductors.
- Know what makes an insulator an insulator and a conductor a conductor.

Part E: How a Wire Works

Conductor <i>A conductor</i> is any material that allows electrical current to flow. Conductors are usually made of <i>metal</i> .	Examples: Copper wire Steel Iron
Insulator <i>An insulator</i> is any device that does not allow electrical current to flow. Conductors are usually not made of metal.	Examples: Rubber Piece of paper Cloth Glass

For each item **E.1 – E.8**, say if it is a conductor or an insulator:

E.1 a rubber glove

E.2 a paper clip

E.3 a stainless steel fork

E.4 a sweater

E.5 a copper penny

E.6 a glass window

E.7 something that allows electricity to flow

E.8 something that stops electricity from flowing

E.9 Explain the difference between an insulator and a conductor.

Metal Atoms

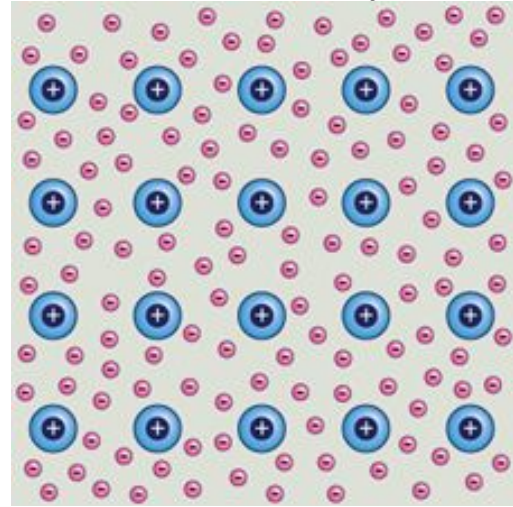
Not all atoms look exactly like the picture on the first page of this packet. Metal atoms are arranged differently.

Inside a metal atom, the nuclei *share* the electrons outside the atom. Electrons don't belong to an individual nucleus.

Inside of an insulator, each atom has its own electrons.

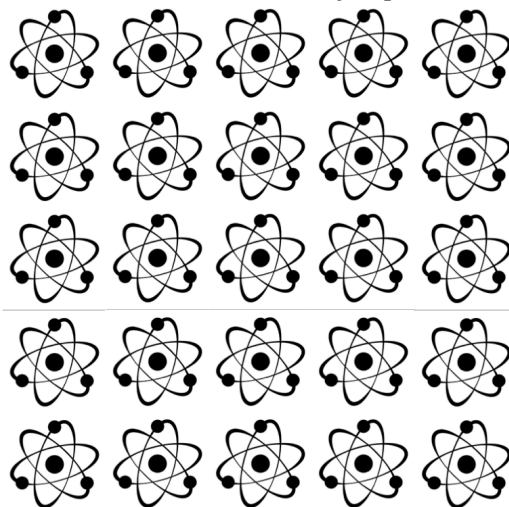
Conductor Atoms

The electrons are *shared* by the nuclei.



Insulator Atoms

Each electron is *owned* by a particular nuclei.



True or false:

E.10 In a conductor, electrons are shared by all atoms.

E.11 In an insulator, each nucleus holds on to individual electrons.

E.12 It is easy for electrons to move from one nucleus to another in a conductor.

E.13 In a conductor, each nucleus holds on to its individual electrons.

Answers:

E.1 insulator

E.2 conductor

E.3 conductor

E.4 insulator

E.5 conductor

E.6 insulator

E.7 insulator

E.8 conductor

E.9 current can flow through an insulator but not a conductor.

E.10 True

E.11 True

E.12 True

E.13 False