

## Week 36 – SCIENCE NOTE PAGE

### Electromagnets



#### Review

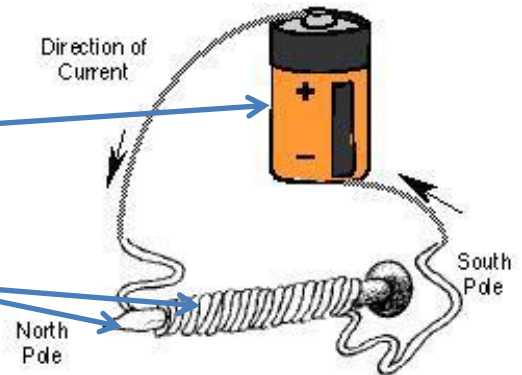
- **Permanent magnets** are magnetic all the time!

#### Temporary Magnets

- **Electromagnets** are **temporary** magnets made using electric current, usually running around a metal core.
  - **Temporary magnets** can be turned on and off.

#### Parts of an Electromagnet

- **LABEL the parts** in the diagram
  - Electricity source
  - Metallic core
  - Coiled wire



#### How Are Electromagnets Made Stronger?

- Increase the electric current
  - HOW? **Add batteries (in series), use higher-voltage batteries, or thicker wire**
- Increase the size of the metallic core
  - HOW? **Use thicker core**
- Increase the number of coils in the wire
  - HOW? **Wrap wire more times (more tightly)**

#### Measuring Current: Galvanometers

- An instrument called a **galvanometer** uses a movable permanent magnet to detect the **temporary** magnetic field around an electric current.

#### Making Electric Currents

- A **moving electric** charge creates a **magnetic** field, ...
  - But, a magnetic field can cause an electric charge to move too.
  - As long as the magnet is stationary, nothing happens. However, if **the magnet moves, its changing field at the wire affects charged particles—electrons—in the wire**. The **electrons** begin to flow as an electric current.

