Series and Parallel Circuits

When drawing circuit diagrams, the symbols below are used to represent the different components of the circuit.



Single Cell (often incorrectly called a battery)

Connecting Wire

Switch

Light Globe

Battery (several cells joined together)

1. Study the following circuit diagrams.



* 1. Which are series circuits?
  2. Which are parallel circuits?
  3. Which are a combination of two types of circuits?

1. Draw a circuit diagram for a simple circuit showing a battery, a light globe and a switch.
2. Draw two circuit diagrams of circuits containing three light globes and a battery. Draw one with the three globes in series and one with the three globes in parallel.
3. What is an advantage of connecting globes in series?
4. What is an advantage of connecting globes in parallel?
5. When a light globe in your house blows, do the rest of the lights in your house go out? Do you think the lights in your house are connected in series or in parallel? Explain your choice.
6. The following diagram shows and electric circuit consisting of globes and switches connected to a battery.

Which switch or switches must be closed to make the following globes light up?

* 1. A and B
  2. C, D and B
  3. A, B, C and D

If all the switches were closed, which globes would stay lit if

1. globe A was removed?
2. globe B was removed?
3. globe C was removed?
4. Heidi wants to test whether Everexcellent Batteries last as long as Supersensational Batteries. She buys one 12V battery of both brands and connects each one into a circuit with six globes.

She connects the Everexcellent Battery in series with six globes and the Supersensational Battery in parallel with six globes. She switches them on at the same time and times how long it is before the globes stop glowing in both circuits.

Is this a fair comparison? Why or why not?