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Glue on this side

Cells

1	I can explain how to use a microscope to observe a cell.
2	I can describe the functions of the main parts of cells, including the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts
3	I can identify the structural adaptations of some unicellular organisms
4	I can describe the structural adaptations of some animal and plant cells
5	I can compare and contrast animal and plant cells
6	I can describe the process of diffusion and state factors that affect diffusion.

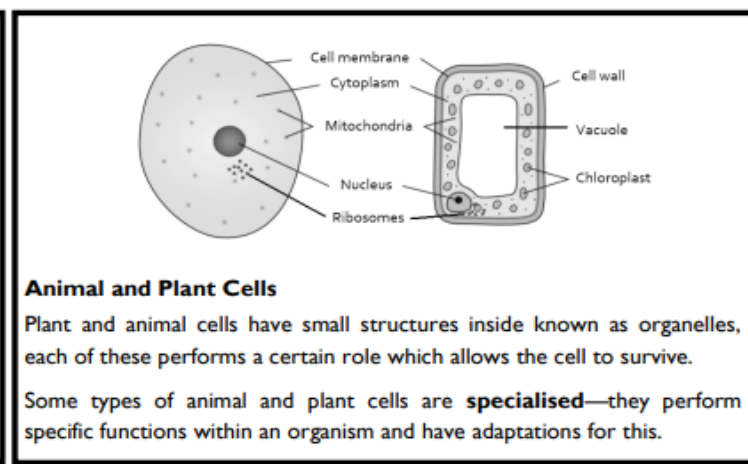
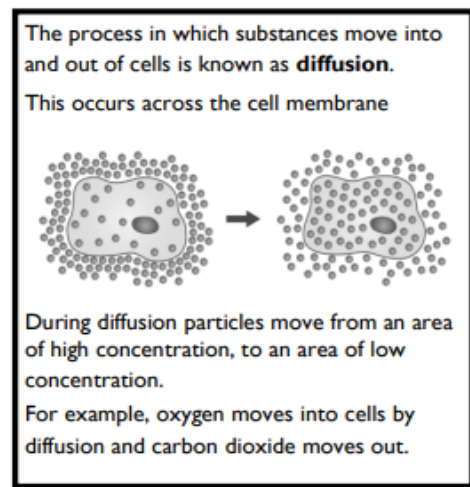
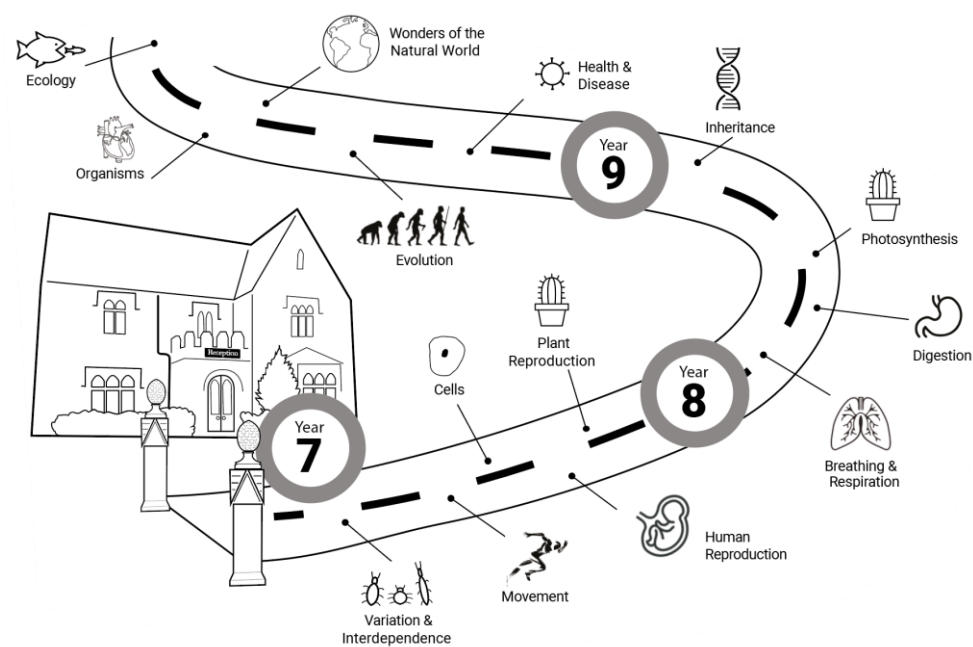
	Keyword	Definition
1	cell membrane	The cell component that surrounds the cell and controls movement of substances in and out.
2	cell wall	The cell component that surrounds the cell and strengthens it. In plant cells it is made of cellulose.
3	chloroplast	The plant cell component that absorbs light so the plant can make food by photosynthesis.
4	cytoplasm	Jelly-like substance (found in cells) where most chemical processes happen.
5	mitochondria	Part of the cell where food molecules are broken down during the process of respiration, enabling energy transfer.
6	nucleus	The cell component that contains genetic material (DNA), which controls the cell’s activities.
7	specialised cell	A cell whose shape and structure enable it to perform a particular function.
8	uni-cellular (organism)	Living things made up of one cell.
9	vacuole	The cell component that contains liquid and can be used by plants to keep the cell rigid and store substances.

Prior Knowledge From KS2:
At KS2 you will have covered the different life process and explained and explored the basic structure of animals and plants. You will have looked at why organisms are classified as plants or animals based on specific characteristics

Why?
Cells are the building blocks of life. Every organism is made form them. Cell research is the future of many medical advances including drugs and cancer treatment

Future Learning:
At GCSE you learn in more detail about cell structure and function and look at the role of specialized cells in multicellular organisms. You will also look at stem cells and their uses in medicine and beyond. You will learn how cells divide to be used in growth, repair and replacement of old cells

Careers:
Endocrinologist
Biologist
Science writer
Lab technician



Structure	Function
Nucleus	Controls what happens in the cell and contains the DNA
Cytoplasm	Where chemical reactions take place
Cell membrane	Controls what goes into and out of the cell
Mitochondria	Where respiration takes place, releasing energy
Ribosome	Where proteins are made
Cell wall (plant only)	Supports the cell
Chloroplast (plant only)	Where photosynthesis takes place
Vacuole (plant only)	Filled with sap to keep the cell rigid

Using a Microscope

A **microscope** is a piece of equipment used to view objects that are too small to see with just our eyes.

Microscopes need to be **focused** before we can see the object we are looking at.

To calculate the **actual size** of an object viewed under the microscope, we first need to measure the **size of the image** and then divide this by the **magnification**.

For example, if a picture of a cell measured 100 mm across when magnified 200 times we would do the calculation:

$$\frac{100 \text{ mm}}{200} = 0.5 \text{ mm}$$

This shows us that the actual length of the cell is 0.5 mm.

Topic	1 Point	2 Points	4 Points	6 Points	10 Points
How to Use a Microscope 	Draw or print out a picture of a microscope and label the main parts.	Write step-by-step instructions that someone could follow to use a microscope to view a prepared slide.	Pick three things that you would like to look at underneath a microscope. What do you think you would observe if you did? Can you sketch a diagram of what you'd expect to see?	Research the history of the microscope and produce a timeline to show the events in history.	Make up an answer to a six-mark exam question on microscopes, include mistakes in it, get a friend to find the mistakes.
Animal and Plant Cells 	Write an <u>old style</u> tweet that describes what the nucleus does. (140 characters)	Summarise the organelles that you find in plant and animal cells as a Venn diagram.	Produce revision notes to describe the function of each organelle. You could make flash cards, a poster for your wall, or something else that will support your revision.	Write a letter to a scientific journal that explains the differences between plant and animal cells.	Make a model of a plant or animal cell (or both!) using whatever resources you have. Find a way to label each part and describe what it does.
Diffusion 	Write two truths and one lie about diffusion.	Write down what diffuses INTO cells, and what diffuses OUT of cells.	Describe, using key words why the smell of deodorant travels across a classroom.	Research as many examples of diffusion in everyday life as you can.	Place some skittles around the edges of a plate, carefully add some water. Observe what happens, can you explain this in terms of diffusion?
Specialised Cells 	Draw and label one specialised plant cell and one specialised animal cell.	Produce flash cards for each of the specialised cells we have covered, labelling their adaptations.	Produce an information poster that includes a diagram of at least five specialised cells, including labels. Describe how each cell is adapted to its function.	Make a comicstrip of specialised cells that explains how they are adapted to their function. Be creative when coming up with your story line - how do you think the cells would describe their roles?	Compose a song or write a poem that explains what an organism would be like if each of the specialised cells couldn't perform their function. It can be funny or serious.