

# Electron Flow

**Electricity All Around Us**  
**Activity**  
**Grade Level: 5-8**



## Main Objectives

This activity uses a diagrammatic approach to teaching about electron movement in conductors. Learners will use diagrams to describe electron movement and direction. Learners will work cooperatively to make observations about negative and positive charges using balloons.

## Learning Outcomes

By the end of this activity, learners will:

- describe the different parts of the atom
- understand how electrons move through wire
- predict which materials (metal or plastic) have atoms that move easily or not
- describe and define the concept of voltage.

## Length of Activity

1.5 hours

## Materials List

Internet-enabled device

Electron Flow Learner Worksheet

Balloon

Sweater or something on which to rub the balloon

String or wool

## Background

Atoms are the basic building blocks of all matter. The nucleus of an atom consists of a cluster of protons and neutrons. Each proton carries a positive charge. Negatively charged electrons occupy the space around

the nucleus. Normally, the number of electrons surrounding the nucleus is the same as the number of protons in the nucleus. Under some conditions, an atom can gain or lose an electron. If an atom happens to gain an electron, it becomes negatively charged. When an atom loses an electron, it becomes positively charged. Some atoms – like those in metals – have electrons that can be easily bumped from atom to atom.

## Activity

### Step 1:

- a. Hand out the worksheet and instructions to each learner (or group).
- b. Provide a brief introduction about the flow of electrons and review the information provided in the first background section.

### Step 2: The experiment

Have learners do the balloon experiment and record their results on the worksheet.

- a. Blow up your balloon and tie the end.
- b. Tie a piece of string or wool to the end of the balloon.
- c. Rub the balloon vigorously back and forth on your sweater or hair.
- d. Turn to your neighbour who has another negatively charged balloon and try holding both balloons by the string ends, letting the balloons fall together.
- e. Try this again with balloons that have no charge.

- f. Place your balloon against the wall. What happens? When the balloon is on the wall positive charges will attract the balloon, which is negatively charged. Remember that opposite charges attract.
- g. Record your observations on the worksheet.
- h. Think about how and why you think static electric shocks occur?

### Step 3:

- a. Ask learners to discuss their results and why they got these results.
- b. Review the information provided in the second background section on electron flow.

### Step 4:

- a. Have learners complete the two illustrations showing flow of electrons and electrical force.
- b. As learners to complete the question portion of the worksheet.

### Extension Activity

- Have learners illustrate the flow of electrons by drawing a diagram, painting a picture, or creating a multimedia demonstration.

### Comprehension

- Ask learners to describe the different parts of the atom.
- Ask learners to describe in words or using the chalk board how electrons move through wire.
- Ask learners how they predict which materials (metal or plastic) have atoms that move easily or not (conductors or insulators)
- Ask learners to describe and define the concept of voltage.