Autumn 2
Year 7 Extended Science Homework Assignment

OLD BUCKENHAM HIGH SCHOOL
Achieving excellence together

Name: _____

Teacher: _____

Instructions

A printed copy should be handed into your teacher.

The knowledge required to complete this assignment will be supported in class.

Potential difference, resistance and current

Task 1: Potential difference

1 **a** Circle the name of the piece of equipment used to measure potential difference.

voltmeter/ammeter

b Draw the circuit symbol.

2 Draw a circuit with one cell, one bulb, and one switch.

Add to the diagram another component that would allow the potential difference across the bulb to be measured.

3 What does potential difference tell you about the energy in a circuit?

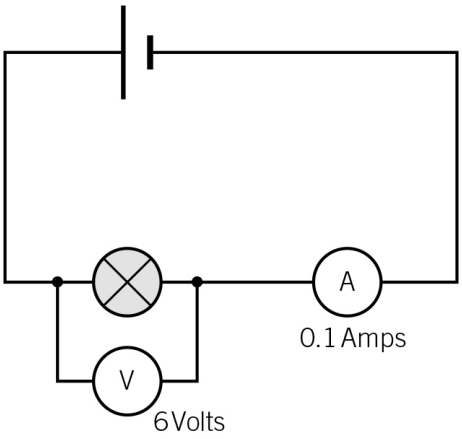
.....

.....

Task 2: Resistance

1 Calculate the resistances of the components in the following circuits. Part **a** has been done for you as an example.

a

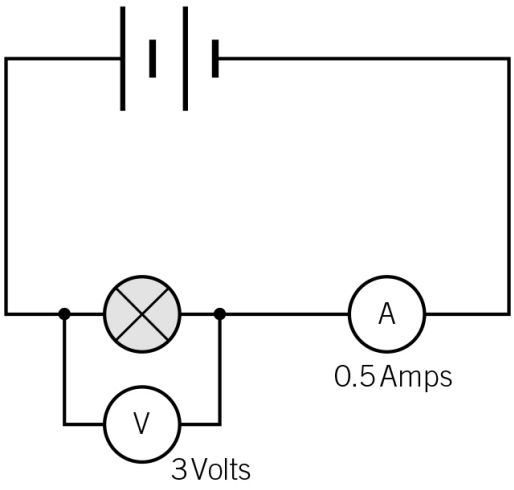


Known values (from the circuit diagram):
Potential difference = 6 V
Current = 0.1 A

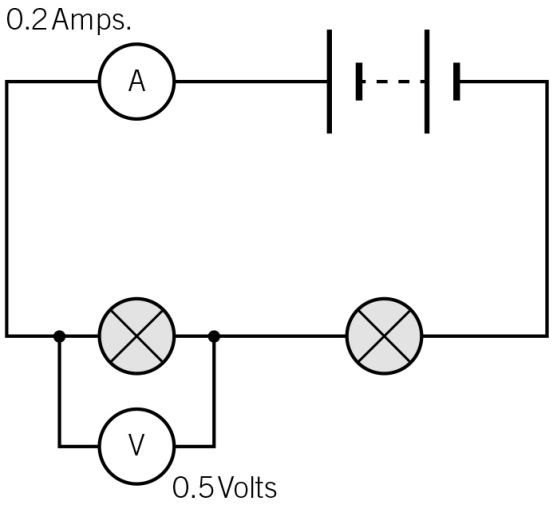
Formula:
resistance = potential difference ÷ current

Substitute known values into the formula:
resistance = 6 V ÷ 0.1 A
= 60 Ω

b



c



2a Complete the description about conductors and insulators.

An insulator has a very …… resistance but a conductor has a very

…… resistance.

b How well do insulators and conductors allow electricity to flow?

……

……

3 Complete the sentence below.

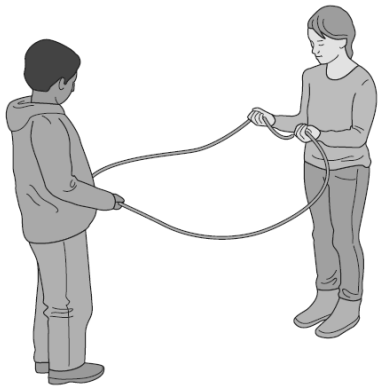
Components with …… reduce the …… flowing in a circuit

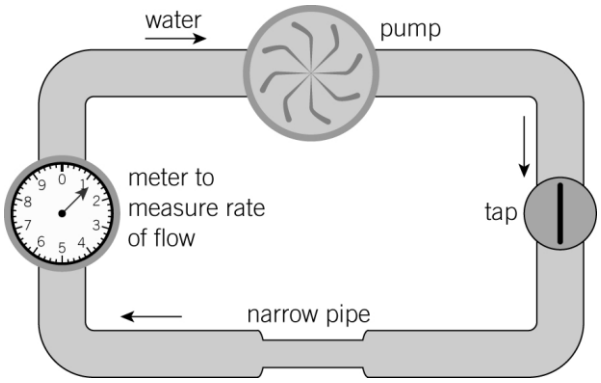
because the moving electrons collide with the atoms in the components and transfer

energy to the surroundings by …….

Task 3: Models of electricity

Complete the following table to compare the rope model and water model of electrical circuits. Use the diagrams to help you.

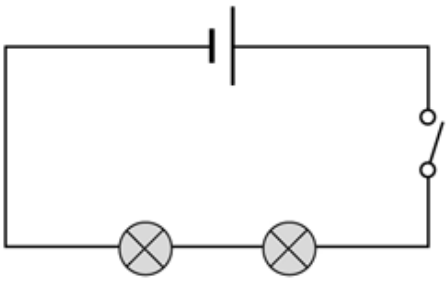
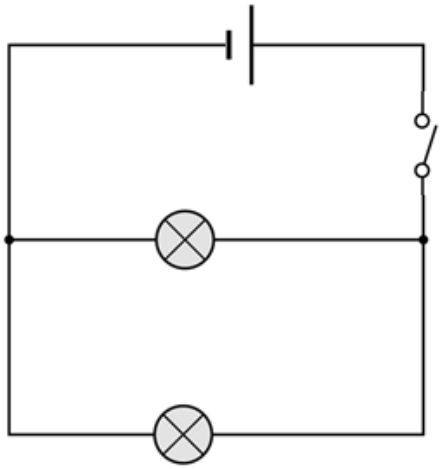




Part of circuit	Part of rope model	Part of water model
cell/battery		
flow of charge		
components (e.g., bulbs)		
switch	not included	

Task 4: Series and parallel circuits

Complete the table to compare potential difference and current in series and parallel circuits.

	Series circuit	**Parallel circuit**
		
Describe the potential difference.		
Describe the current.		

Task 5: Current

1 State what current is.

.....

2 What is the name and symbol of the piece of equipment used to measure current?

Name:

.....

Symbol:

3 Draw a circuit with one cell, one bulb, one switch, and the component for measuring current.

4 What happens to the current when more bulbs are added to a series circuit?

.....

.....

5 What happens to the current when more bulbs are added in parallel to a parallel circuit?

.....

.....

Task 6: Charging up

1 What are the two types of electric charge?

……

2 Complete the following table to state whether the two charges will attract or repel.

Charge 1	Charge 2	Attract or repel?
positive	positive	
negative	positive	
negative	negative	

4 Use the following words to complete the sentences describing what happens to make hair charged when combing with a plastic comb.

charged **electrons** **negatively** **positively**

When a plastic comb is pulled through hair, some …… are transferred from the hair onto the comb. This means that comb and hair become ……. The hair loses electrons and becomes …… charged. The comb gains electrons and becomes …… charged.

5 Sketch a diagram to illustrate the situation before and after the plastic comb has been charged up by pulling it through hair.

Task 1: Cells and microscopes

Use words from the box to complete the sentences about cells and microscopes.

chloroplasts	**diffusion**	**eyepiece**	**high**	**low**	**magnify**
membrane	**nucleus**	**tissue**	**unit**	**wall**	

Cells are very small so we have to _____ them to make them visible.

The microscope has two types of lens, the _____ and the objective lens.

A _____ power objective lens is needed to see the smaller cell structures.

Usually we look at several similar cells at the same time so we are looking at a _____.

Leaf cells can be seen with a microscope.

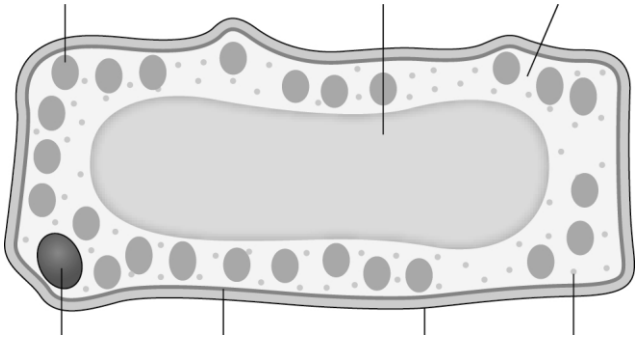
On the outside of a leaf cell is a _____. This stops the cell from bursting when it fills with water by the process of _____.

Inside the leaf cell is a _____, which controls cell activities.

Leaf cells also have _____, which contain green chlorophyll.

Task 2: Functions of parts of a leaf cell

1 Label the diagram. Make sure you label every part that has a line to it.



2 Fill in the table below by either filling in the function or name of the component.

Name of component	**Function**
	where photosynthesis happens
vacuole	
	'jelly-like' substance where chemical reactions take place
mitochondrion	
cell wall	
	a barrier around the cell that controls what can come in and out of the cell
nucleus	

3 List the parts of a plant cell which are not found in an animal cell.

_____

_____

Task 3: Joints

1 The left column has a list of structures that help a joint to move.

For each structure, write a description (e.g., hard, smooth, elastic, not elastic) and describe its function.

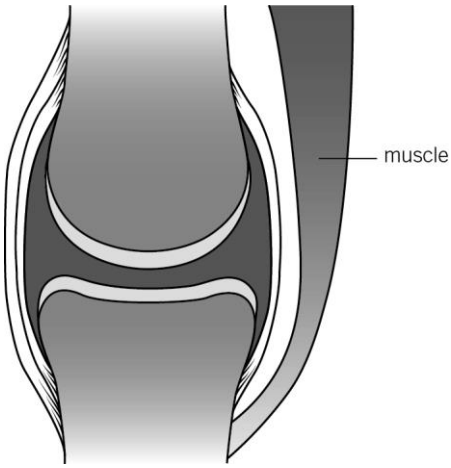
Structure	Description	Function
bone		
ligament		
cartilage		
tendon		

2 Draw a line from each type of joint to its correct type of movement (on the left) and to a correct example (on the right).

Type of movement	Type of joint	Example
does not allow movement	hinge joint	shoulder or hip
moves backwards and forwards	ball and socket joint	skull
moves in all directions	fixed joint	elbow or knee

Task 4: Muscles and movement

This is a diagram of a joint and one muscle.



1 On the diagram label a ligament, cartilage, a tendon, a bone, fluid.

2 What is the purpose of the fluid?

_____

_____

3 What will happen when the muscle contracts?

Tick one box.

The bottom bone will move to the left ☐

The top bone will move to the left ☐

The bottom will move to the right ☐

The top bone will move to the right ☐

4 In your own words explain why two muscles are needed to move bones.

_____

_____