

Name:
Science Class:
Teacher:
Hand in day:

# Y7 Science

## Term 1: Homework Booklet

### Biology

	Hand in Date	Parents Signature
<b>Animal Cells</b>		
Homework 1		
Homework 2		
Homework 3		

# Animal Cells: Homework 1

## Comprehension Task:

### Life Processes

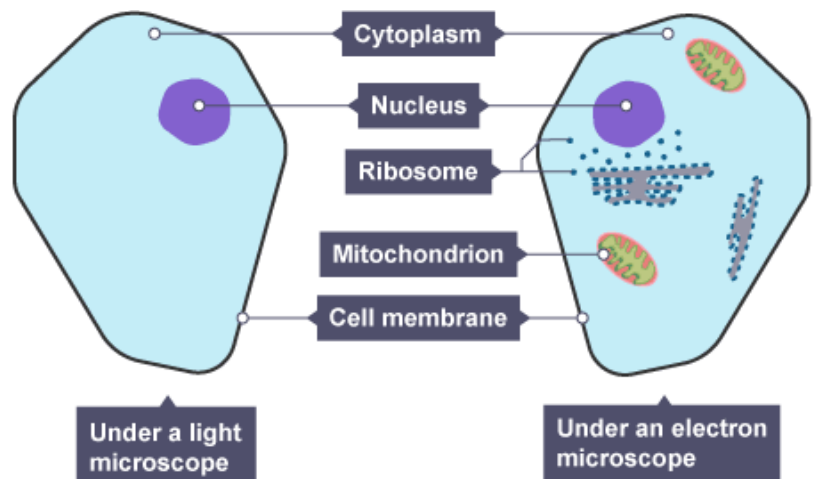
Living organisms have certain **life processes** in common. There are **seven** things that they need to do to count as being alive. The phrase **MRS GREN** is one way to remember them:

- **M**ovement - all living things move, even plants
- **R**espiration - getting energy from food
- **S**ensitivity - detecting changes in the surroundings
- **G**rowth - all living things grow
- **R**eproduction - making more living things of the same type
- **E**xcretion - getting rid of waste
- **N**utrition - taking in and using food

### Cells

Cells are the **basic building blocks** of all animals and plants. They are so small, you need to use a **light microscope** to see them.

The basic structure of an animal cell is shown in the diagram, on the left viewed with the light microscope, and on the right with the transmission electron microscope.



The function of each part of an animal cell is described below:

	Function
Cytoplasm	A jelly-like material that contains dissolved nutrients and salts and structures called organelles. It is where many of the chemical reactions happen.
Nucleus	Contains genetic material, including DNA, which controls the cell's activities.
Cell membrane	Its structure is permeable to some substances but not to others. It therefore controls the movement of substances in and out of the cell.
Mitochondria	Organelles that contain the enzymes for respiration, and where most energy is released in respiration.
Ribosomes	Tiny structures where protein synthesis occurs.

## Questions

1. How many life processes are there?
2. Which life process means making more living things of the same type?
3. Which life process means getting rid of waste?
4. All living things need to be able to respire. What does this mean?
5. What do we describe cells as?
6. Which part of an animal cell contains DNA?
7. In which part of a cell do most chemical reactions take place?
8. What is the role of the cell membrane?
9. Which parts of a cell can be seen by using just a light microscope?
10. In which part of a cell does respiration take place?

## Animal Cells: Homework 2

### 1. Use the words to label the picture of the microscope:

Base    Light Source    Coarse Adjustment Knob    Arm  
Eyepiece Lens    Stage    Base    Fine Adjustment Knob    Objective Lens



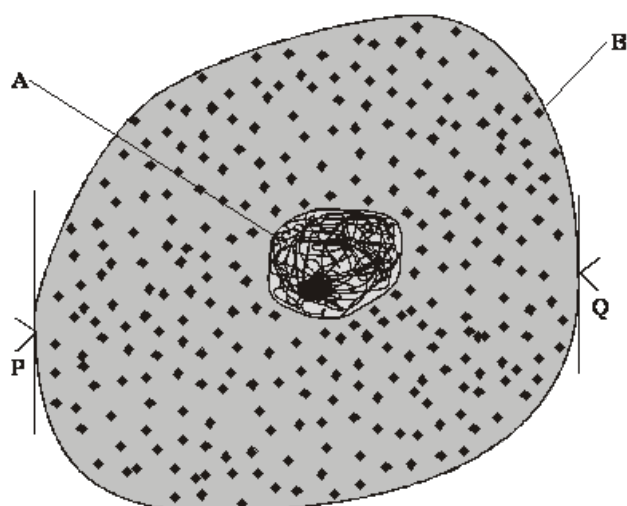
### 2. Use the words to complete the sentences describing how to use a microscope:

Fine    Magnification    Microscope    Draw    Clips    Light    Stage

1. Plug in the m\_\_\_\_\_ and turn on the l\_\_\_\_\_.
2. Place the specimen (the object to observe) on the s\_\_\_\_\_.
3. Turn the m\_\_\_\_\_ to the smallest.
4. Make sure that the specimen is in the centre; fasten with the c\_\_\_\_\_.
5. Look down the m\_\_\_\_\_.
6. Use the f\_\_\_\_\_ adjustment knob to observe the specimen.
7. Increase the m\_\_\_\_\_.
8. D\_\_\_\_\_/write down any observations.

### 3. Complete the exam question:

The diagram shows an animal cell.



- (a) (i) Name structures **A** and **B** by choosing the correct words from the box.

cell membrane	cell wall	cytoplasm	nucleus	vacuole
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Structure **A** \_\_\_\_\_

Structure **B** \_\_\_\_\_

(2)

- (ii) Which structure named in the box controls the passage of substances in and out of the cell?

\_\_\_\_\_

(1)

Living organisms are made of cells.

- (a) Animal and plant cells have several parts. Each part has a different function.

Draw **one** line from each cell part to the correct function of that part.

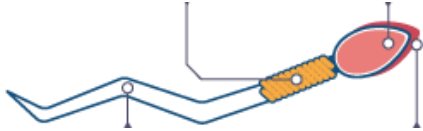
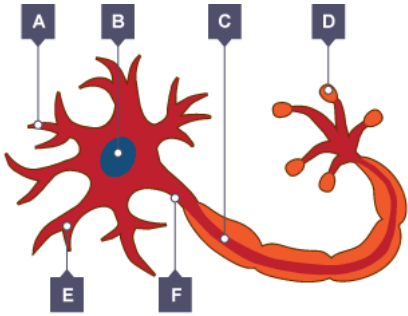
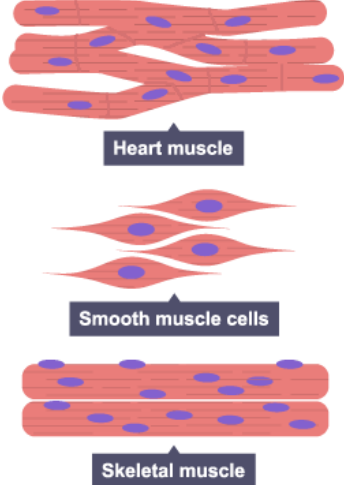
Cell part	Function
Cell membrane	Where most energy is released in respiration
Mitochondria	Controls the movement of substances into and out of the cell
Nucleus	Controls the activities of the cell
	Where proteins are made

(3)

(Total 6 marks)

## Animal Cells: Homework 3

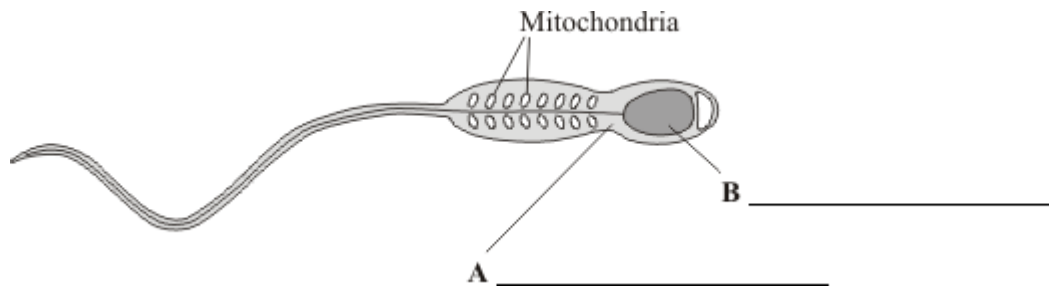
### 1. Complete the table below:

Type of Cell	What adaptations does this cell have and why?	Diagram of Specialised Cell
		 <p>A diagram of a sperm cell. It features a long, thin, wavy tail (flagellum) at one end, a small oval nucleus in the middle, and a larger, rounded head at the other end. The head contains a small, circular mitochondrion.</p>
		 <p>A diagram of a neuron. It shows a central cell body (soma) with a large, dark blue nucleus. Several branching processes (dendrites) extend from the soma. A long, thin axon extends from the soma, ending in a series of branching structures (axon terminals). Labels A, B, C, D, E, and F are placed at various points along the neuron.</p>
		 <p>A diagram showing three types of muscle cells. The top section shows heart muscle cells, which are branched and striated. The middle section shows smooth muscle cells, which are spindle-shaped and non-striated. The bottom section shows skeletal muscle cells, which are long, cylindrical, and striated. Labels 'Heart muscle', 'Smooth muscle cells', and 'Skeletal muscle' are placed below their respective diagrams.</p>

## 2. Complete the exam question:

This question is about cells.

- (a) (i) The diagram shows a sperm cell.



Use words from the box to label parts **A** and **B**.

cell membrane

cytoplasm

nucleus

(2)

- (b) Sperm cells have many mitochondria.

Why do sperm cells need many mitochondria?

Tick (✓) **one** box.

Sperm cells are involved in fertilisation.

☐

Sperm cells are produced in very large numbers.

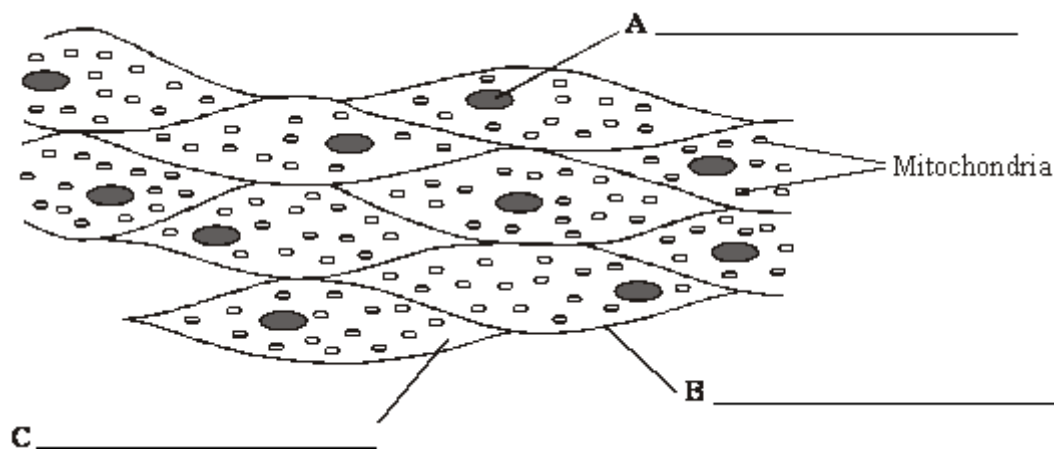
☐

Sperm cells need a lot of energy to swim.

☐

(1)

The diagram shows a group of muscle cells from the wall of the intestine.



- (c) On the diagram, use words from the box to name the structures labelled **A**, **B** and **C**.

cell membrane	cell wall	chloroplast	cytoplasm	nucleus
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(3)

- (d) How are these muscle cells adapted to release a lot of energy?

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(2)

(Total 8 marks)