

## Energy/Electricity Review

1. Name different kinds of energy and classify them as renewable or non-renewable.

Fossil fuels: non-renewable

Nuclear: non-renewable

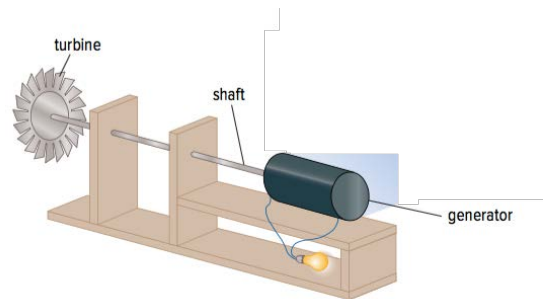
Hydro: renewable

Solar: renewable

2. Where does BC get most of its energy?

Hydro

3. Draw a generator and label the three main parts.



4. How is an insulator different from a conductor? Give examples of each.

An insulator prevents the flow of electricity and a conductor easily allows the flow of electricity

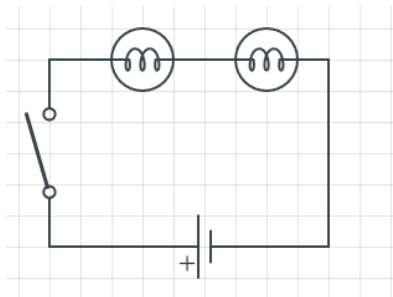
Insulator: plastic

Conductor: copper

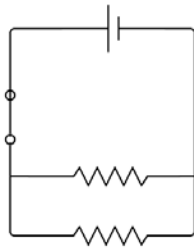
5. Opposite charges **attract**
6. Like charges **repel**
7. Describe what happens when you rub a balloon on your hair. (describe what happens to the electrons)  
Electrons transfer from your hair to the balloon making the balloon negatively charged and your hair positively charged

**Draw the following circuits**

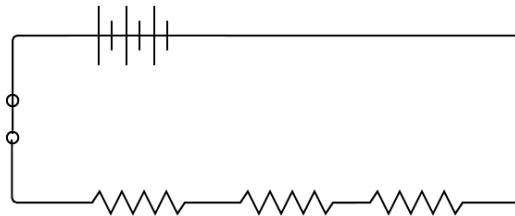
8. A cell, two light bulbs and an open switch, all connected in series.



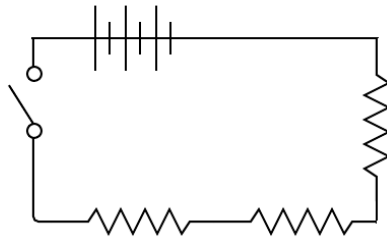
9. A cell and a closed switch, with two loads in parallel.



10. A battery, a closed switch and three light bulbs, all in series.



11. An open circuit with a battery, a buzzer and a light bulb.

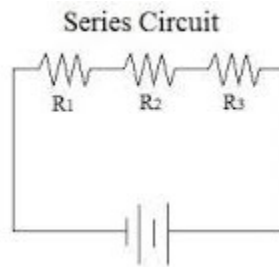


## Questions on circuits

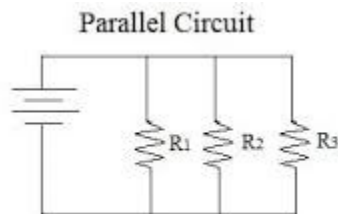
12. Fill out the following chart:

Symbol	Symbol Represents	Unit
V	Voltage Electrical Potential Difference	Volts (V)
I	Current	Amps/Amperes (A)
R	resistance	Ohms ( $\Omega$ )

13. Draw a simple series circuit.



14. Draw a simple parallel circuit.



15. Draw and describe a short circuit.

Provides an easier path for the electricity to flow (easier means less resistance)

16. How many paths are in a series circuit? How many in a parallel circuit?

One. Two or more.

17. Which provides a greater voltage: two cells connected in series or two cells connected in parallel?

Two connected in series

18. Which provides a greater resistance: two loads connected in series or two loads connected in parallel?

Two loads in series

19. If you unscrew a lightbulb and all the lights in the room go out, what type of circuit is it? Why?

Series because there is only one path and you broke the path

20. When a light bulb burns out in your house all the other lights stay on. What type of circuit is this? Why?

Parallel because there are many paths for the electricity to flow. When the lightbulb burns out only that path is broken but all the other paths remain complete

21. What is another name for electrical potential difference?

Voltage

**Solve the following using Ohm's Law**

22. Fill out the following chart for Ohm's Law:

To find voltage	$V = IR$
To find resistance	$R = \frac{V}{I}$
To find current	$I = \frac{V}{R}$

23. A 3 V battery produces 0.046 A of current when connected to a load. What is the resistance of the load?

$$R = \frac{V}{I} = \frac{3}{0.046} = 65.2\Omega$$

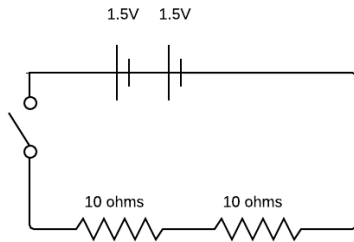
24. A radio is plugged into a 120 V source. If the resistance of the radio is 2400  $\Omega$ , what current does it draw?

$$I = \frac{V}{R} = \frac{120}{2400} = 0.05A$$

25. A toy car has a resistance of 180  $\Omega$  and draws a current of 0.05 A. What is the voltage of the battery that powers the car?

$$V = IR = 0.05 \times 180 = 9V$$

26. Draw the following circuit. Then calculate the current. Two 1.5 V cells, two 10  $\Omega$  resistors, and a closed switch are all connected in series.



$$I = \frac{V}{R} = \frac{3}{20} = 0.15A$$