

Electricity and magnetism

Circuits: Series and parallel circuits

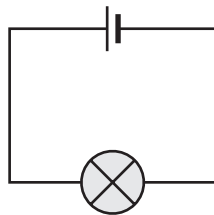
SW-PHY-INT-0008

Objectives

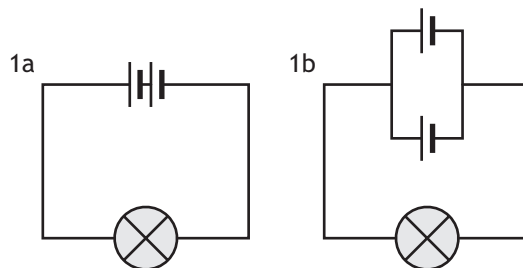
To investigate the effects of placing cells and lamps in series and in parallel in circuits.

Instructions

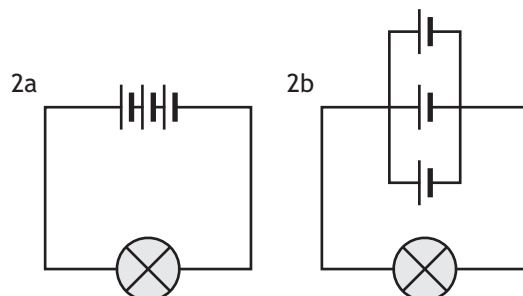
Make a circuit containing one cell and one lamp. Note the brightness of the lamp. You should use this as your reference when describing the brightness of the lamps in the circuits that follow.



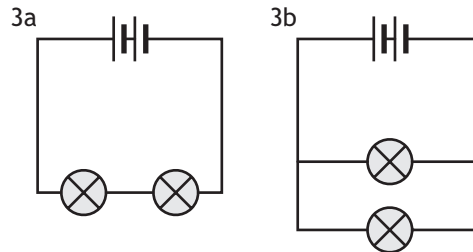
Place a second cell in the circuit both in series (1a) and in parallel (1b) with the first cell.



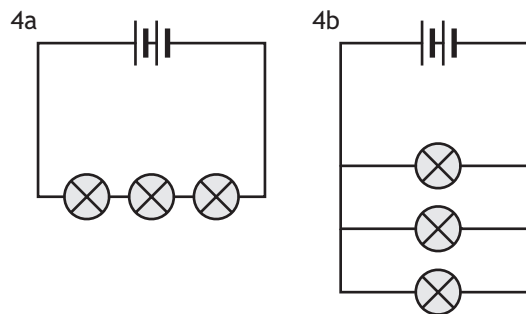
Place a third cell in the circuit both in series (2a) and in parallel (2b) with the two cells.



Using two cells connected with the same polarity in series, connect two lamps in series (3a) and parallel (3b).



Repeat this connecting three lamps in series (4a) and three lamps in parallel (4b).



Conclusions

Thinking about the following questions may help you to write your conclusions.

1. What is the effect on the brightness of a single lamp of adding a cell in series (1a) and in parallel (1b)?
2. What is the effect on the brightness of a single lamp of adding two cells in series (2a) and in parallel (2b)?
3. What is the effect of adding lamps in series in a circuit (3a) and (4a)?
4. What is the effect of adding lamps in parallel in a circuit (3b) and (4b)?
5. Would the cells in circuit (4b) last a shorter time, the same time or a longer time than the cells in circuit (4a)? Explain your answer.