

# Electrical Resistance

Miss Walrond



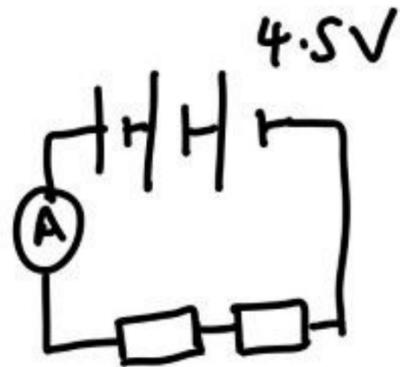
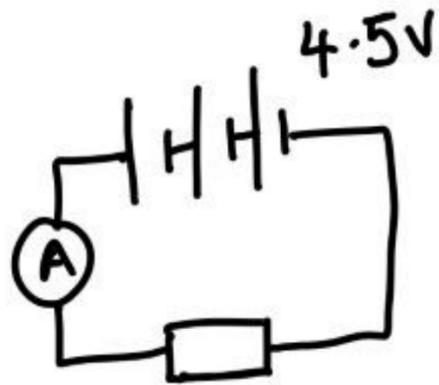
# Definitions

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

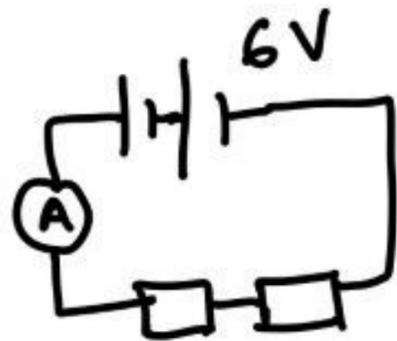
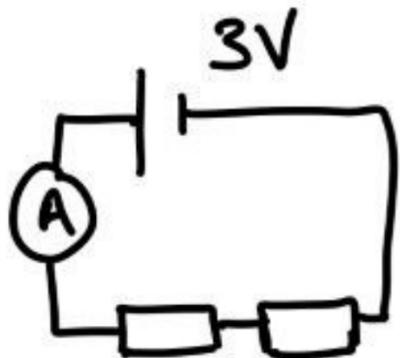


# Independent Task

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 $3 \Omega$ , how much potential difference is there across the motor?	The current through a $12 \text{ k}\Omega$ resistor in an electric circuit is 1.5 A. Calculate the potential difference across the resistor.
<b>V</b> alues		
<b>E</b> quation		
<b>S</b> ubstitute		
<b>R</b> earrange		
<b>A</b> nswer		
<b>U</b> 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 $\Omega$
	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 $\Omega$ .	A 12 V lamp has a current of 30 mA flowing through it. Calculate the resistance of the lamp.
<b>V</b> alues		
<b>E</b> quation		
<b>S</b> ubstitute		
<b>R</b> earrange		
<b>A</b> nswer		
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## 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  $\Omega$ . Calculate the current flowing through the circuit.
- 3) A 50 k  $\Omega$  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  $\mu\text{A}$ . What is the resistance of the lamp?



# Answers



# Review: Independent Task: Calculating potential difference

1)

Potential difference in V	Current in A	Resistance in $\Omega$
<b>5.4</b>	0.9	6.00
<b>12.6</b>	2.1	6.00
<b>18.0</b>	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  $\Omega$**
- 2) **1.2 A**
- 3) **0.0002 A or 0.2 mA**
- 4) **12,000  $\Omega$  or 12 k $\Omega$**

