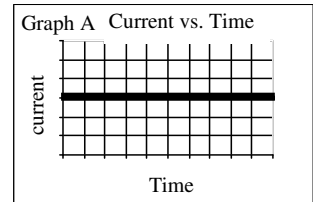


- For the rod to be negative did it gain or lose electrons?
 - Which side of the metal sphere will be positive?
 - If the rod is touched to ground, would it gain or lose electrons?
- Do the above charges attract or repel each other?
 - To increase the potential energy of the objects would you move them closer or farther apart?

3. AC (alternating current) or DC (direct current)?

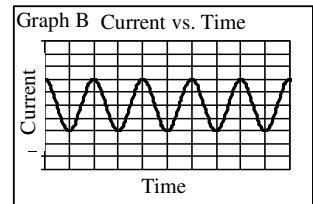
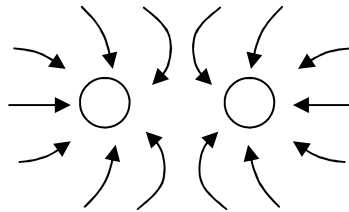
- Current that changes polarity.
- Current that is constant.
- What comes from a battery.

- What comes from the power outlet.
- Graph A
- Graph B.



4. Identify the signs of the two charges.

5. Why is a bird not electrocuted when it lands on a high voltage wire?



6. How does the force change?

- If the distance between two charges is doubled?
- If the distance between two charges is tripled?
- If one of the charges is halved?

- If the distance between two charges is halved?
- If one of the charges is four times as big?

7. Does the resistance of the wire increase or decrease?

- If the wire is made shorter?
- If the wire is heated (becomes hotter)?
- If the wire is replaced with a thinner wire?

- If the voltage is increased?
- If the wire is replaced with a superconductor?

8. A $4\mu\text{C}$ charge is 3cm from a -2C charge.

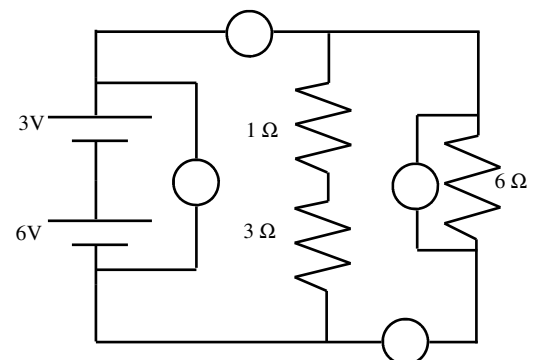
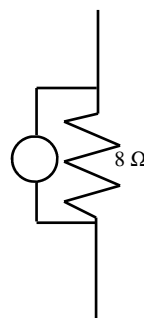
- Do they attract or repel each other?
- Find the force between them.

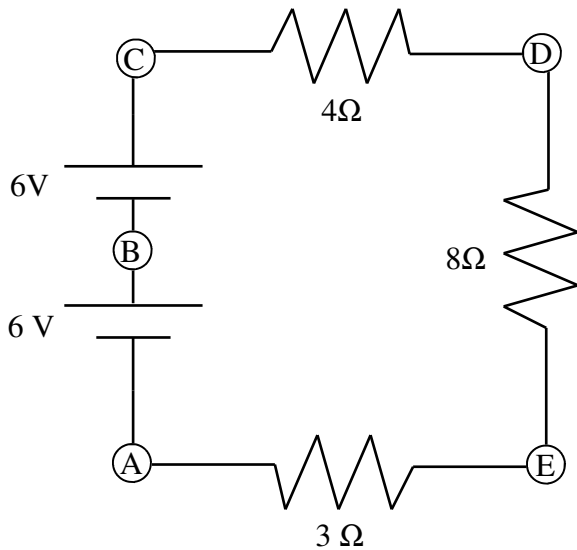
C. How many electrons were gained or lost by the 4C charge?

9. Identify each of the meters at the right as an ammeter (A), ohmmeter (O), or voltmeter (V).

10. What is electricity (what is or is not moving)?

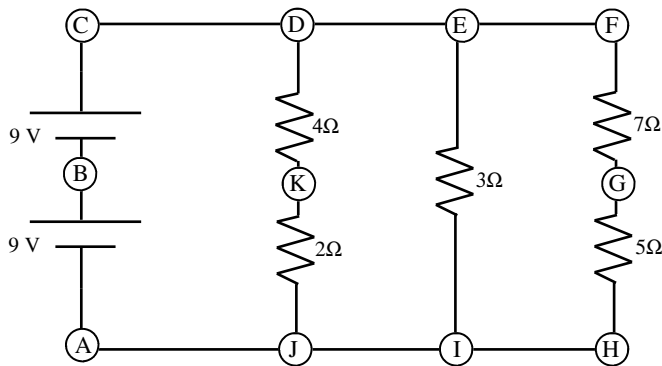
11. Very simply, what is voltage, current, and resistance?





12. After working the circuit at the left, answer the following.
- Are the batteries in parallel or series?
 - What is the total resistance (R_{total})?
 - What is the total current (I_{total})?
 - How much voltage is used by the 8Ω resistor?
 - How much power is used by the 4Ω resistor?
 - What is the total power used by the circuit (P_{total})?

BIG NOTE: We all know that the voltage at the bottom of the first battery (letter A above and below), is 0 volts. This is our reference point. When we say that point C above is 12 volts we actually mean: “12 volts above letter A”. It is always the difference of voltage that matters. “ $V_{A\text{ to }C}$ ” means “what is the difference of voltage between points A and C”.



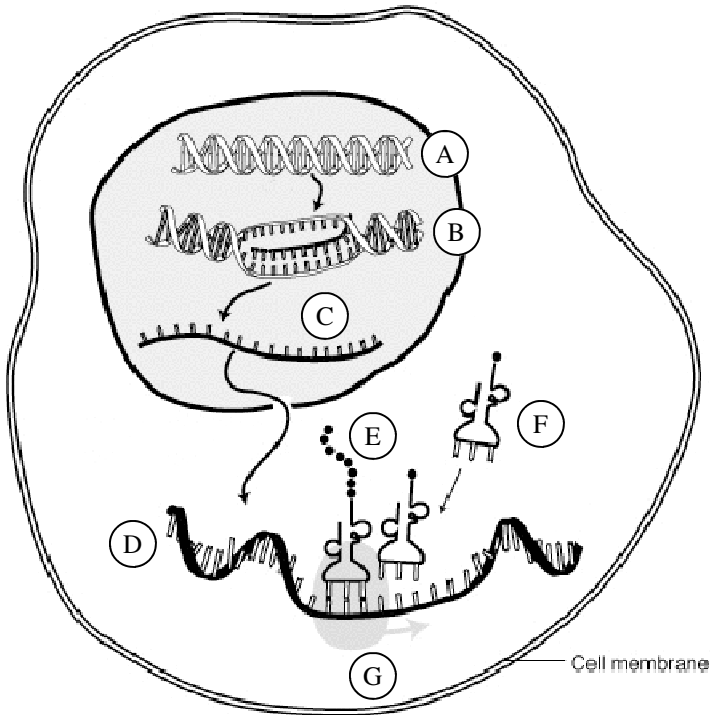
13. After working the circuit at the left, answer the following.
- $V_{\text{total}} =$
 - $V_{\text{ at A}} =$
 - $V_{\text{ at C}} =$
 - $V_{\text{ at F}} =$
 - $V_{\text{ C to F}} =$ (The difference in voltage between C and F) =
 - $I_{\text{ thru point K}} =$
 - $I_{\text{ thru the } 5\Omega \text{ resistor}} =$
 - $I_{\text{ from I to J}} =$
 - $V_{\text{ used by the } 2\Omega \text{ resistor}} =$
 - $P_{\text{ used by the } 3\Omega \text{ resistor}} =$
 - $P_{\text{ total}} =$

Transcription:	Process in which DNA is copied into mRNA. (<i>Before it can <u>ride</u> it must <u>transcribe</u>.</i>)
Translation:	Process in which proteins are made from tRNA. (<i>Before it can <u>create</u> it must <u>translate</u>.</i>)
Ribosomes:	Cell organelle where proteins are created.
Amino Acids:	Building blocks of proteins.
Codon:	Three base code that tells the ribosome what amino acid to make. Ex. AGA

14. Translation (TL) or Transcription (TS)?

- A. ____ When mRNA is turned into tRNA.
- B. ____ When DNA is turned into mRNA.
- C. ____ Occurs in the nucleus.
- D. ____ Occurs at the ribosomes.

15. The three nitrogen base code that tells the r_____ which a_____ a_____ to make is called a:



16. The picture at the left shows the steps in protein synthesis in an animal cell.

- A. The double coiled molecule at letter A is called the _____.
- B. The double coiled molecule is unzipping and giving its code to the single stranded molecule at letter B. This single stranded molecule is the _____.
- C. The process in which molecule A becomes molecule C is called t_____.
- D. Molecule F is called the _____.
- E. When D becomes F is called t_____.
- F. Letter E shows the chaining of amino acids to make a p_____.
- G. Two of the major organelles are shown in grey.
 - i. A, B, and C are in the _____.
 - ii. G shows the _____.

17. From the codon chart below, what amino acid comes from the codon: CAG?

Second Nitrogen Base (2nd letter)

		Second Nitrogen Base (2nd letter)								
		U		C		A		G		
First Nitrogen Base (1st letter)	U	UUU	Phenylalanine	UCU	Serine	UAU	Tyrosine	UGU	Cysteine	U
		UUC		UCC		UAC		UGC		C
		UUA	Leucine	UCA		UAA	Ochre	UGA	Opal	A
		UUG		UCG		UAG	Amber	UGG	Tryptophan	G
	C	CUU	Leucine	CCU	Proline	CAU	Histidine	CGU	Arginine	U
		CUC		CCC		CAC		CGC		C
		CUA		CCA		CAA	Glutamine	CGA		A
		CUG		CCG		CAG		CGG		G
	A	AUU	Isoleucine	ACU	Threonine	AAU	Asparagine	AGU	Serine	U
		AUC		ACC		AAC		AGC		C
		AUA		ACA		AAA	Lysine	AGA	Arginine	A
		AUG	Methionine	ACG		AAG		AGG		G
	G	GUU	Alanine	GCU	Alanine	GAU	Aspartic acid	GGU	Glycine	U
		GUC		GCC		GAC		GGC		C
		GUA		GCA		GAA	Glutamic acid	GGA		A
		GUG		GCG		GAG		GGG		G