Cytoplasm
Is a gel-like substance where most chemical reactions will occur. It contains enzymes that will control the reactions.

Nucleus
It contains genetic material that will control the cells activities

Mitochondria
It is where reactions for aerobic respiration will occur, creating energy

Cell membrane
it holds the cell together and controls what enters and exits the cell

Ribosome
It is where protein synthesis takes place creating protein

Cell wall
It supports the cell and strengthens it making it rigid

Vacuole
It is made of a solution of salts and sugars called cell sap

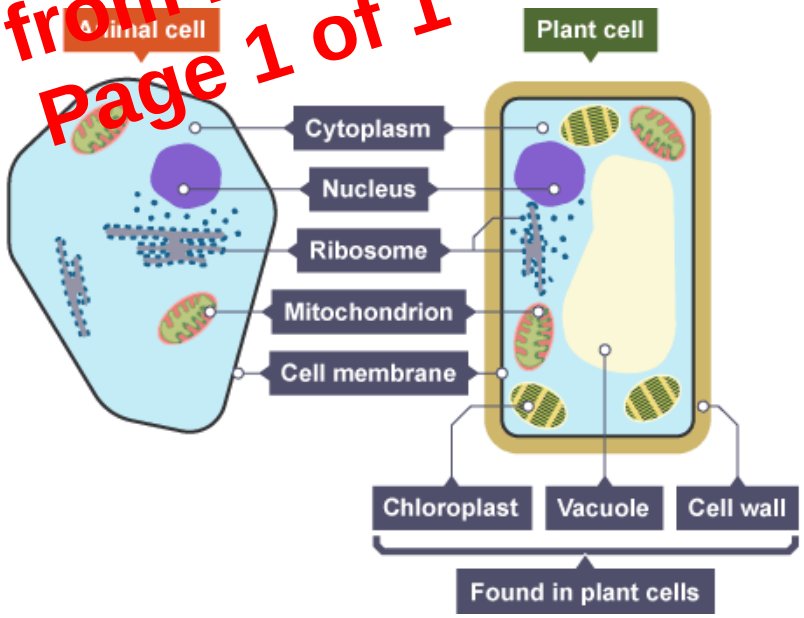
Chloroplast
It is where photosynthesis occurs which creates the plants food. It contains chlorophyll which is the green pigment needed to absorb the light

Bacteria
They are prokaryotes and contain:

- Cytoplasm
- Cell membrane
- Cell wall
- Don't have true nucleus. Instead they have single circular strand of DNA.
- May also contain small rings of DNA called plasmids
- Don't have mitochondria

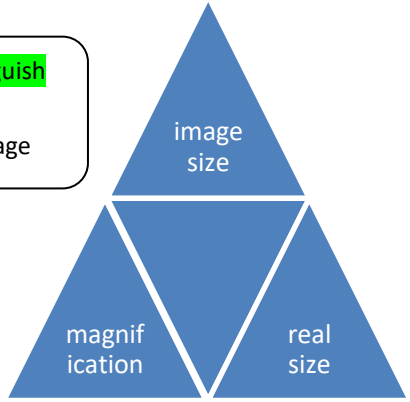
Prokaryotes = single celled organism (bacteria) normally very small
Eukaryote = organism that is larger than prokaryotes

Biology
Cells 1



Microscopes
Light microscope = use light and lenses to magnify individual cells and sub cellular structures.
Electron microscope = use electrons to gain a higher magnification and higher resolution to see the internal structure of sub cellular structures.

Resolution is the ability to distinguish between 2 points. So a higher resolution provides a sharper image



Cells differentiate to become specialised.
Differentiation = process where a cell changes to become specialised for its job. This allows cells to perform specific functions. Differentiation normally occurs at an early stage in animal cells and is then lost but in plant cells this ability is never lost. Differentiation in adult animals is normally for repairing and replacing cells. Undifferentiated cells are called stem cells.

Sperm cells are specialised for reproduction. Function is to get male DNA to the female DNA. It has: long tail, streamlined head to help it swim to the egg, lots of mitochondria to provide energy, contains enzymes to digest through the egg membrane

Muscle cells are specialised for contraction. Function is to contract quickly. They are long so that they have space for contraction, have lots of mitochondria to create energy.

Phloem and Xylem cells are specialised for transporting substances. They form tubes that transport food and water around the plant. They are long and hollow in the centre and have few sub cellular structures to allow stuff to flow through them.

Root hair cells are specialised for absorbing water and minerals. They provide a large surface area for absorbing water and mineral ions from the soil.

Nerve cells are specialised for rapid signalling. Function is to carry electrical signals all around the body. They are long to cover more distance, have branched connections to connect to other nerve cells and form a network.