Science 9 – Introduction to Electric Circuits

For each of the following circuits use:

- 3 light bulbs
- leads (wires)
- 1.5 Volt cells (batteries) connected in series: Use up to a maximum 3 cells - enough to power the lightbulbs – if the bulbs don't light, try adding another cell in series, until the bulbs light – if the bulbs don't light even after adding a few cells, ask your teacher for help – the bulbs might have burnt out, the leads might be broken or rusted, you may have connected the cells the incorrectly – the teacher will help you trouble-shoot

1) ***Build a circuit so that when you unscrew one lightbulb, all the others turn off.***
    a. Draw a **sketch** of the circuit showing all the circuit elements (for an example of a sketch or a circuit, refer to your textbook page 306, Figure 1 and 2)

    b. Draw a formal **circuit diagram** using the symbols shown in you textbook (page 304, Table 1). There are examples of formal circuit diagrams on page 307, Figure 3.

2) ***Build a circuit so that when you unscrew one lightbulb, the others do not turn off.***
    a. Draw a **sketch** of the circuit showing all the circuit elements

    b. Draw a formal **circuit diagram.**

3) Build a circuit so that when you unscrew one lightbulb, all the others do turn off, but if you unscrew one of the other lightbulbs, the other two stay lit. (this is a combination circuit, partly series, and partly parallel)

a. Draw a **sketch** of the circuit showing all the circuit elements

b. Draw a formal **circuit diagram.**

4) On each of your circuit diagrams [1(b), 2(b), and 3(b)] ***draw arrows beside the leads (wires) to show the direction of flow of electrical current*** *[remember that current flows out of the positive terminal of the cell, and into the negative terminal]*

5) What is the name of the type of circuit you built in (1)? *(series, parallel, or combination)*

6) What is the name of the type of circuit you built in (2)? *(series, parallel, or combination)*