

SECTION 6: ELECTRICITY PRODUCES MAGNETIC FORCE

LAB

INTRODUCTION

Electricity produces a magnetic force. The special properties of magnets can be used to make electricity. Moving magnetic fields can pull and push electrons. Some metals, like copper have electrons that are loosely held. They can be pushed from their shells by moving magnets. Magnets and wire are used together in electric generators.

A battery produces electricity using two different metals in a chemical solution. A chemical reaction between the metals and the chemicals frees more electrons in one metal than in the other. One end of the battery is attached to one of the metals; the other end is attached to the other metal. The end that frees more electrons develops a positive charge and the other end develops a negative charge. If a wire is attached from one end of the battery to the other, electrons flow through the wire to balance the electrical charge.

ASSESSMENT ANCHORS ADDRESSED

- S4.A.2.1 Apply skills necessary to conduct an experiment or design a solution to solve a problem.
- S4.A.2.2 Identify appropriate instruments for a specific task and describe the information the instrument can provide.
- S4.C.1.1 Describe observable physical properties of matter.
- S4.C.3.1 Identify and describe different types of force and motion, or the effect of the interaction between force and motion.

PURPOSE

Students will experiment with batteries, wire, and a compass to determine if electricity has a magnetic field.

MATERIALS

For Each Pair of Students

| | |
|----------------|---|
| battery | battery holder |
| wire coil | compass |
| ferrite magnet | 1 3 oz. paper cup (with 2 vertical slits) |
| | Worksheet, <i>Electricity Produces Magnetic Force</i> |

*Teacher provides items marked with **