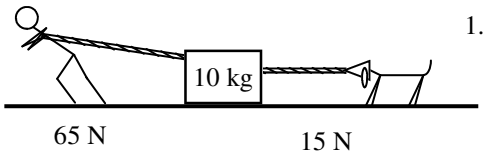
A-day: Due Thurs., Apr 16
B-day: Due Fri., Apr 17

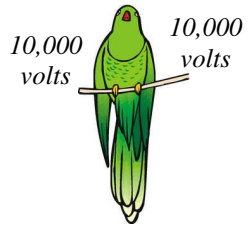
2009 Electricity 6

Name: _____



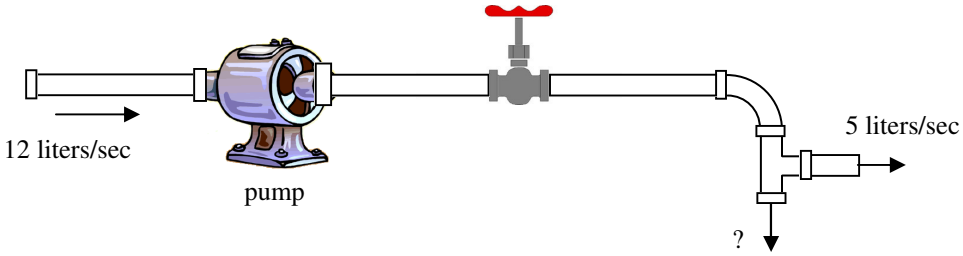
1. Slim Jim is trying to move a 10 kg box. Unfortunately his dog, Bim, is trying to be "helpful".
   A. How much force is actually pulling the box?
   B. What is the acceleration of the box?

   C. So, it is not the force that matters, but the n_____ force.

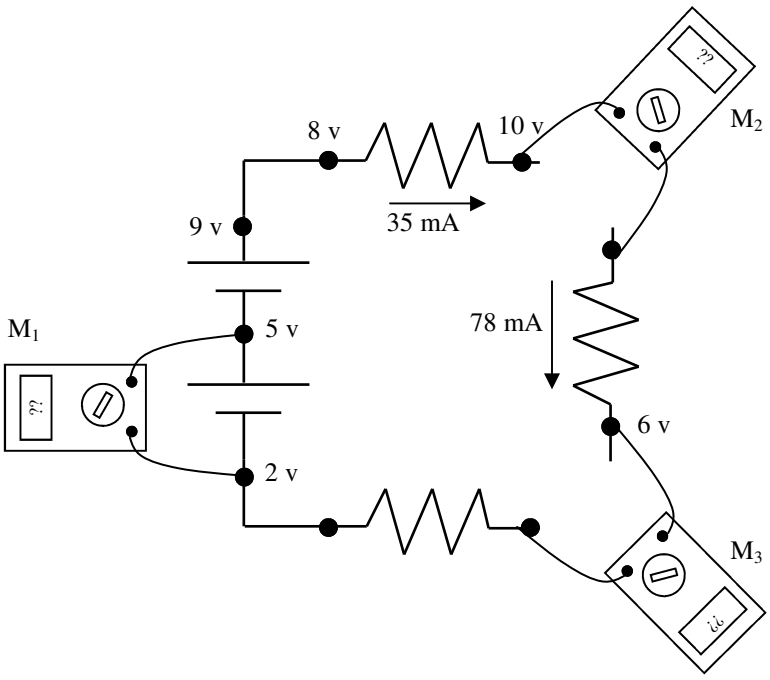


2. A bird perches on a high voltage wire.
   A. What is the difference of voltage between the bird's legs?
   B. How big of a shock does the bird feel?

   C. What would happen if the wire sagged down until the bird's foot touched the ground?



3. 12 liters/sec of water is being pumped by a water pump as shown above. The valve is open the whole time.
   A. The water pump is like what part of an electrical circuit?
   B. What is the valve like?
   C. How much water flows thru the valve?
   D. How much water flows out of the bottom end of the pipe?
   This split point is called a junction.

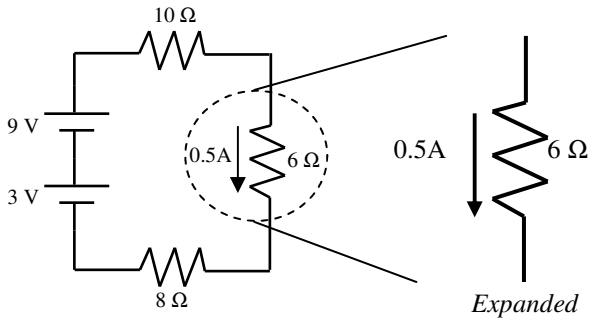


4. The diagram at the left is from our lab in class.
   A. Which meter or meters is an ammeter?
   B. Which meter or meters is a voltmeter?
   C. Which meter or meters is an ohmmeter?
   D. Find three mistakes with the voltage around the circuit. Be sure to explain why.
      1.

      2.

      3.

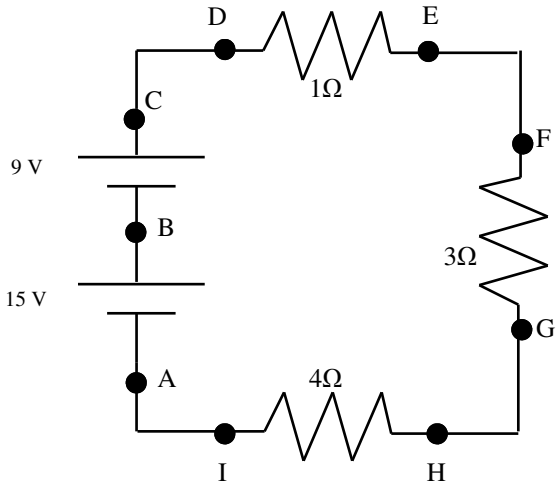
   E. Find one mistake with the current in the circuit. Be sure to explain why.



5. Use the circuit at the left to answer the following.
   A. How much current is flowing thru the 6Ω resistor?
   B. How much current is flowing thru the 8Ω resistor?
   C. How much current is flowing thru the 9v battery?
   D. What is the total resistance of the circuit?
   E. What is the total voltage of the circuit? f
   F. What is the voltage used by the 6Ω resistor?

   The 3v battery is then removed.
   G. How will the total voltage change?
   H. How will the total resistance change?
   I. How will the current change?
   J. How does the total resistance change?

*BIG HINT: This easiest way of doing the following problem is to **work the circuit first**, then answer the questions. Figure out the voltages, etc, on the diagram first. Also, this circuit is a large part of the test. Get help if you need it.*

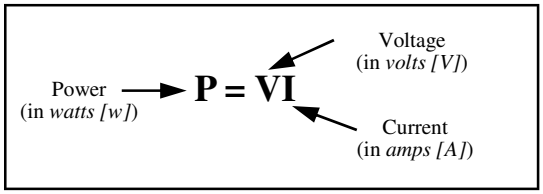


6. A. What is the total voltage?
   B. What is the total resistance?
   C. What is the total current?

   D. What is the voltage at point A?
   E. What is the voltage at point B?
   F. What is the voltage at point C?
   G. How much voltage is lost from C to D?
   H. How much current is flowing thru the 1Ω resistor?
   I. How much voltage is used by the 1Ω resistor?

   J. How much voltage is left at point E?

   K. How much current is flowing thru the 3Ω resistor?
   L. How much voltage is used by the 3Ω resistor?



   M. Using the equation at the left, how much power is used by the 3Ω resistor?

   N. Using the total voltage and total current, how much power is used by the entire circuit?

The notes for these questions are on the Electricity 1 homework.

7. How much charge do 5,300 electrons have?

TAKS NEXT PAGE

Use the notes below to answer the following.

8. Without this organelle the cell would be unable to repair itself or continue to grow.
9. Without this organelle, if a plant cell lost water, it would shrink.
10. Celery is hard to bend partly because of this organelle.
11. A. What color is a chloroplast?
    B. Why?
12. The nucleus from Cell A is removed and replaced by the nucleus from Cell B. Afterwards, which cell's characteristics will Cell A have?
13. A cell needs certain molecules to function. These come from outside the cell.
    A. What organelle will allow or disallow these molecules to get in?
    B. Which organelle moves these molecules around the cell.
    C. Which organelle will make these molecules into proteins?
    D. Where the plans for making the proteins is stored (and comes from)?
    E. Which organelle makes energy for these molecules to be used?
    F. Which organelle will then moves the finished proteins around the cell?
    G. Which organelle will break up these materials when the cell is done with them?
14. Plants actually have two organelles that make energy. Which ones?
15. If this organelle is removed, a cell loses its ability to function.

Major Cell Organelles

	Where found				
Organelle	**Plants**	**Animals**	**Analogy**	**Function**	**Looks like**
Nucleus	x	x	brain	holds DNA (blueprint)	The big blob in the middle
Ribosomes	x	x	factory	makes proteins from mRNA's blueprint	little dots (chocolate chips)
Mitochondria	x	x	energy plant	makes ATP (energy) for cell	hot dog with mustard
chloroplast	x		green house	performs photosynthesis	stacked M&M's in a bubble
cell membrane	x	x	skin	protects cell and allows passing of materials into cell	at the edge of the cell
cell wall	x		walls of a room	like skeleton - gives rigidity - holds up a plant cell	very edge of a plant cell
lysosomes	x	x	clean up crew	breaks down left over and worn out material	
vacuoles	x		toilet	holds waste products; maintains water pressure in cell.	
Golgi apparatus (or complex)	x	x	post office	redistributes materials to rest of cell	Stack of pancakes
Endoplasmic reticulum	x	x	Conveyor belt for assembly line	moves materials from ribosomes to golgi	Folded fruit roll up