

Electrical Resistance

Miss Walrond



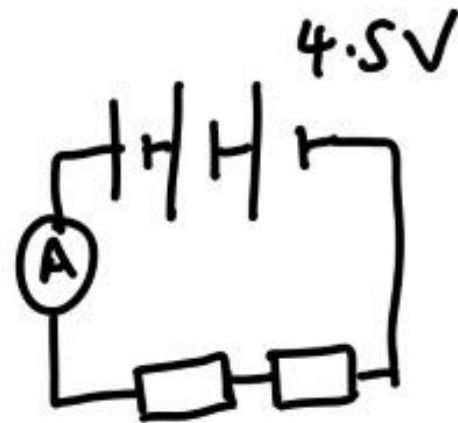
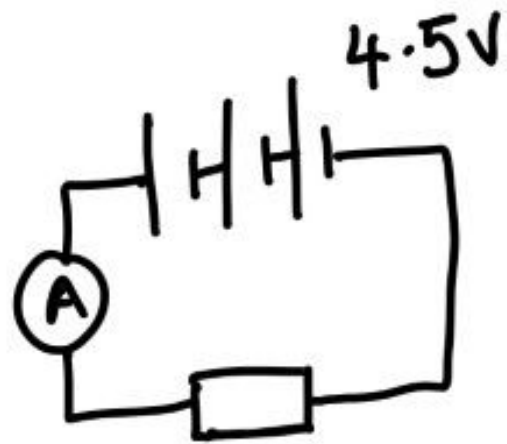
Definitions

- 1) Write the definition for electrical resistance.
- 2) Complete the sentence below:
If the resistance of a variable resistor decreases, the current will
_____.

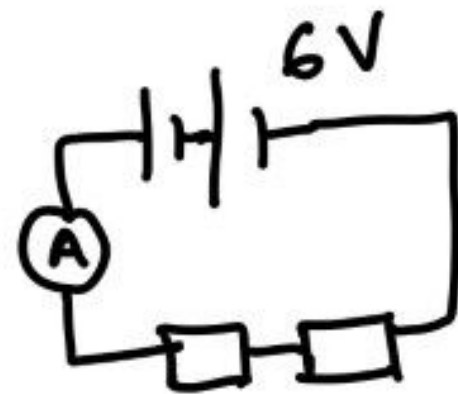
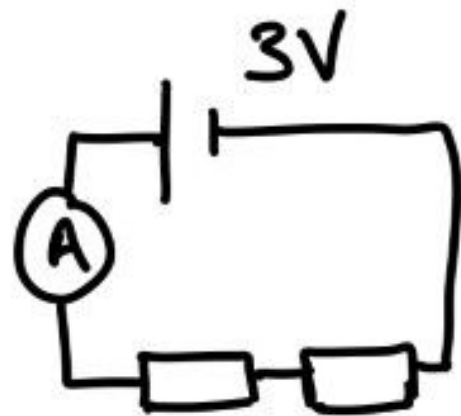


Independent Task

1) Explain which of these circuits has the lower current?



2) Explain which of these circuits has the higher current?



Worked example - Calculating potential difference

	If a current of 2.5 A flows through a motor with a resistance of 3 Ω , how much potential difference is there across the motor?	The current through a 12 k Ω resistor in an electric circuit is 1.5 A. Calculate the potential difference across the resistor.
V alues		
E quation		
S ubstitute		
R earrange		
A nswer		
U nits		



Independent Task: Calculating potential difference

- 1) A student collected data to find the resistance of a fixed resistor. But he forgot to write down the potential difference values. Complete the table below:

Potential Difference in V	Current in A	Resistance in Ω
	0.9	6.0
	2.1	6.0
	3.0	6.0

- 2) A $6\ \Omega$ lamp has a current of 50 mA flowing through it. Calculate the potential difference across the lamp.



Worked example - Using $V = I \times R$

	What current flows through a hair dryer plugged into a 110 V circuit, if it has a resistance of 25 Ω .	A 12 V lamp has a current of 30 mA flowing through it. Calculate the resistance of the lamp.
V alues		
E quation		
S ubstitute		
R earrange		
A nswer		
U nits		



Independent Task: Using $V = I \times R$

- 1) A resistor in a circuit has a current through it of 0.20 A when the potential difference across it is 15V. Calculate the resistance of the resistor.
- 2) A 12 V car battery pushes charge through the headlights which have a total resistance of 10 Ω . Calculate the current flowing through the circuit.
- 3) A 50 k Ω resistor has a potential difference of 10 V across it. What is the current flowing through it?
- 4) A 3 V lamp has a current of 250 μA . What is the resistance of the lamp?



Answers



Review: Independent Task: Calculating potential difference

1)

Potential difference in V	Current in A	Resistance in Ω
5.4	0.9	6.00
12.6	2.1	6.00
18.0	3.0	6.00

2) A $6\ \Omega$ lamp has a current of 50 mA flowing through it. Calculate the potential difference across the lamp. **0.3 V**



Review - Independent Task: Using $V = I \times R$

- 1) **75 Ω**
- 2) **1.2 A**
- 3) **0.0002 A or 0.2 mA**
- 4) **12,000 Ω or 12 k Ω**

