FLEET Schools. Activity 4: Making electricity? Draw a circuit

Learning Intentions
Students will explore and articulate their perception of their concept of electricity and what a circuit is. This activity establishes a baseline understanding of circuits and electricity. It can be compared to their understanding at the end of the selected activities.

Materials
- Paper
- Pencils, crayons
- Online drawing tools (optional)
- Worksheet for Draw a circuit

Teacher Notes	Teaching Notes: running the activity
This activity will assess student perceptions of what electricity and a circuit is. We do not correct it here. They get to test/challenge their assumptions, reflect on and refine their ideas as they proceed through the activities. While we want the student to provide their initial perception without prompts, for teacher background the following basics may be useful. In the construction of the atom, students learned the atom has charged particles and one of those particles – the electron – is responsible for making electricity. To generate electricity, we need to make those electrons flow in one direction. How do we do that? We need a force or source of energy of some sort. The battery is one common source. It converts chemical energy into electrical energy. Remember we are not magicians. We cannot magic up electrical energy from nowhere. We need to convert one form of energy into a form that is useful for what we want to do. The form of energy that is useful to us in a circuit is electrical energy and in Activity 10 we will use it to make a light globe glow. It is your battery that provides the energy to push and pull the electrons along – to make them flow through a circuit. The negative half	**What is electricity?** Students brainstorm in small groups about what they think electricity is. Students can use whiteboards or butcher's papers to draw or describe what they know about electricity and what they think it is. Alternatively, if they have access to software drawing tool, they can attempt to draw them on their devices. **Draw a circuit** In small groups, students brainstorm how they would make a functioning circuit using the following three components: a battery, wires and a light globe. Students use their drawing tools to draw their perception of a functional circuit using the three components. Get students to describe why they think their circuit will work.

of the battery contains electrons that when connected to a circuit will provide a repulsive force to push the electrons through the circuit. The positive side of the battery provides an attractive force to pull the electrons through a circuit. The flow of charge in a properly made circuit results in electricity.

A correct circuit is a closed circuit. That is, where there is a continual circuit from the negative terminal through the load source (light globe) and to the positive terminal. See Figure 1.

In Activity 10, students can build on their initial perceptions of electricity and circuits and build their own circuit in the activity, *Graphite circuit*. Following completion of Activity 10, get students to draw a circuit again, this time labelling the direction of electron flow. Higher year levels could include different circuits such as parallel or series.
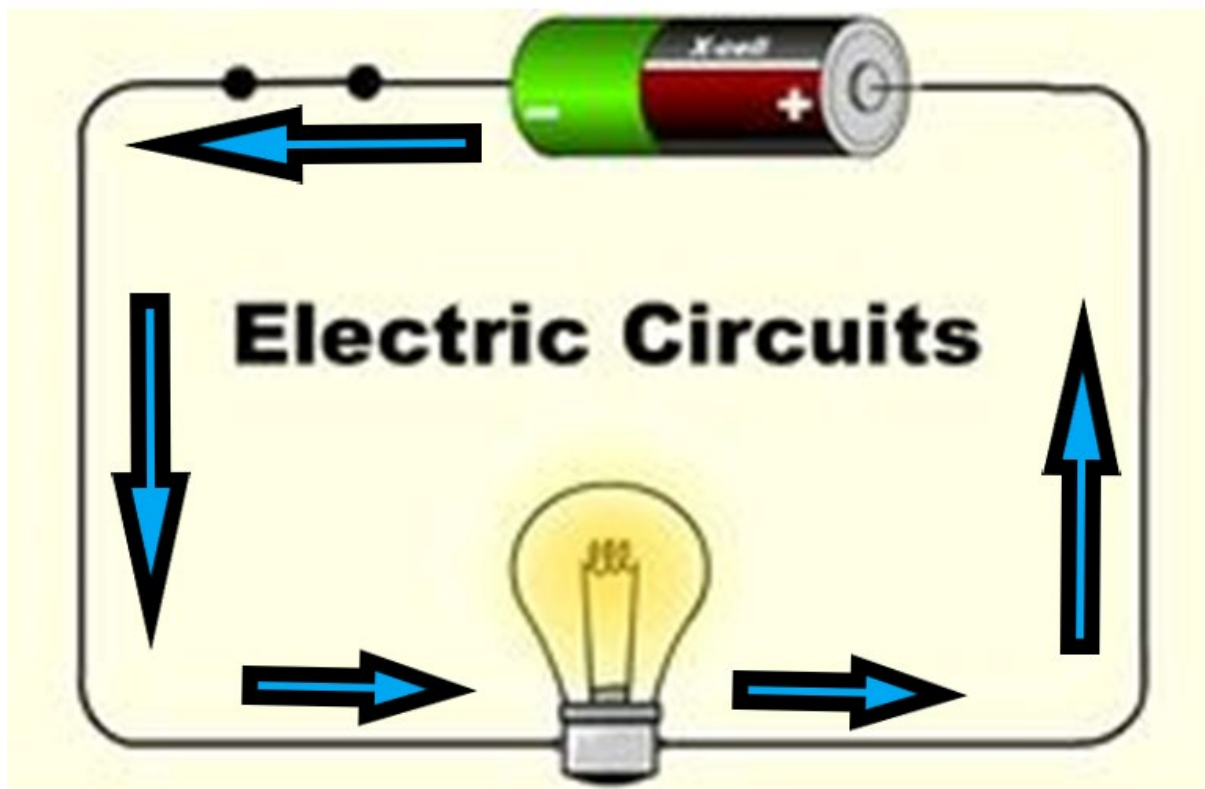

Figure 1. A closed circuit. The arrows show the direction of flow of the electrons through the circuit.