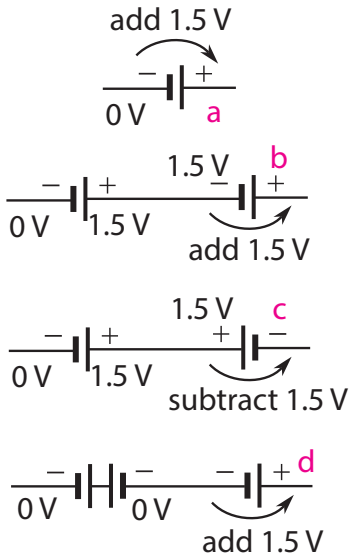
Potential and Circuits Practice

1 The cells below are linked together in different ways. What is the total potential for each combination?



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

(b) Two cells are connected together. The potential at the negative terminal of cell 2 is 1.5 V. What is the potential at (b)?

(c) The second cell is connected in reverse. What is the potential at (c)?

(d) A third cell is now connected. What is the potential at (d)?

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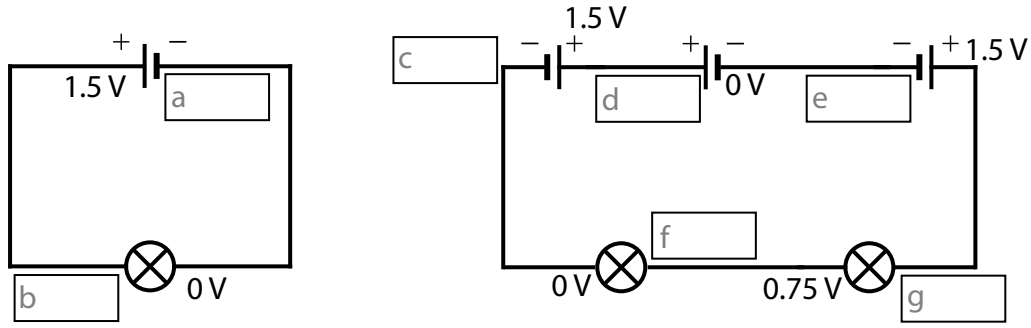
2 Write down the potential in each of the boxes.



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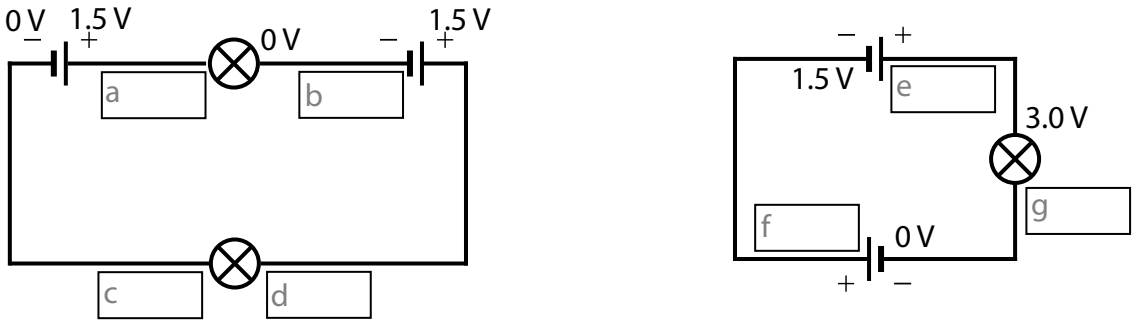
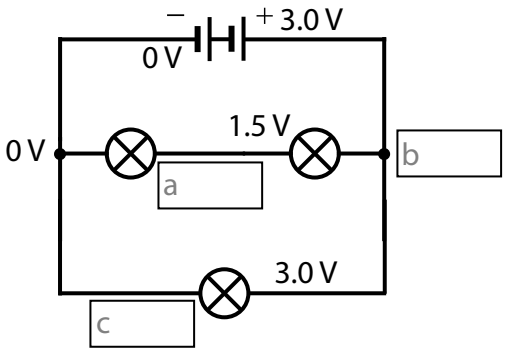
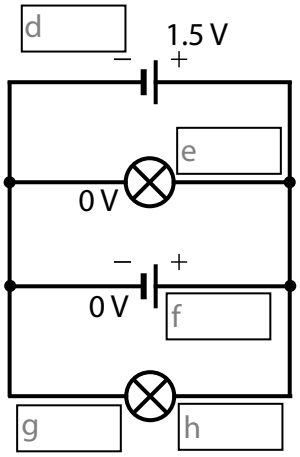
3 Write down the potential in each of the boxes.

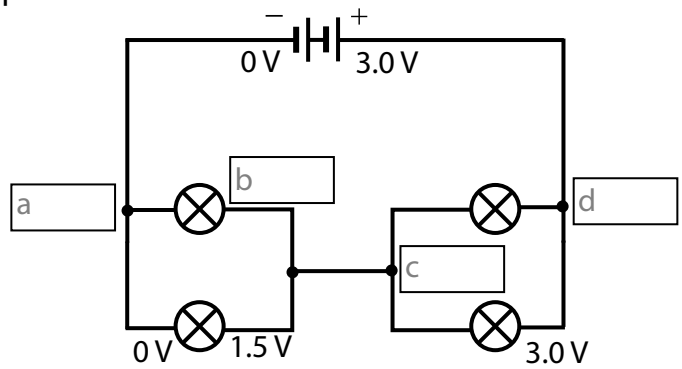


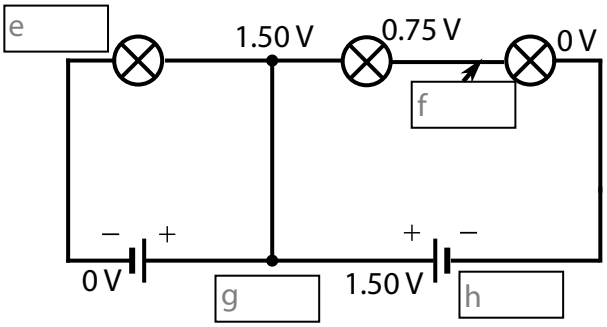
4 Write down the potential in each of the boxes.





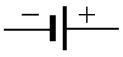
5 Write down the potential in each of the boxes.





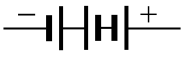
6 What is the potential difference for each cell combination or battery? Each cell has a potential difference of 1.5 V.

(a) 1-cell battery

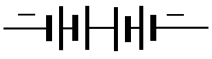


(b) 2-cell battery

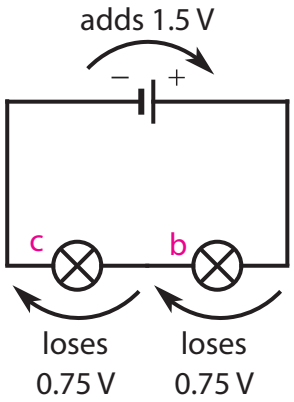
(c) odd 3-cell battery



(d) odd 4-cell battery



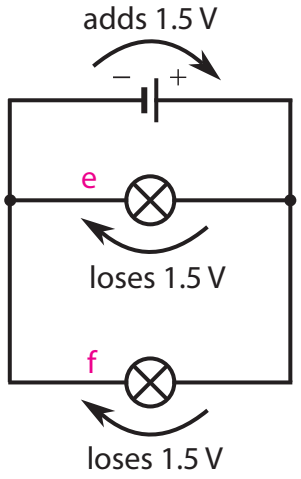
7 Complete the sentences with the words **series, parallel, branch, branches, next, shared, same, different, potential difference**. Some words may be used twice.



(a) If two bulbs are _____ to each other on the same _____ of the circuit, we say they are in _____. The _____ is _____ across the two.

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

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



(d) If two bulbs are on _____ branches of the circuit, we say the bulbs are in _____. The _____ is the _____ across the two _____ of the circuit.

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

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

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8 Which bulbs in the circuits in question 4 are in series and which are in parallel?

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9 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.

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10 A toy car needs a potential difference of 9.0 V to work.

(a) How many 1.5 V batteries will you need to make the car work? A 1.5 V battery means the potential difference across it is 1.5 V.

(b) Draw a diagram showing how you would connect the batteries.