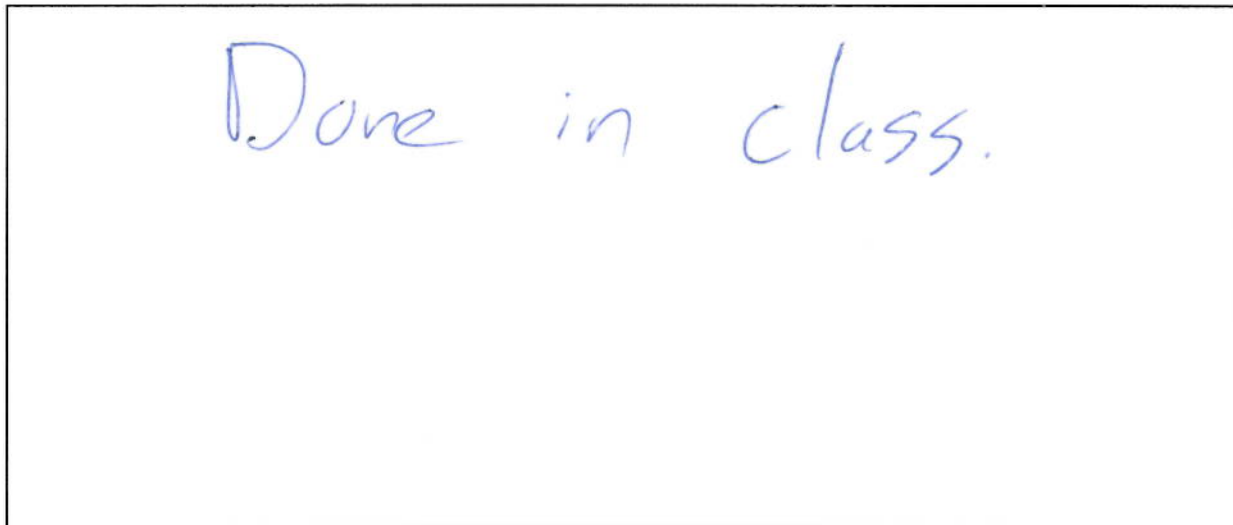


Parallel vs Series Circuits

1. Draw a **schematic diagram** of a basic circuit in the box below. Label each of the parts



Write a short description of each of the four parts:

Electrical source - source of current electricity in a circuit – gives off energy to power a load. In this diagram the source is the cell.





conductor - The wire that allows electrons to move easily through it. Set pathway. Connects parts of the circuit.

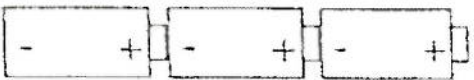

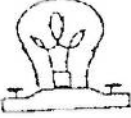
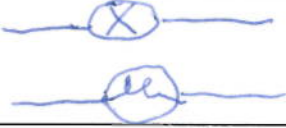
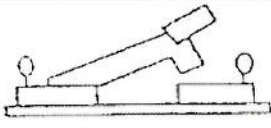


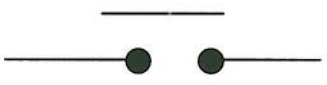
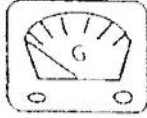



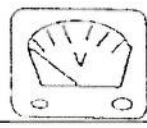

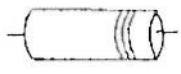

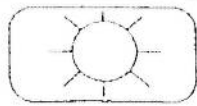
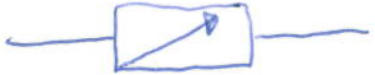
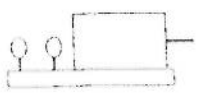

load - Uses resistance to convert electrical energy into another form of energy.

switch – completing or not completing the circuit. Allows control over the flow of electrons.

Circuit Diagrams

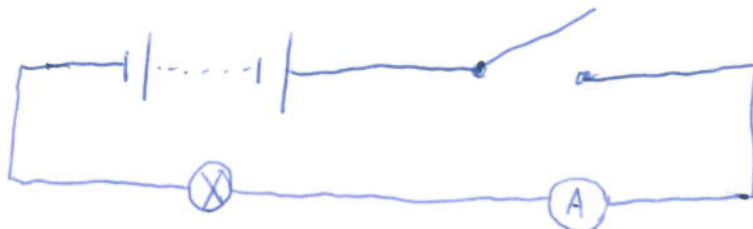
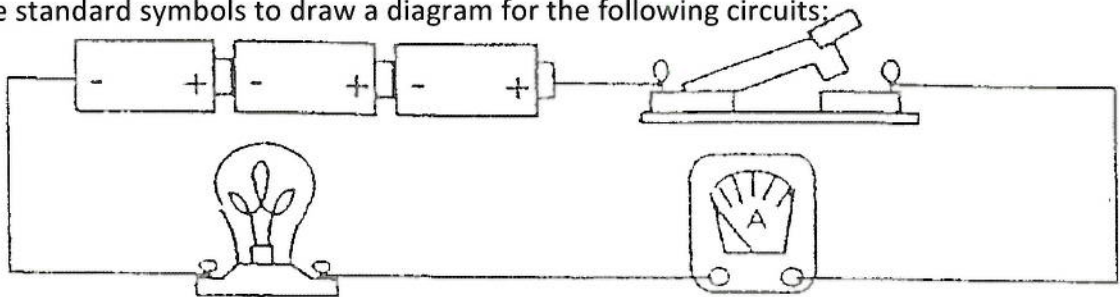
2. Standard symbols are used to represent each part of a circuit. Some of these symbols are shown in your textbook. Complete the following chart.

Diagram	Name	Symbol
	Cell	
	Cell	

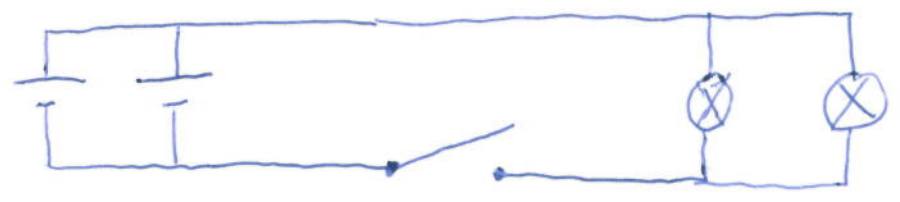
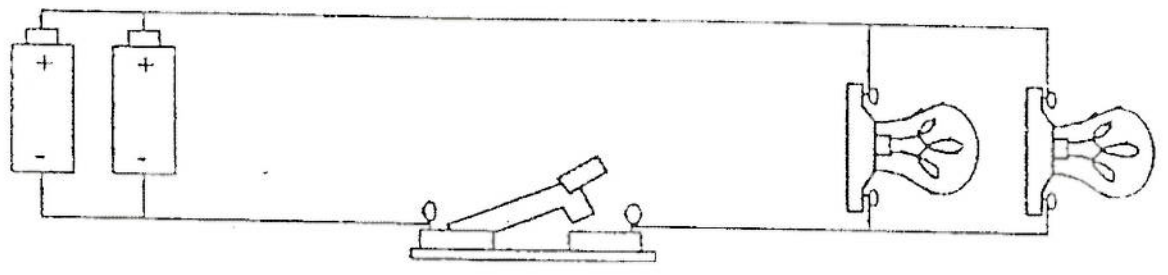
	Battery of 3 cells	
	Lamp (socket & bulb)	
	Single-pole switch (open)	
	Push button switch (open)	
	Galvanometer	
	Ammeter	
	Voltmeter	
	Resistor	
	Variable resistor (dimmer switch)	
	Motor	

3. Use standard symbols to draw a diagram for the following circuits:

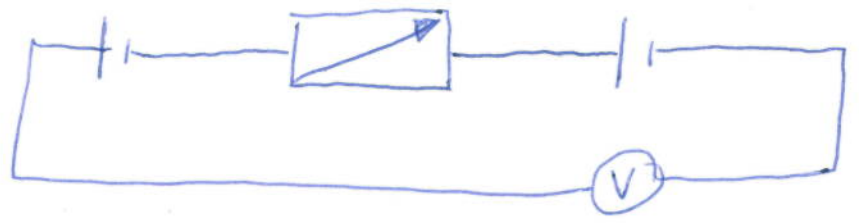
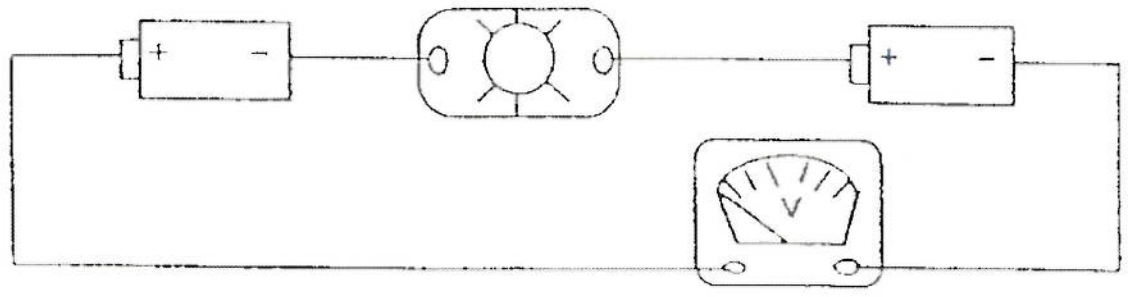
a.



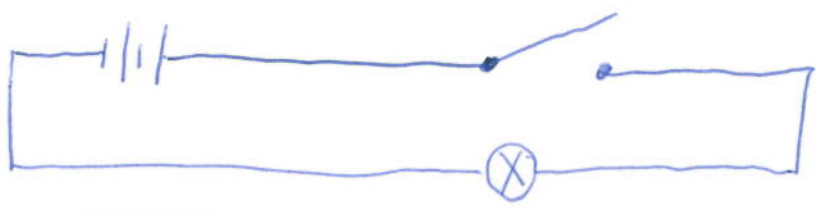
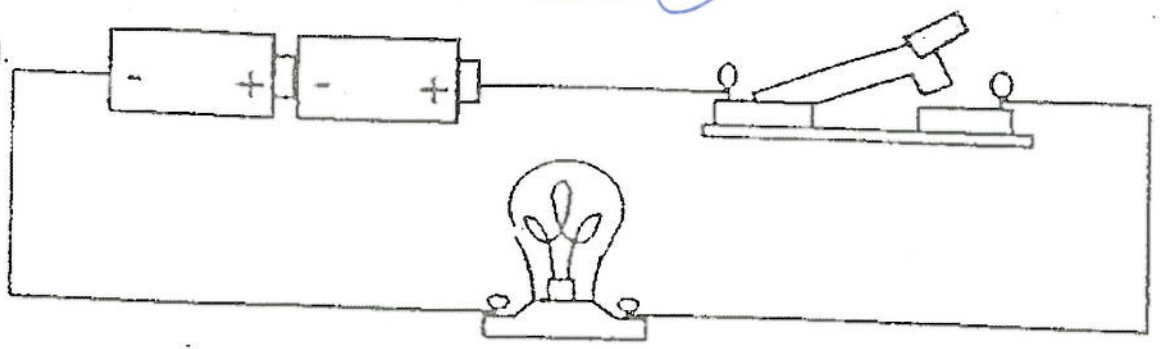
b.

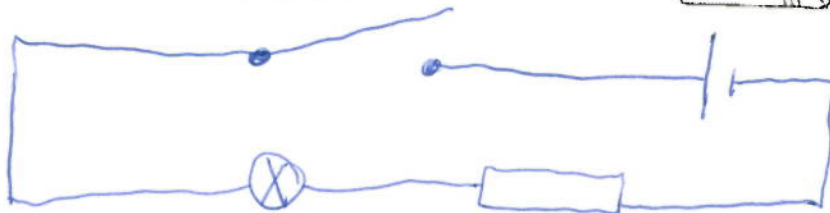
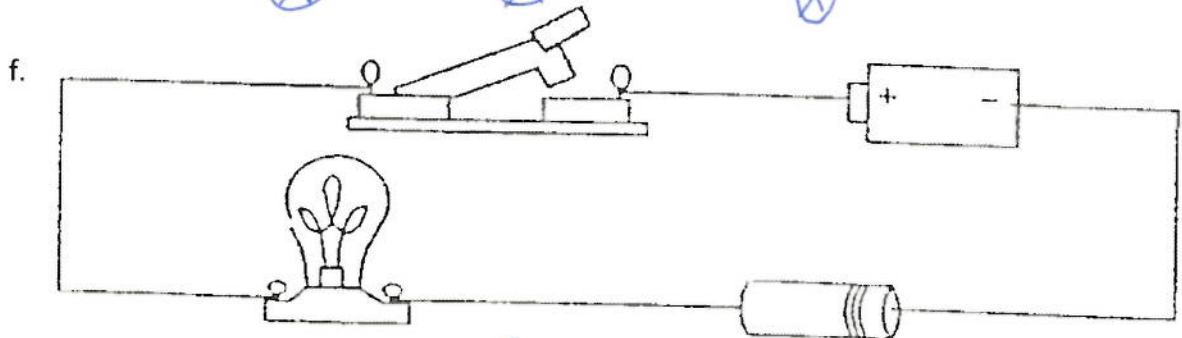
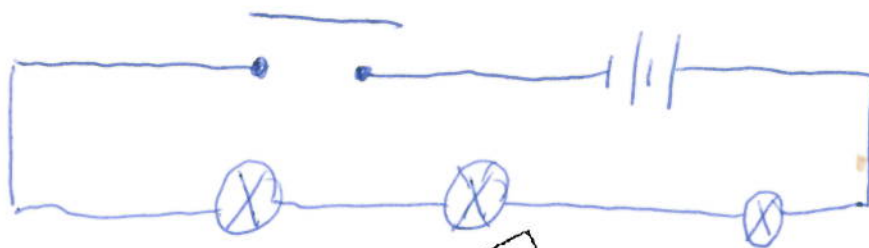
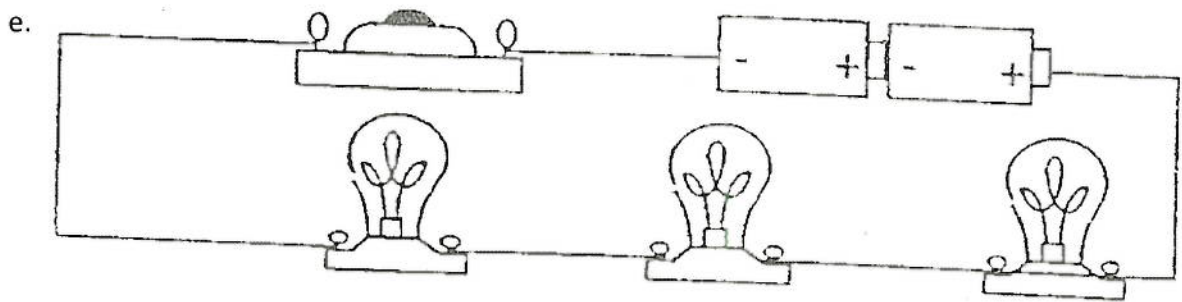


c.



d.





4. What is the difference between a cell and a battery in a schematic diagram?

Cell has one cell and a battery has two or more cells.

Series Circuits

Definition: Closed circuit and electrons can only travel on one path.

Schematic diagram with explanation:

Pictures a, c, d, e, and f from the previous question

Parallel Circuits

Definition: Closed circuit in which the electrons can flow in two or more paths.

Schematic diagram with explanation:

Picture b from question 3.

5. In a *series circuit* there is only one path for the current to follow. In the space below list two disadvantages of a series circuit and one advantage.

Disadvantage	Advantage
<ol style="list-style-type: none">1. one load removed, everything goes out2. the more components there are the greater the circuit resistance.	<ol style="list-style-type: none">1. simple design do not overheat easily use less electricity

--	--

6. In a *parallel circuit* there are separate paths for each component in the circuit. In the space below list the advantages to using this type of circuit instead of a series circuit.

Advantage:

- one load removed, nothing goes out
- the more components there are, it doesn't increase the resistance.
- they all shine brightly

Disadvantage

- use more electricity
- more complicated to design

7. Where do you find *parallel circuits* in a home? Why?

Many examples

8. Where do you find *series circuits* in a home? Why?

Many examples.

9. How does resistance change as you add bulbs to a series circuit? Explain your answer.

It increases! Each new load has more and more resistance.

10. What happens to all the bulbs in a parallel circuit when one bulb burns out? Explain your answer.

The rest stay on. They each have their own connection to the power source.

11. You use a wall switch to turn your bedroom light on and off, this does so by interrupting the *flow of current* in the circuit. How does a *transistor* in your video game box act as a switch between actions on the screen?

The transistor controls whether each portion (pixels) of the screen is lit, based on what you are doing in the game.