



ELECTRICITY

7 Nov 2007

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:
 - a. Show how to rescue a person touching a live wire in the home.
 - b. Show how to render first aid to a person who is unconscious from electrical shock.
 - c. Show how to treat an electrical burn.
 - d. Explain what to do in an electrical storm.
 - e. Explain what to do in the event of an electrical fire.
- 2. Complete an electrical home safety inspection of your home, using the checklist found in this pamphlet or one approved by your counselor. Discuss what you find with your counselor.**
3. Make a simple electromagnet and use it to show magnetic attraction and repulsion.
4. Explain the difference between direct current and alternating current.
5. Make a simple drawing to show how a battery and an electric bell work.
6. Explain why a fuse blows or a circuit breaker trips. Tell how to find a blown fuse or tripped circuit breaker in your home. Show how to safely reset the circuit breaker.
7. Explain what overloading an electric circuit means. Tell what you have done to make sure your home circuits are not overloaded.
- 8. On a floor plan of a room in your home, make a wiring diagram of the lights, switches, and outlets. Show which fuse or circuit breaker protects each one.**
9. Do the following:
 - a. Read an electric meter and, using your family's electric bill, determine the energy cost from the meter readings.**
 - b. Discuss with your counselor five ways in which your family can conserve energy.
10. Explain the following electrical terms: volt, ampere, watt, ohm, resistance, potential difference, rectifier, rheostat, conductor, ground, circuit, and short circuit.
11. Do any TWO of the following:
 - a. Connect a buzzer, bell, or light with a battery. Have a key or switch in the line.
 - b. Make and run a simple electric motor (not from a kit).
 - c. Build a simple rheostat. Show that it works.
 - d. Build a single-pole, double-throw switch. Show that it works.
 - e. Hook a model electric train layout to a house circuit. Tell how it works.



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Items 2, 8, and 9 require pre-work.

2 - electrical inspection of a home is one or two hours of pre-work.

8 - pre-work showing the lights, switches and outlets of the Scout's home. A hand-sketch of the rooms with clear markings for switches, lights, and outlets is perfectly acceptable. Here are the symbols:



9 - read the home electric meter 1 Nov
read the home electric meter 1 Dec
bring a copy of a recent electric bill

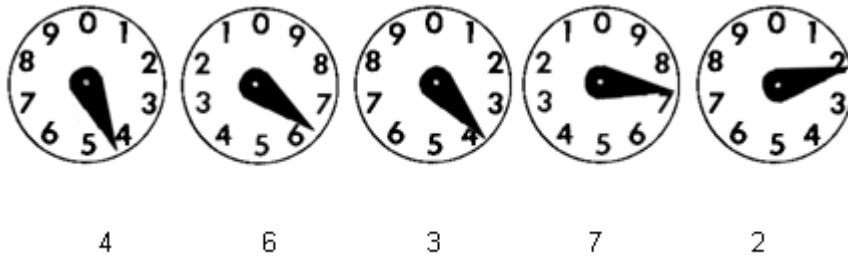
Electric meter reading help:

Each of the five dials represents one digit of the present reading.

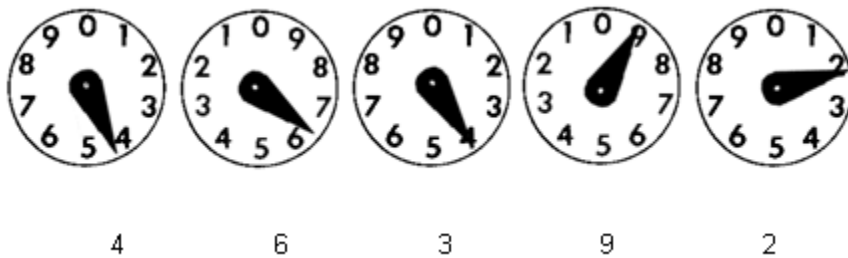
Dial move **both** clockwise and counter clockwise.

If the hand of a dial is between numbers, **always take the smaller number.**

For example:



Sometimes it is difficult to tell if a hand has passed a number or not. Don't panic! Look at the dial to the right. If it passed zero, then the hand is pointing to the correct number. If the dial to the right has not passed zero, then use the next smaller number. Sounds confusing? Here is another example:





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Yes, it looks like there is a mistake! Well, the third digit is a three because the digit to the right is at the number 9, and has not passed zero. If the second dial from the right was between the zero and the one, then the third digit would have been a four.

Well, if you are totally unsure as to whether you can read the meter accurately, use this form and simply record **exactly** where the meter hands are pointing.

NOV 1 reading



DEC 1 reading



Except for the pre-work, all Merit Badge requirements will be completed at the December outing.

All of the requirements are fun, hands-on activities with the exception of #11, which will also be covered at the outing.

A list of items for use to enhance the learning experiences for #10 will be available. Anything you wish to tear apart is also welcome, TVs, stereos, electric fans and appliances, and anything **WITHOUT COMPRESSORS WITH FREON**.

Adequate supervision will be available to maintain a safe and exciting learning environment.

Yours in Scouting,

Nick Pepe C.J. Pepe