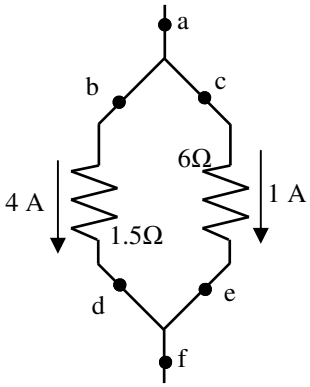
A-day: Due Mon., Apr 21 (Assigned Thurs., Apr 17)
B-day: Due Tues., Apr 22 (Assigned Fri., Apr 18)

2008 Electricity 8

1. Three light bulbs have resistances of 12Ω, 8Ω, and 15Ω.
   A) What is their total resistance if in series?

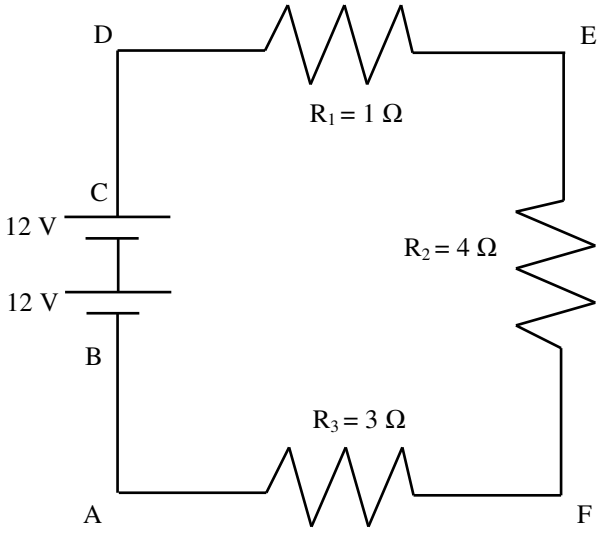
   B) What is their total resistance if in parallel?

   C) If in series, they will have the same:
   D) If in series, which one will be brightest?
   E) If in parallel, they will have the same:
   F) If in parallel, which one will be brightest?



2. Electricity is actually moving electrons. These moving charges makes up the current in a circuit. Think of these moving charges as water molecules in a water circuit. In the diagram at the right:
   A) How much current is flowing thru point "a"?
   B) How much current is flowing thru point "e"?
   C) How much current is flowing thru point "f"?
   D) How much voltage is there pushing from a to f?
   E) (Again, thinking about water…) Which resistor has more current?
   F) Which resistor can allow the most charge to flow in 3 seconds?
   G) Which resistor can allow the most charge to flow in total?

3. Refer to the following diagram for the following questions. This process was shown step-by-step in the last homework. Refer to it, if need be.



   A) Which of the resistors will use up the most voltage?

   B) Which of the resistors has the most current flowing thru it?

   C) Calculate the current flowing thru point E.

   D) Calculate the voltage used by the first resistor.

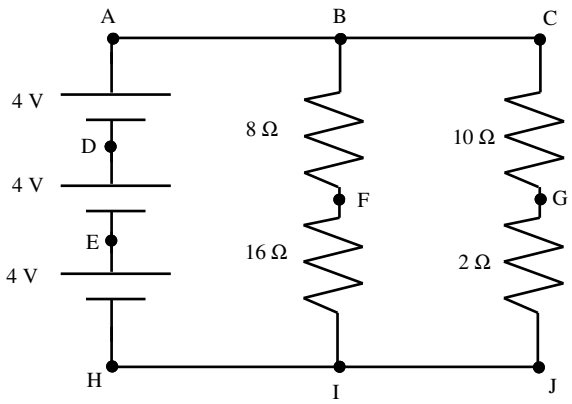
   E) Calculate the total power used by the circuit.

4. Use the circuit at the left to answer the following. It will help if you label the diagram as you go.
   A) Calculate the total voltage.
   B) How much voltage is there at B and C?
   C) How much voltage is there at I and J?
   D) Calculate the total resistance from B to I.
   E) Calculate the total resistance from C to J.
   F) Calculate the current from B to I.

   G) Calculate the current from C to J.

   H) Calculate the total current (flowing from I to H).

   I) Calculate the total resistance of the circuit.



5. An object has a charge of 5.6 μC.
   A) Is it positive or negative?
   B) Did it gain or lose electrons to have this charge?
   C) If a –2μC charge is brought near it, will they attract or repel each other?
   D) As they are brought closer to each other, does the potential energy between them increase or decrease?
   E) What does the "μ" mean?

Seniors may stop.

6. When mRNA is turned into tRNA, this is called:
7. When DNA is turned into mRNA in the nucleus, this is called:
8. The three nitrogen base code that tells the r_____ which a_____ a_____ to make is called a:
9. When DNA is replicated and a mistake occurs, we call this a:
10. Using the chart, what amino acid comes from ACC?
11. A) If P is purple and p is white, which is dominant?
    B) Given the following punnet square, how many different phenotypes are there?
    C) How many different genotypes are there?

	P	*P*
P	*PP*	*PP*
p	*Pp*	*Pp*

    D) How likely is it that there will be a pea plant with white flowers?

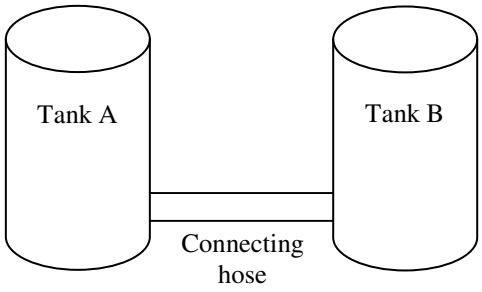
Codon Chart

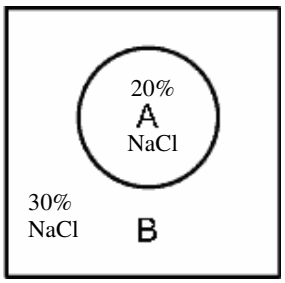
Second Position

First Position (5′)	U	C	A	G	Third Position (3′)
U	Phenylalanine	Serine	Tyrosine	Cysteine	U
	Phenylalanine	Serine	Tyrosine	Cysteine	C
	Leucine	Serine	Stop	Stop	A
	Leucine	Serine	Stop	Tryptophan	G
C	Leucine	Proline	Histidine	Arginine	U
	Leucine	Proline	Histidine	Arginine	C
	Leucine	Proline	Glutamine	Arginine	A
	Leucine	Proline	Glutamine	Arginine	G
A	Isoleucine	Threonine	Asparagine	Serine	U
	Isoleucine	Threonine	Asparagine	Serine	C
	Isoleucine	Threonine	Lysine	Arginine	A
	Methionine	Threonine	Lysine	Arginine	G
G	Valine	Alanine	Aspartic acid	Glycine	U
	Valine	Alanine	Aspartic acid	Glycine	C
	Valine	Alanine	Glutamic acid	Glycine	A
	Valine	Alanine	Glutamic acid	Glycine	G

$^{5'}$AGAUCGAGU$^{3'}$ → $^{5'}$A*C*AUCGAGU$^{3'}$

12. Since plants make their own food thru _____, are they autotrophs or heterotrophs?
13. Which kingdom?
    A) Flat worms?
    B) Ferns?
    C) A bacteria that lives in extreme environments.
    D) Made up of decomposers (heterotrophs), like mushrooms.
14. If Tank A is full of water and Tank B is empty, which way does the water flow?
15. If Tank A has a pressure of 20 pascals and Tank B has a pressure of 55 pascals, which way does air flow?





16. A) In which region is there more table salt (by percent)?
    B) In which region is there more water (by percent)?
    C) If there is a semi-permeable membrane around A than allows only water to flow, does water flow from A to B or from B to A?
    D) Over time, does A swell (get bigger) or shrink (get smaller)?
    E) This flow of water is known as:

    F) If the salt were moving, it would be known as d_____.