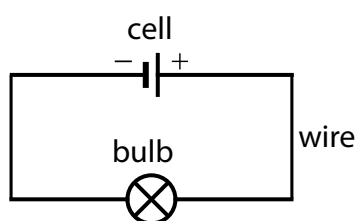


Potential and Circuits

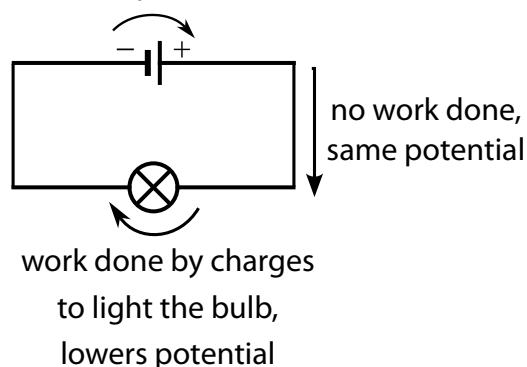
Electric charges move around a circuit to make a **current**. The charges can be **positive** or **negative**. Electric charges are the **electrical** "material" in a circuit.

The amount of **work done** on **each unit of charge** is called the **potential**. It is measured in **volts** (V).

The potential will **change** around a circuit.

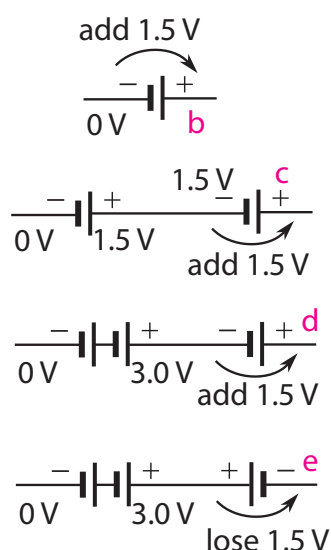


work done on charges,
adds potential



1 Complete the sentences below with the words **potential**, **positive**, **negative**.

(a) The potential at the _____ terminal of a cell, the short side, is 0 V. The _____ at the _____ terminal, the long side, is 1.5 V.



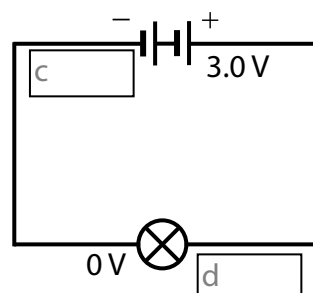
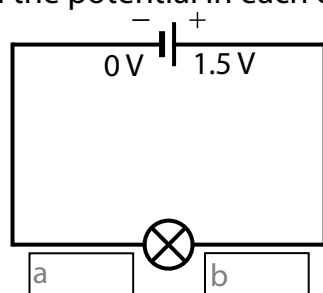
(b) What is the potential at (b)?

(c) Two cells are connected together. What is the potential at (c)?

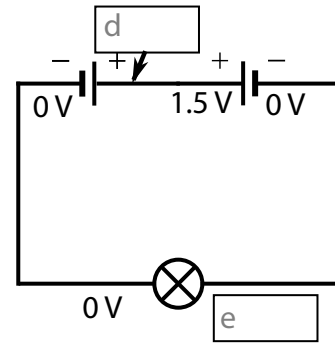
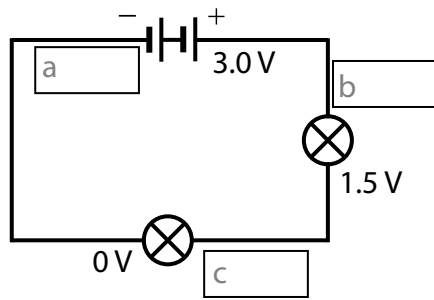
(d) Three cells are now connected together. What is the potential at (d)?

(e) The third cell is now connected in reverse. What is the potential at (e)?

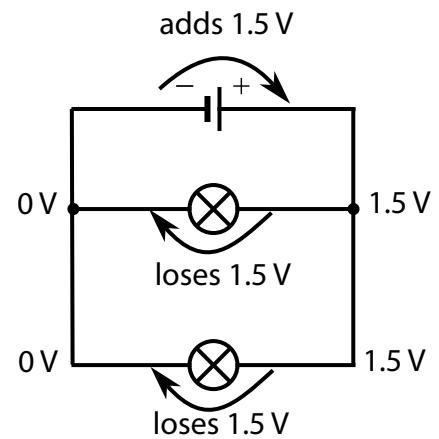
2 Write down the potential in each of the boxes.



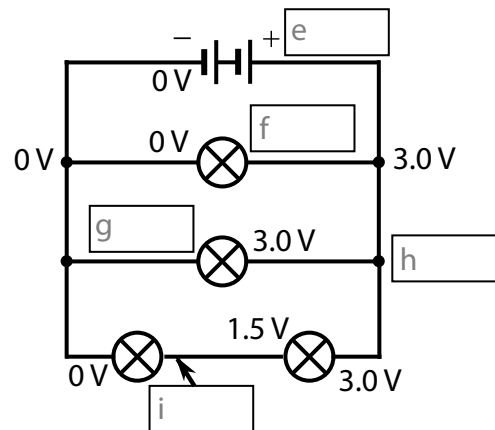
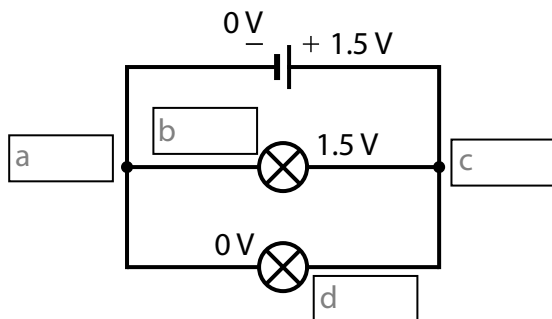
3 Write down the potential in each of the boxes.



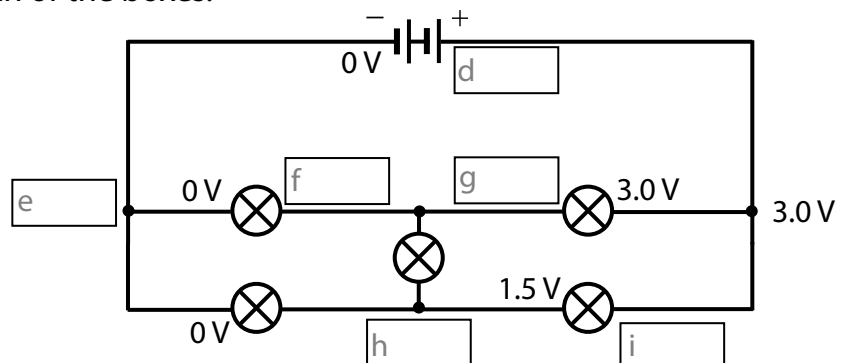
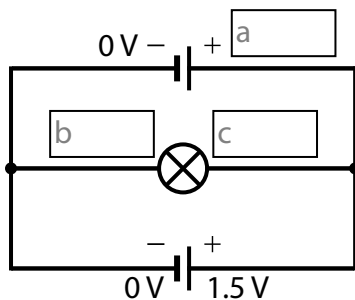
Parallel circuits have **junctions**. **No work** is done by a **charge** when passing through a junction. The **potential** stays the **same**.



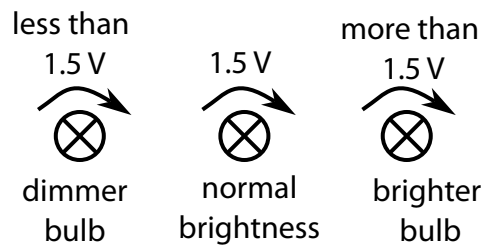
4 Write down the potential in each of the boxes.



5 Write down the potential in each of the boxes.

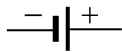


The **difference** in **potential** across a battery or a bulb is called the **potential difference** or **voltage**. When there is a **potential difference** across a **bulb**, charges **flow** through it, lighting it up.



6 What is the potential difference for each combination of cells or **batteries**? Each cell has a potential difference of 1.5 V.

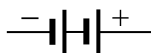
(a) 1-cell battery



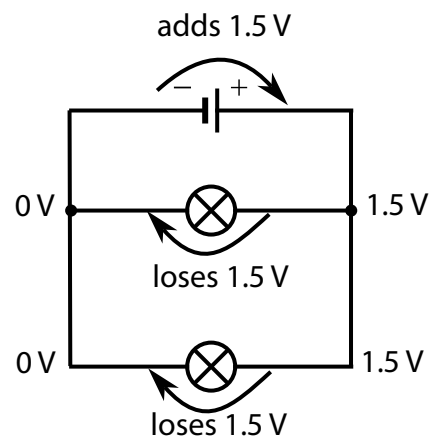
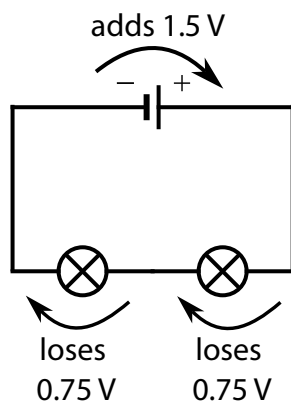
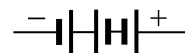
(c) 3-cell battery



(b) 2-cell battery



(d) odd 3-cell battery



If **two** bulbs are **next** to each other on the same **branch** of the circuit, we say they are in **series**. The **potential difference** is **shared** across the two. If the bulbs are **identical**, it is shared **equally**.

If **two** bulbs are on **different branches** of the circuit, we say the **bulbs** are in **parallel**. The **potential difference** is the **same** across the two **branches** of the circuit.

7 In the circuits in question 4, which bulbs are in series and which bulbs are in parallel?

8 Go back to the circuits in questions 2, 3, 4, and 5. What is the brightness of each bulb? Are they **normal brightness**, **dimmer** or **brighter**? A bulb with normal brightness means the potential difference across it is 1.5 V.