
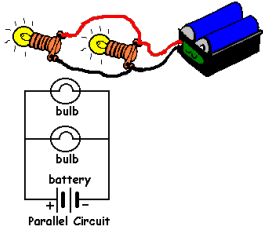


Electric Power

Electric Power

Objectives

Define and calculate the electrical power in a circuit.

Power

measures rate which work is done

$$P = \frac{W}{t}$$

Unit: J/s or Watt (W)

$$60 \frac{J}{s} = 60W$$

Electric Power

rate at which electric energy is "used"

$$P = I \cdot V \rightarrow \frac{q}{t} \cdot \frac{E}{q} = \frac{E}{t} \text{ or } \frac{W}{t} = P$$

depends on: energy per charge (Volts)

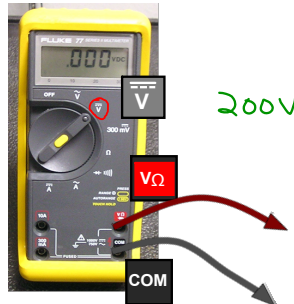
Ex. charge per time (current)

$$30W = .25A \cdot 120V$$

Electric Power Ratings

Appliance	Power (Watts)
Air Conditioner (5,000 BTU)	500
Ceiling Fan (With 3 60 Watt Bulbs)	230
Clock (Electric)	3
Clothes Dryer (Electric)	5000
Clothes Washer	1200
Coffee Maker	900
Computer with Monitor	270
Dishwasher (With Dry Cycle)	1000
DVD	60
Exercise Treadmill (3 horsepower)	3000
Fish Tank (10 Gallon)	80
Freezer (Upright/Chest - 17 cu ft)	600
Hair Dryer (Hand Held)	1500
Heating System (Furnace)	500
Hot Tub	1500
Lighting (3 rooms)	480
Microwave Oven	1500
Oven	5000
Range (Small Surface Unit)	1200
Refrigerator/Freezer (14 cu ft)	653
Stereo	75
Sump Pump	500
Television (43 inch)	200
VCR	45
Video Game	200
Water Heater	4500

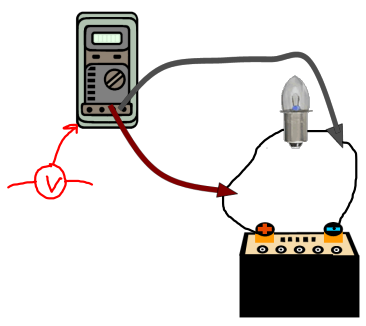
Voltmeter



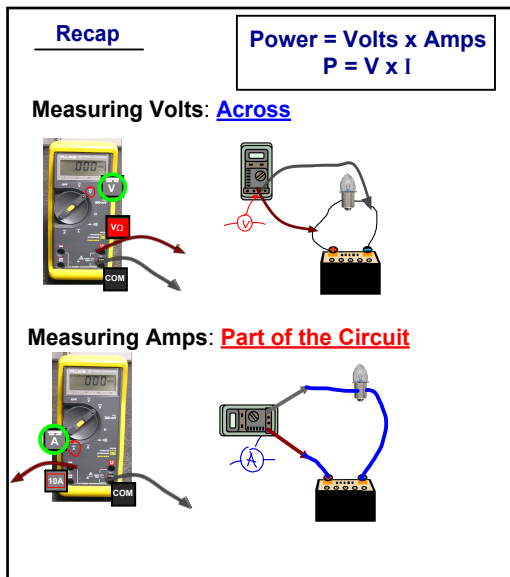
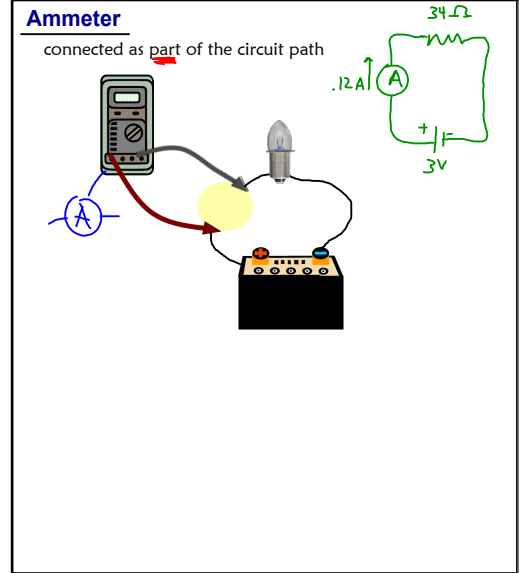
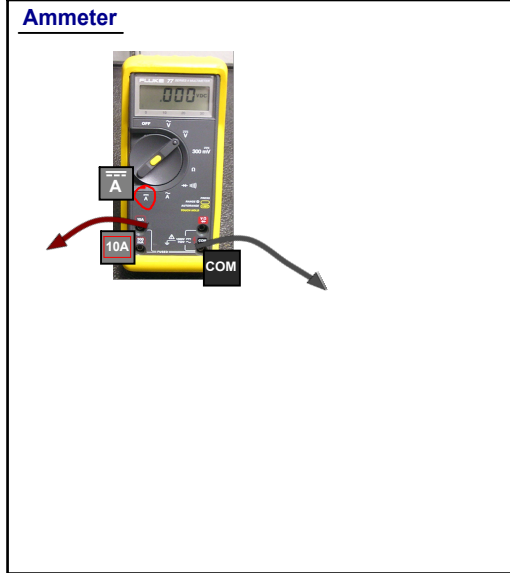
Voltmeter

meas. energy difference between 2 points

across!



Electric Power



Assignments . . .

- Lab: Watt's Your Power?
- Chapter 15 Homework #5 - 8