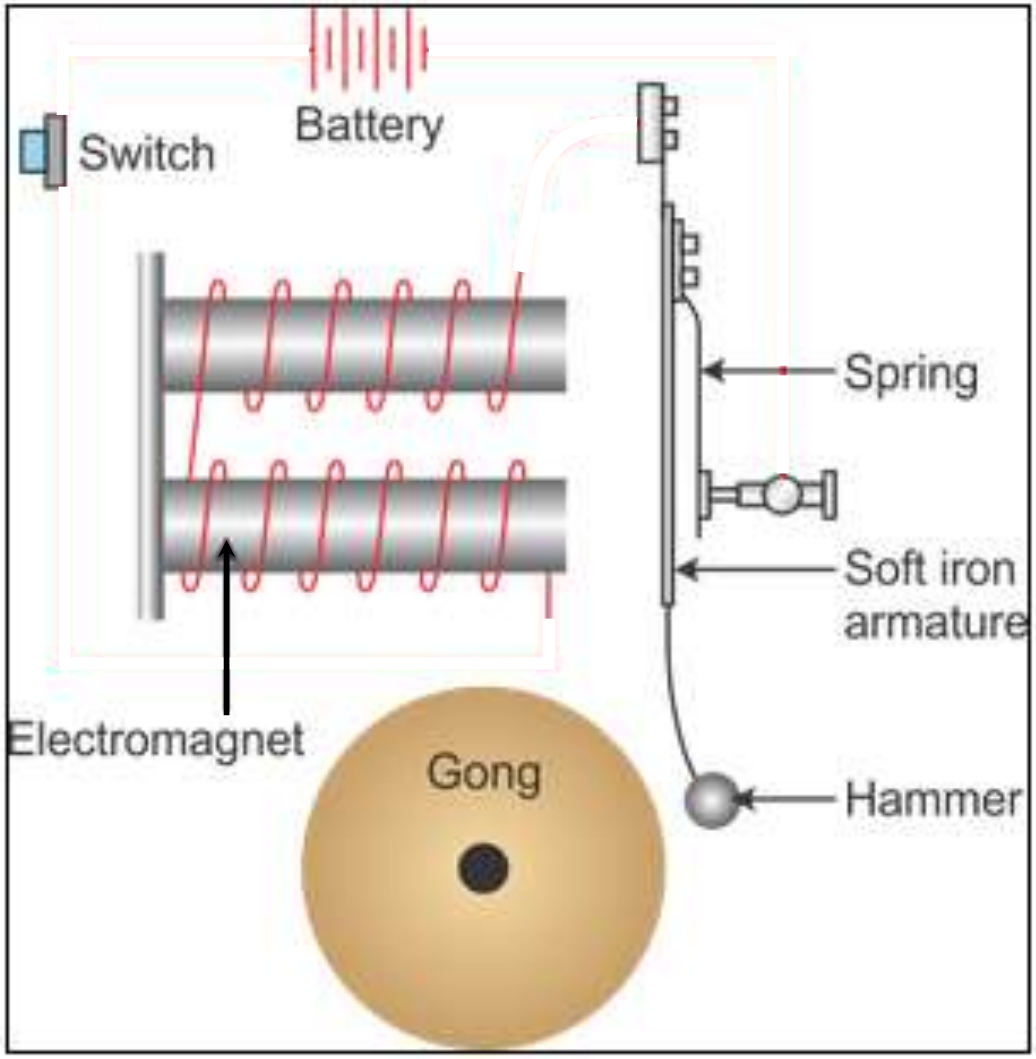
Electricity

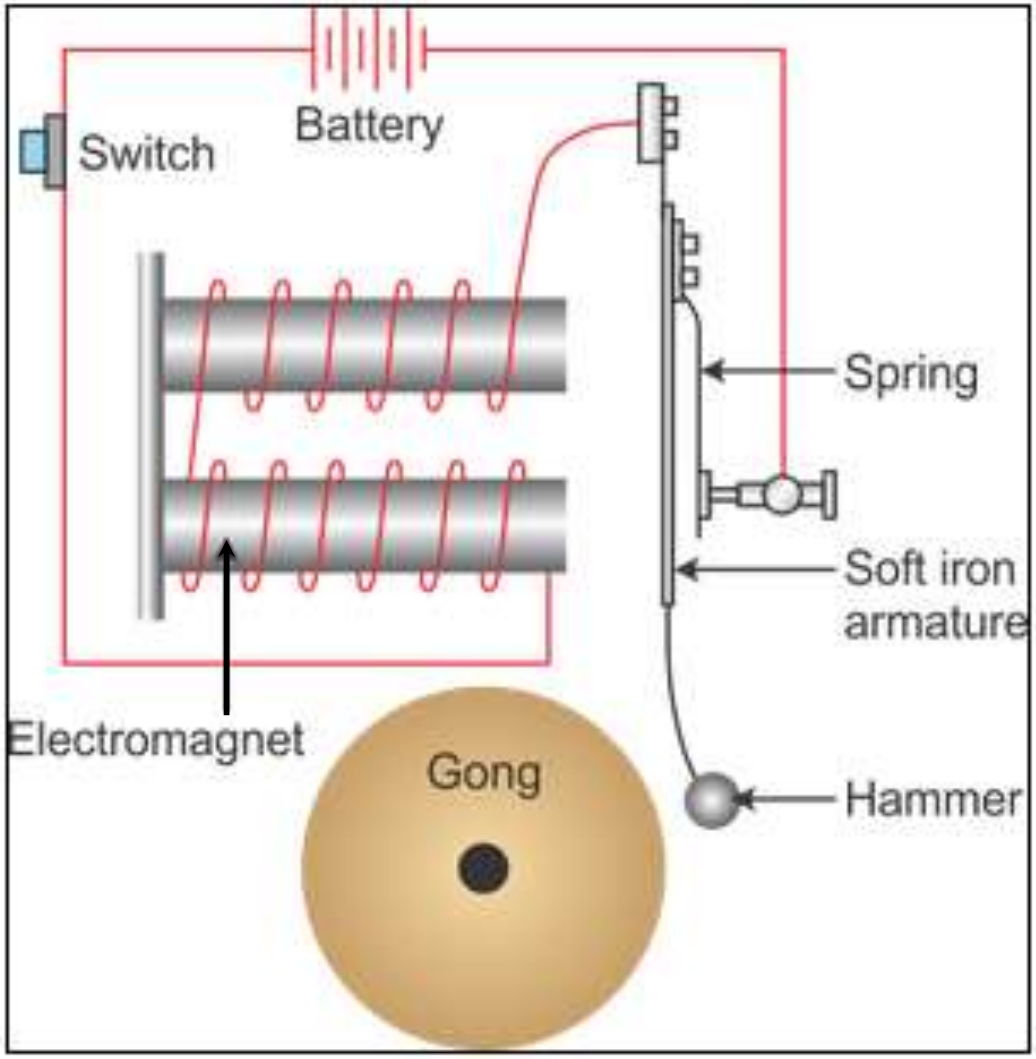
Merit Badge

Week 3

Requirement 5
Battery and Electric Bell



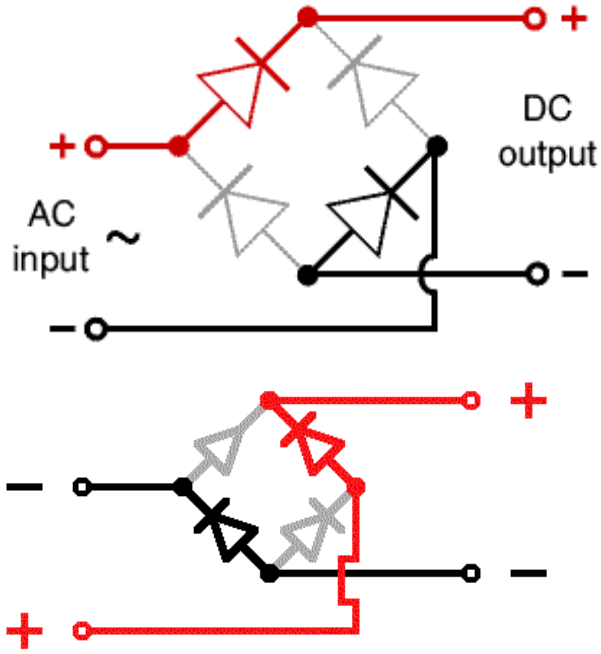
Battery and Electric Bell



Requirement 10

Rectifier

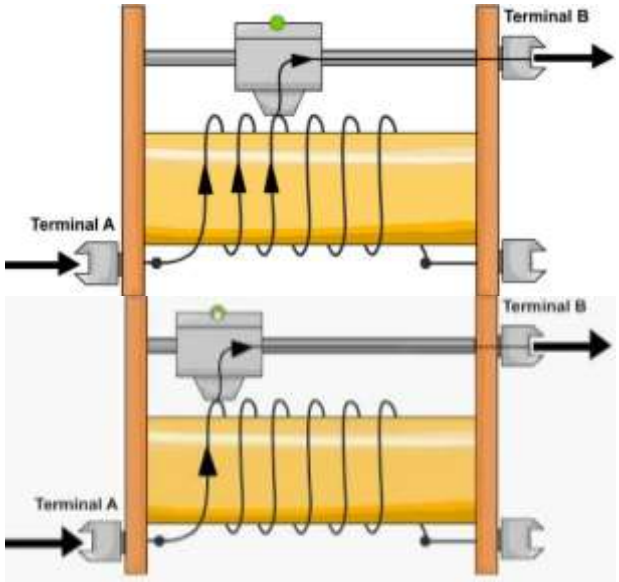
- An electrical device which converts an alternating current into a direct one by allowing a current to flow through it in one direction only.



Requirement 10

Rheostat

- A resistor built so that the current traveling through the circuit can be adjusted at will. Volume controls and dimmer switches are examples.



Stations

1. **<u>Electrical Safety & Checklist – 35 min</u>**
2. Hands On Electrical Wiring – 35 min

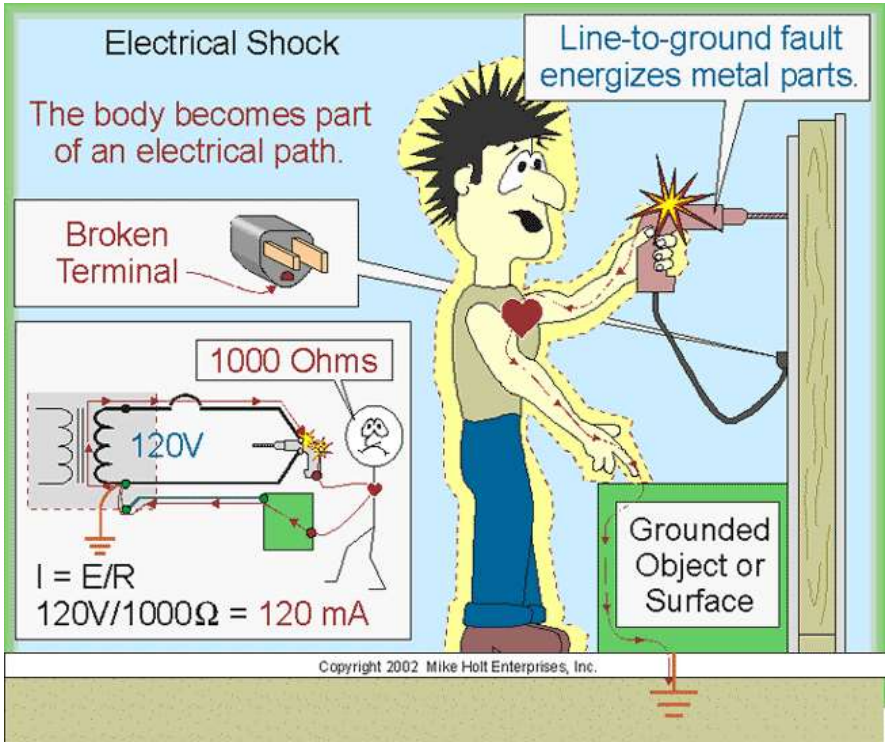
Electrical Safety

- General reason for safety checklist is to prevent shock and fires – Each year:
  - An average of 51,000 electrical home structure fires occur each year, killing ~ 500, injuring >1,400 people, and causing more than $1.3 billion in property damage
  - Average of 300 people die from electrocution and thousands more non-fatally shocked

Requirement 1

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:

   Show how to rescue a person touching a live wire in the home.



Requirement 1

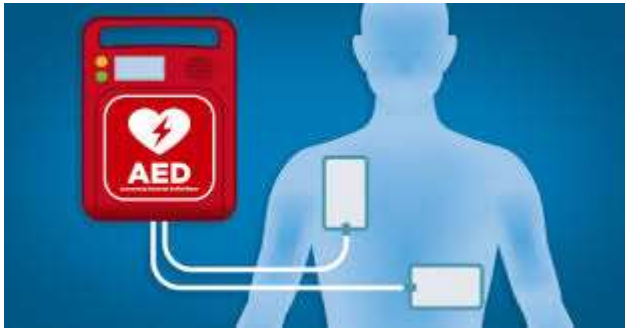
- If someone is in contact with a live circuit, do not touch the person. You can become “stuck” to him and part of the electrical field.
- If the service panel is nearby, quickly shut off the house current by throwing the main circuit breaker.
- If it is a long way to the service panel, or you do not know where the panel is, use a non-conducting object such as a wooden chair, wooden broom handle, rug, or rubber doormat to separate the person from the live wire.
- Never use a metal or wet object.

Requirement 1

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:

Show how to render first aid to a person who is unconscious from electrical shock.

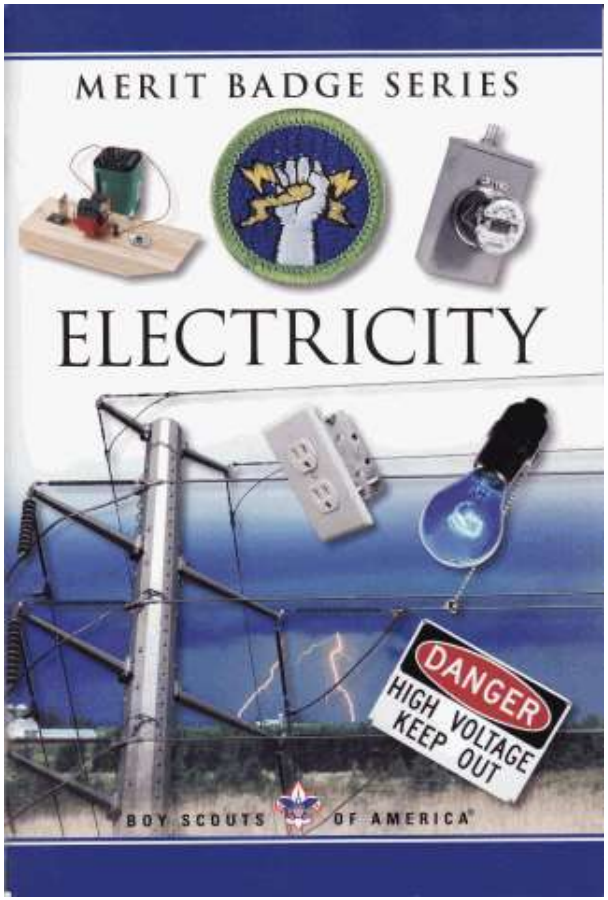
Electric Shock - Unconscious



First aid for a person unconscious from electrical shock

- Call 911 or send someone to call
- Send some to obtain a defibrillator
- The order of treatment in a life-threatening emergency is A-B-C-D: **A**irway, **B**reathing, **C**irculation, and **D**efibrillation.
  - Open airway.
  - Check for breathing.
  - If no breathing, begin CPR.
  - When defibrillator arrives, turn the AED on and follow the voice prompts.
  - Keep CPR going while AED is being set up.

A-B-C-D



- A is for airway
- B is for breathing
- C is for circulation
- D is for defibrillation
- Read about it in the merit badge book
- Take a CPR course

Requirement 1

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:
   c. Show how to treat an electrical burn.

And these are the least severe electrical burns on the web

Electrical Burn

- Don't touch the injured person if he or she is still in contact with the electrical current.
- Electric shock causes burns inside the body, so immediately seek medical attention for the victim.
- Do not apply ice, butter, ointments, medication, bandages, or cotton dressings to electrical burns.
- Do not touch burns, break blisters, or remove burned clothing.
- Try to prevent the injured person from becoming chilled.

Treating Electrical Burns… Don't

- Don't touch the burn; you may cause infection
- Don't put anything on a burn - don't apply ice, butter, ointments, medication, bandages, or cotton dressings to electrical burns; you can make it worse
- Don't move the person unless he or she is in danger of further injury
- Try to prevent the injured person from becoming chilled
- Let the medical professionals handle the movement and treatment

Requirement 1

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:

Explain what to do in an electrical storm

Electrical Storm

- If caught in the outdoors when a storm approaches, move away from open water, mountaintops, the crests of ridges, and the bases of tall or solitary trees.
- A dense forest located in a depression offers the most protection.
- In a tent, stay away from metal tent poles.
- If an electrical storm catches your group in the open, spread out so people are at least 100 feet from one another.
- Become the smallest target you can by squatting on the balls of your feet, cover your ears with your hands, and get your head close to your knees.

Requirement 1

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:

Explain what to do in the event of an electrical fire

Requirement 1

Electrical fires are different from other fires.

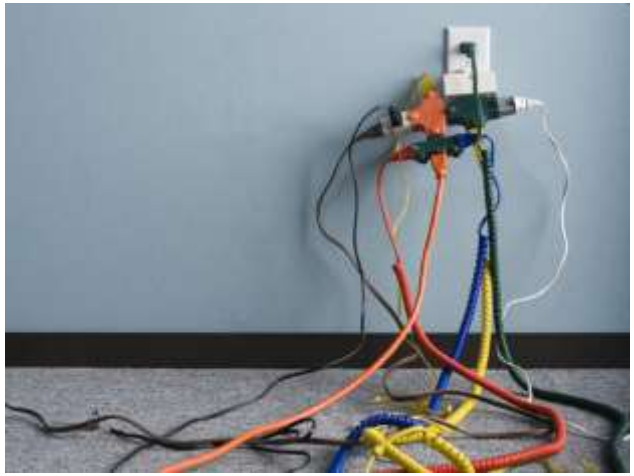
- Never use water on an electrical fire.
- Turn off the main power to the house.
- Use only extinguisher rated for electrical fires (Class C).
- If the fire cannot be safely put out, leave the house immediately and take everyone with you.
- Call 911 from the nearest phone once you and your family are safely away from your home.

Requirement 2

HOMEWORK!!

Complete an electrical home safety inspection of your home.

Home checklist is at the back of your worksheet



Check for Overloaded Circuits

- Check for high wattage appliances
  - Toasters
  - Microwaves
  - Coffee Makers
  - Large TV sets
  - Electric heaters
- Make sure there aren't too many appliances on a single circuit

Safe or Not Safe?

Safe or Not Safe?

Not safe

- Not in the wall
- No cover
- Could hurt anyone who touches sides

Safe or Not Safe?

Safe or Not Safe?

Safe

- Near the sink
- GFCI outlet is safe near a sink

Safe or Not Safe?

Safe or Not Safe?

Not safe

- Plug not firmly inserted

Suspicious

- Is outlet loose inside?
- Are those scorch marks on the outlet?

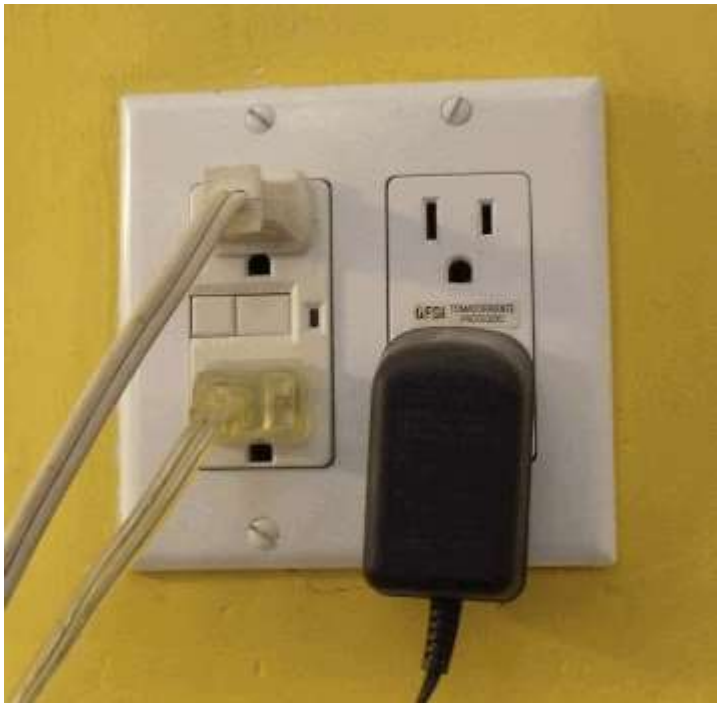
Safe or Not Safe?

Safe or Not Safe?

Not Safe

- Too many wires
- Might be overloaded
- Wires on floor where people step on them

Safe or Not Safe?



Safe or Not Safe?

Safe

- GFCI outlet on left
- Right outlet is connected to GFCI outlet
- Right outlet is marked “GFCI”
- Both outlets are safe near water and outside