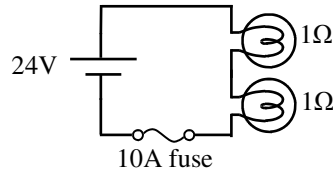
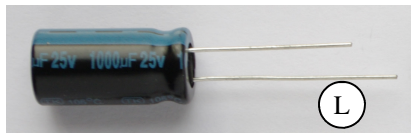


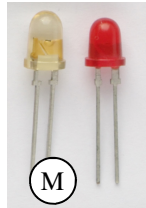
1. The circuit at the left shows a capacitor like the red plastic one you used in the circuit boards. The switch can be switched between point S and point T. The switch is first put to point S. Then the switch is moved to point T. Describe what happens.



- Use the notes: "Power and Voltage Drops".
2. A. What is the current flowing in the circuit?
- B. What will happen to the fuse?
- C. Can you reset a fuse?
- D. What could you use that could be reset?
- E. Give one way that you could fix the circuit so that the fuse will not blow.



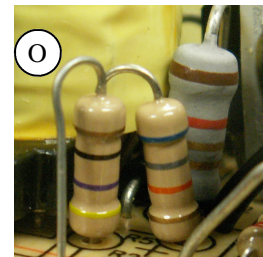
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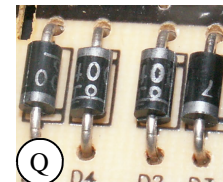
N



O

3. Identify the pictures.

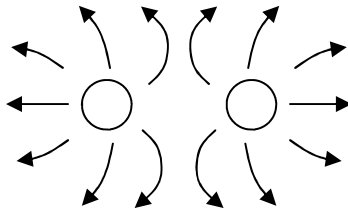
- A. ___ Resistor.
 B. ___ Diode
 C. ___ Fuse
 D. ___ Capacitor
 E. ___ Variable resistor
 F. ___ Light emitting diode.
- G. ___ Can protect a circuit from too much current.
 H. ___ Only lets the current flow one way.
 I. ___ Stores charge temporarily.
 J. ___ Used by an oven to change temperature.



Q



P

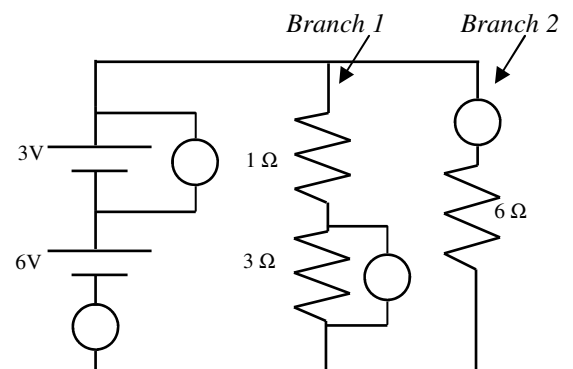


4. Using the "Electric Fields" notes, identify the charges above.

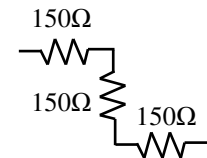
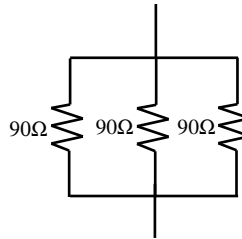
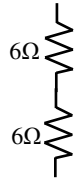
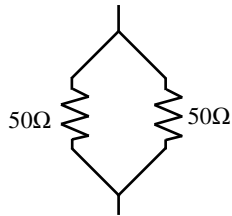
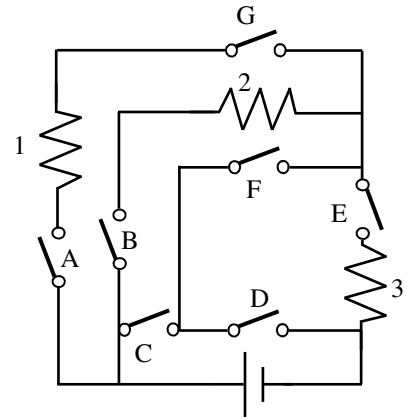
5. A. Do the above charges attract or repel?
 B. Thinking of them like a spring, to increase the potential energy of the two charges should they be pulled apart or brought closer together?

Use your "Series Circuit Lab" to answer the following.

6. Each of the four circles in the circuit at the left are meters. In each of the circles put one of the following: Ammeter (A); Ohmmeter (O); Voltmeter (V).
7. A. What is the total voltage of the circuit?
 B. What is the total resistance of branch 1?
 C. How much current flows thru branch 1?
 D. How much current is flowing thru branch 2?
 E. What is the total current of the circuit?
 F. How much voltage does the 1Ω resistor use?
 G. What is the total power used by the circuit?



8. Which switches would you turn close for each of the following?
 A. For only resistor 1 to be on.
 B. For only resistor 3 to be on.
 C. For only resistors 1 and 3 to be on.
9. For each of the following pairs, circle the one with the greatest resistance.
 A) A 25 Ω resistor at 5°C or at 25°C?
 B) A 5 cm wire or a 5 meter wire?
 C) Thick wires or thin wires?
 D) Aluminum wires or Copper wires?
 E) Silver wires or wires made with a superconductor?
10. For each of the following examples decide if they are in parallel or series and calculate the total resistance.



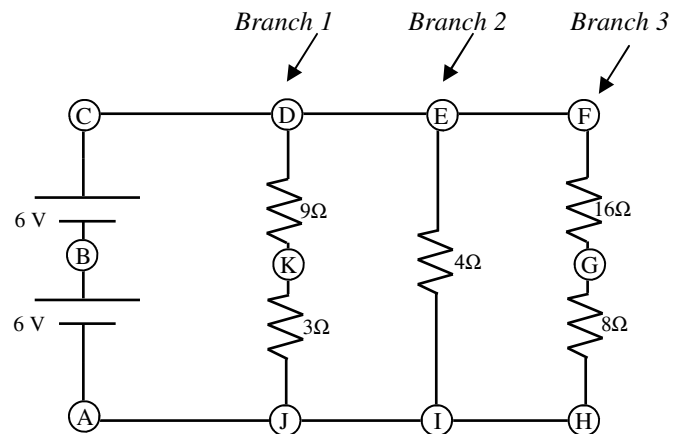
- A. Parallel or series?
 $R_{total} = \underline{\hspace{2cm}}$
- B. Parallel or series?
 $R_{total} = \underline{\hspace{2cm}}$
- C. Parallel or series?
 $R_{total} = \underline{\hspace{2cm}}$
- D. Parallel or series?
 $R_{total} = \underline{\hspace{2cm}}$

11. Given these three resistors: 20Ω, 50Ω, and 10Ω.
 A. What is the total resistance if they are in series?
 B. Which of the following is the total resistance in parallel: 80Ω; 30Ω, 5.9Ω.
 C. Why?

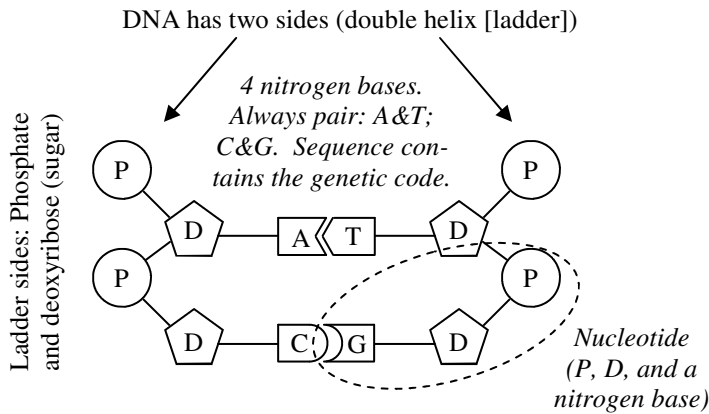
From the lab:

12. A 3Ω light bulb and a 5Ω light bulb are in a circuit.
 A. If two bulbs are in series they have the same _____.
 B. If in series which one is brighter?
 C. Why?
 D. If in parallel, which one is brighter?
 E. Why?

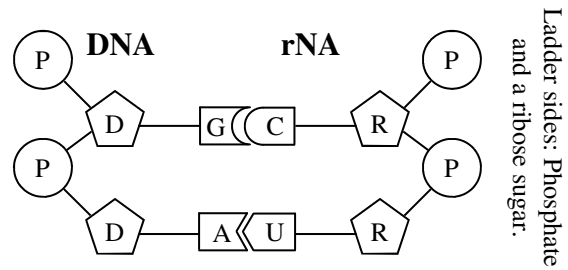
13. A. What is the total resistance of branch 1?
 B. What is the current flowing thru branch 1?
 C. What is the current flowing thru the 9Ω?
 D. How much voltage does the 9Ω use?
 E. How much current flows thru the 4Ω?
 F. What is the total resistance of branch 3?
 G. What is the current flowing thru the 6Ω?
 H. How much voltage does the 6Ω use?
 I. How much voltage is left at point G?
 J. How much current flows from I to J?
 K. What is the total current of the circuit?
 L. Calculate the total power of the circuit?



DNA – Found in the nucleus of all cells. Contain the characteristics of a cell.



RNA has only 1 side. It has Uracil instead of Thymine.



14. A. On the diagram at the right circle each individual nucleotide.
 B. How many nucleotides are there in the diagram?

15. DNA, RNA (could be both).

- | | |
|---|--|
| A. <input type="checkbox"/> Contains nitrogen bases. | E. <input type="checkbox"/> Has a sugar on its side. |
| B. <input type="checkbox"/> Found in the nucleus of a cell. | F. <input type="checkbox"/> Has uracil |
| C. <input type="checkbox"/> Double helix structure. | G. <input type="checkbox"/> Has a phosphate backbone |
| D. <input type="checkbox"/> A goes with T | H. <input type="checkbox"/> Has ribose as a sugar |

16. Given the following genetic codes give the paired sequence.

DNA	RNA	DNA	DNA
A		T	
C		G	
G		C	
G		G	
T		A	

Gametes—Egg or sperm; has only 1/2 the chromosomes of a full cell.
 Zygote—fertilized egg. Has the full set of chromosomes.
 Mitosis—Cell division for regeneration (exact copies to replace aging body cells).
 Meiosis—Cell division for sexual reproduction: produces gametes (egg or sperm).

DNA Mutation—Occurs when the nitrogen base sequence is copied wrong.
 Doesn't cause a permanent mutation unless it occurs in the gametes and is passed on to the offspring.

17. Will it cause a mutation of the species?
- A. A gene mutation occurs when a skin cell is replicated.
 B. A mutation happens during meiosis.
 C. If the sequence is copied perfectly.
 D. If the sequence is off by one nitrogen base when making a sperm cell.
 E. If the mutation occurs during mitosis.
 F. If the mutation ends up in a gamete cell.
18. If the gamete cell has 28 chromosomes, how many chromosomes are in the zygote?