AP2 Year 7 revision list

Plant and animal cells

Specialised cells, functions and processes

Series and parallel circuits

Resistance

Circuit components

States of matter

Changing state

Melting and boiling points

Analysing data tables and graphs

Scientific investigations – identifying variables

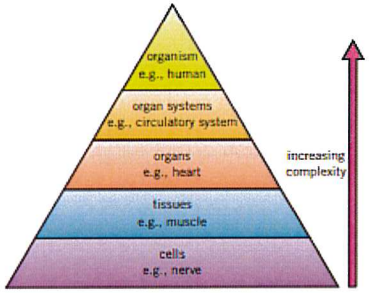
Speed, distance and time

Animal adaptations

B1 Chapter 8: Organisms
Knowledge organiser

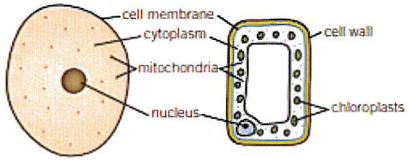
Activate
Question • Progress • Succeed

Levels of organisation



Plant and animal cells

- To be able to **observe** a **cell** we need to use a **microscope**, this magnifies the cell to a point to which we can see it
- Plant and animal cells have small structures inside known as **organelles**, each of these performs a certain role which allows the cell to survive

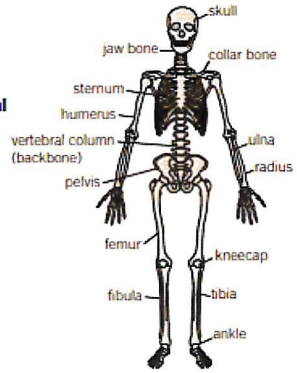


Specialised cells

- **Specialised cells** are designed to carry out a particular function, because of this they have specific features and adaptations to allow them to carry this out
- Both plant and animal cells can be specialised, with these specialised cells working together to help the organism to survive

The skeleton

- The **skeleton** is made up of 206 **bones** which are a type of **tissue**
- Bones have a blood supply and are a living tissue
- The skeleton is part of the **muscular-skeletal system**
- The four main functions of the skeleton are:
  - To support the body – to keep you upright and hold **organs** in place
  - Protect organs – such as the skull protecting the brain
  - Movement – by working with muscles to allow you to move
  - Making blood cells – the **bone marrow** produces red and white blood cells



Muscles

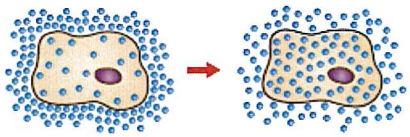
- **Muscles** are a type of tissue which allows movement
- They pull on tendons which in turn pull on bones to allow movement
- Muscles like the triceps and biceps are known as **antagonistic muscle pairs**, they work together –as one contracts, the other will relax

Organs

- An organ is a group of tissues that have the same function
- They can work with other organs in an **organ system**, such as the respiratory system which uses organs like the heart and lungs to transfer oxygen around the body
- Vital organs are the organs that need to keep functioning for an **organism** to stay alive, e.g. the heart

Movement into and out of cells

- The process in which substances move into and out of cells is known as **diffusion**
- This occurs across the **cell membrane**
- During diffusion particles move from an area of high **concentration**, to an area of low concentration



- Oxygen and nutrients enter the cell by diffusion, carbon dioxide and waste products leave

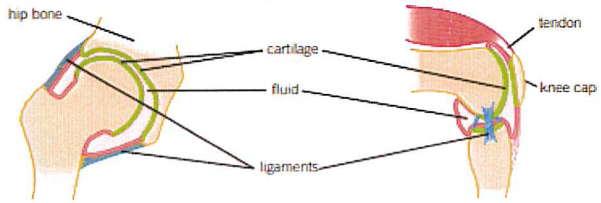
Movement

Joints occur between bones and allow movement, there are three main types of joints

Hinge	Ball and socket	Fixed
For back and forward movement, e.g. knees	*For movement in all directionse.g. hips*	*Do not allow movement, e.g. skull*

Joints have three main types of tissue:

Ligaments	**Cartilage**	**Tendons**
Connect bone to bone	*Coats the end of bones as a protection*	*Connects bone to muscle*



Key terms Make sure you can write definitions for these key terms.

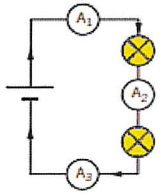
antagonistic muscle pair, bone, bone marrow, cartilage, cell, concentration, diffusion, joints, ligaments, microscope, muscular skeletal system, nucleus, organ, organism, organ system, skeleton, specialised cells, tendons, tissue

P1 Chapter 2: Electricity
Knowledge organiser

Activate
Question · Progress · Succeed

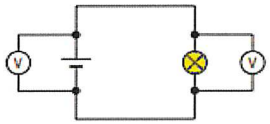
Current

- **Current** is the amount of **charge** flowing per second
- The charges that flow in a circuit are **electrons**, they are negatively charged
- **Electrons** leave the negative end of the **cell** and travel around the circuit to the positive end of the cell
- Current has the unit of Amps (A) and is measured with an **ammeter** (which is placed in series or in the main circuit)



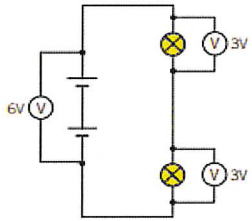
Potential difference

- **Potential difference** is the amount of energy transferred by the cell or **battery** to the charges
- The value of potential difference tells us about the force applied to each charge and then the energy transferred by each charge to the component which it passes through
- Potential difference has the unit of volts (V) and is measured with a **voltmeter** (which is placed in parallel to the circuit)



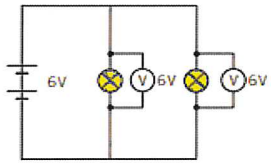
Series circuits

- **Series** circuits only have one loop
- If one component breaks, the whole circuit stops working
- Current is the same everywhere in a series circuit
- The total potential difference from the battery is shared between the components in a series circuit
- Adding more bulbs decreases the brightness of the bulbs



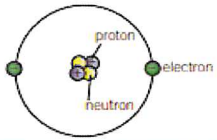
Parallel circuits

- **Parallel** circuits have more than one loop
- If one component breaks, the rest of the circuit will still work
- Current is shared between the different loops in the circuit
- The potential difference is the same everywhere in the circuit
- Adding more bulbs does not affect the brightness of the bulbs



The atom

- The **atom** consists of a central nucleus with electrons orbiting around the outside in shells
- **Electrons** have a negative charged
- **Protons** are inside the nucleus and have a positive charge
- **Neutrons** are inside the nucleus and have a neutral charge



Static electricity

- Static electricity is the caused by the rubbing together of two **insulators**
- This causes electrons to be transferred, leaving one object with a positive charge, and one object with a negative charge

- Like charges will **repel**, opposite charges will **attract**

Resistance

- **Resistance** is a measure of how easy or how hard it is for charges to pass through a component in a circuit
- Resistance has the unit of ohms (Ω)
- Resistance is calculate by measuring potential difference and current and using the following equation:

$$\text{resistance } (\Omega) = \frac{\text{potential difference (V)}}{\text{current (A)}}$$

- Materials with a high resistance are said to be **insulators**
- Materials with a low resistance are said to be **conductors**

Key terms

Make sure you can write definitions for these key terms.

ammeter · atom · attract · battery · cell · conductors · current · electrons · electric charge · insulator · neutral · neutrons · parallel · potential difference · protons · repel · resistance · series · voltmeter

The tasks you will be completing consist of labelling a range of diagrams, reading and comprehension, sentence word fills, key words and definitions, check point tasks and end of topic test questions. You will be expected to use your existing knowledge, the information in the booklet and the recommended websites to answer each question.

Useful websites: please make sure you visit these:
https://www.bbc.co.uk/bitesize/subjects/zng4d2p

https://mmerevise.co.uk/ks3-revision/key-stage-3-science/

https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/z4f26yc

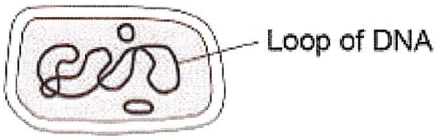
Here you will find a range of information to help you answer each topic.

Q1.

This question is about cells.

(a) **Figure 1** shows a cell.

Figure 1



What type of cell is shown in **Figure 1**?

Tick (✓) **one** box.

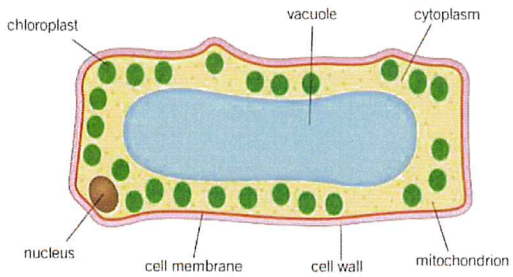
Animal ☐

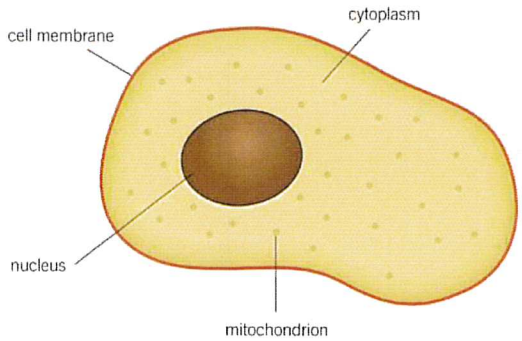
Bacterium ☐

Plant ☐

(1)

Read each exam style question carefully. Tick the correct number of boxes and use appropriate key terms to support your answer. Be ready to self-mark your own work using RED pen to track progress and highlight areas for development





Observe each cell type above. Devise a table to compare each cell. Name each cell type and state the function of each named part.

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<u>Extended learning question:</u>

State the meaning of the term uni-cellular organism and draw and label its structure:

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<u>Uni-cellular organism</u>:

<u>Muscles:</u>

- **Are found all over the body**
- **Muscles work in pairs**
- **There are many different types of muscles in the body.**
- **Could you name some examples…**

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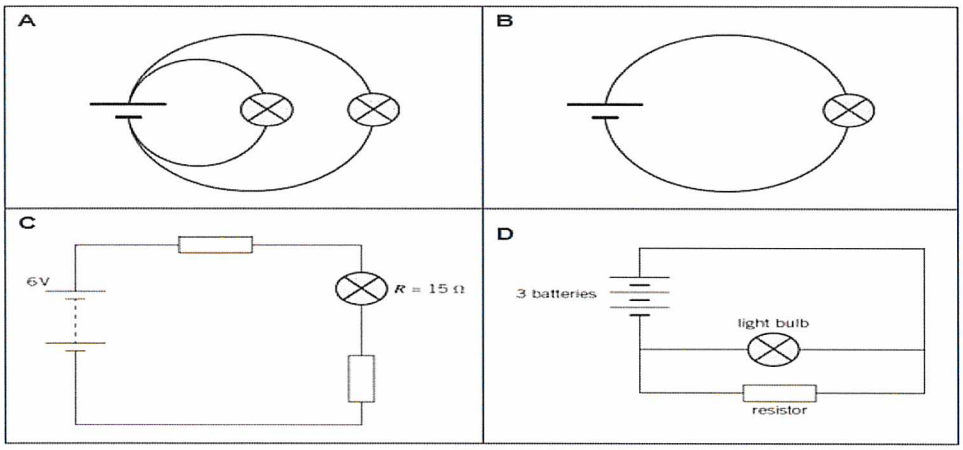
Circuits:



How many components can you name and explain what they do?

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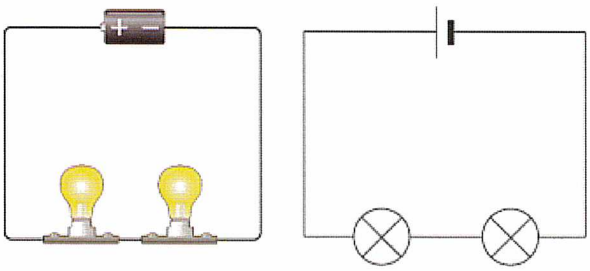
Series circuits:

If you follow the circuit diagram from one side of the cell to the other, you should pass through all the different components, one after the other, without any branches.

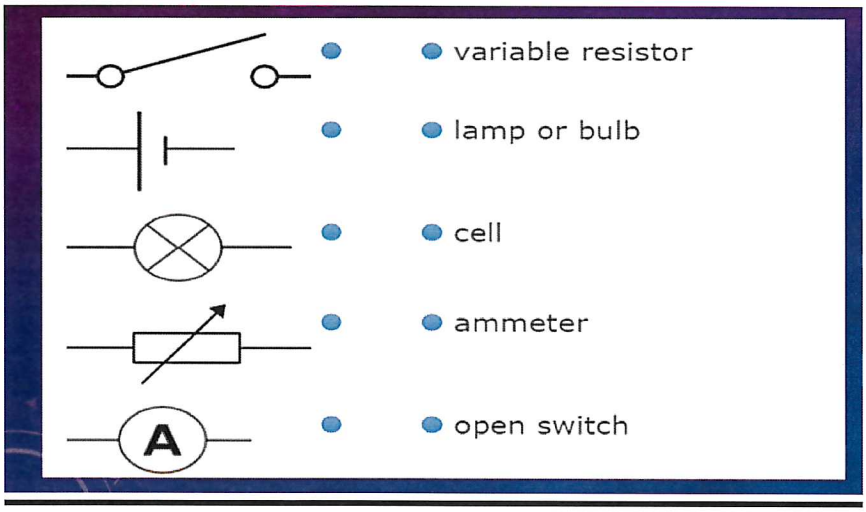
https://youtu.be/WUR4oAKqWHc



Could you attempt to draw a parallel circuit?

Parallel circuit: Attempt to draw your example

Memory challenge!



States of matter:

Draw a particle for each state of matter in the boxes below:

Solid	Liquid	Gas

How is each state of matter different from each other? Explain using appropriate key words

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