

# Potential Difference

Miss Walrond



# Definitions Pause Point

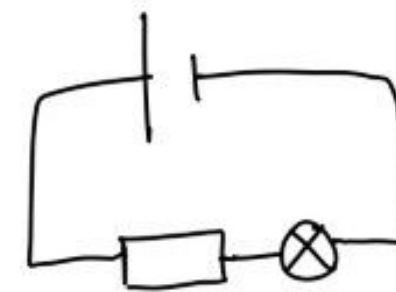
- 1) Write the definition for potential difference.
- 2) What is the unit of measure of potential difference?
- 3) If a component has a potential difference of 6 V, how much electrical work is done per coulomb of charge that passes through it?



# Independent Task:

## Complete the tasks below:

- 1) Name the piece of equipment that is used to measure the potential difference.
- 2) Redraw the two circuits below to include a voltmeter to measure the potential difference across the resistor.



Image, Miss Walrond

- 3) Draw an electrical circuit with a battery and a lamp. Add a voltmeter to measure the potential difference across the lamp.



# **Independent Task: Using $E = QV$**

## **Complete these calculations**

- 1) A charge of 40 C flows through a heater operating at 12 V. How much energy does the heater transfer?
- 2) A 12 V battery is used to deliver 18 J of energy. How much charge has moved?
- 3) What charge flows when 110 J of energy is transferred through a lamp with 230 V applied across it? Give your answer to 2 significant figures.
- 4) A lamp has a potential difference of 1.5 V across it. If 1.2  $\mu\text{C}$  flows through the lamp, how much energy is transferred?



# Independent Task: Calculating Potential Difference

## Complete these calculations

- 1) What is the potential difference if 3 J of energy is transferred through a component when 0.2 C of charge flows?
- 2) What is the potential difference which causes 36 J of energy to be transferred by 150 coulombs of charge?
- 3) Calculate the potential difference if 3.5 kC of charge flows through a lamp transferring 90 J of energy. Give your answer to 2 significant figures.
- 4) What is the potential difference when 1.5 J of energy is transferred through a circuit with a charge of 10  $\mu\text{C}$ ?



# Answers



# Independent Task Review: Using $E = QV$

- 1) 480 J
- 2) 1.5 C
- 3) 0.48 C
- 4) 0.0000018 J or  $1.8 \times 10^{-6}$  J



# Independent Task Review: Calculating Potential Difference

1) 15V

2) 0.24 V

3) 0.026 V

4) 150,000 V or 150 kV

