

T Level – Science



You've probably been wondering how studying at college will compare to your previous studies, so we have put together a quick guide and some activities to help you get ready for starting in September.

Positive Futures: Skills for Jobs, Skills for Life



What will you study?

Year 1

Working within the science sector

- Working within the health and science sector
- The science sector
- Good scientific and clinical practice

Ethics, data and managing personal information in the science sector

- Managing information and data within the health and science sector
- Data handling and processing
- Ethics

Health and safety in the science sector

- Health, safety and environmental regulations in the health and science sector
- Application of safety, health and environmental practices in the workplace

Scientific methodology, equipment and techniques

- Scientific methodology
- Experimental equipment and techniques

Biology

- structure and function of cells and tissues
- large molecules
- exchange and transport mechanisms
- genetic information and genetics
- microbiology
- immunology
- classification of biological materials
- enzyme and protein structure
- cell cycle
- cellular respiration
- pathogens
- formulae and equations
- units

Chemistry

- structure of materials and chemical properties
- acids/bases and chemical change
- rates of reaction and energy changes
- chemical analysis of substances
- analytical techniques
- gas laws
- formulae and equations
- units

Physics

- electricity (R)
- magnetism and electromagnetism (R)
- waves (R)
- particles and radiation (R)
- formulae and equations (P)
- kinetic changes (P)
- pressure/fluid/viscosity (P)
- units (R)

What will you study?

Year 2 – Occupational Specialism

Laboratory Technician

In Year 2 you have the opportunity to undertake a substantial industry placement with an external employer.

This is alongside a college-based project.

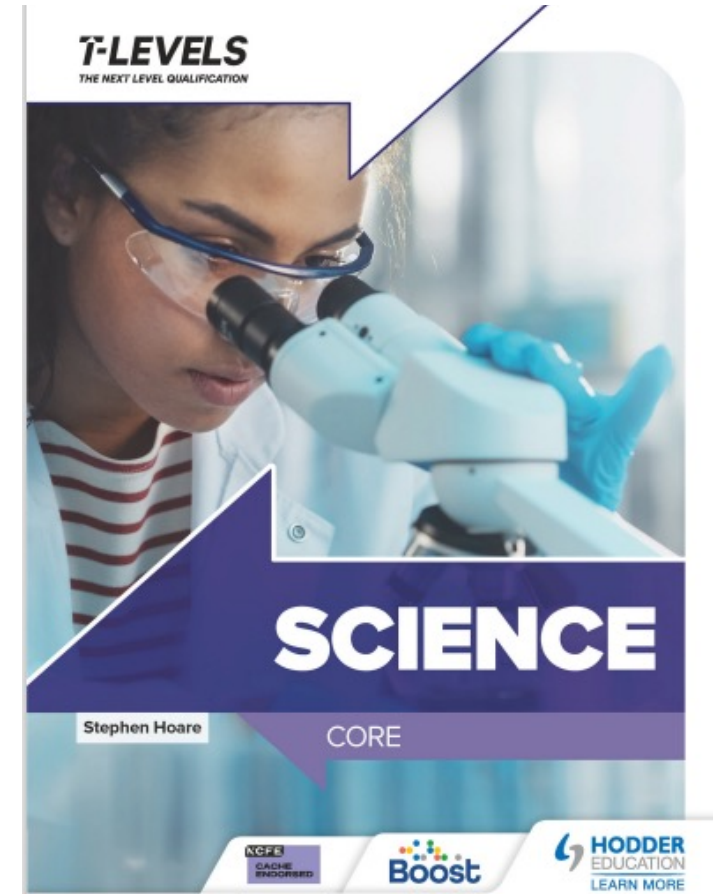


Useful resources [click for the hyperlink](#)

Specification



Text book





**What equipment
do you need?**

- Pens
- Pencils
- Eraser
- Sharpener
- Ruler
- Ring Binder
- Scientific Calculator
- Highlighters
- Notepad

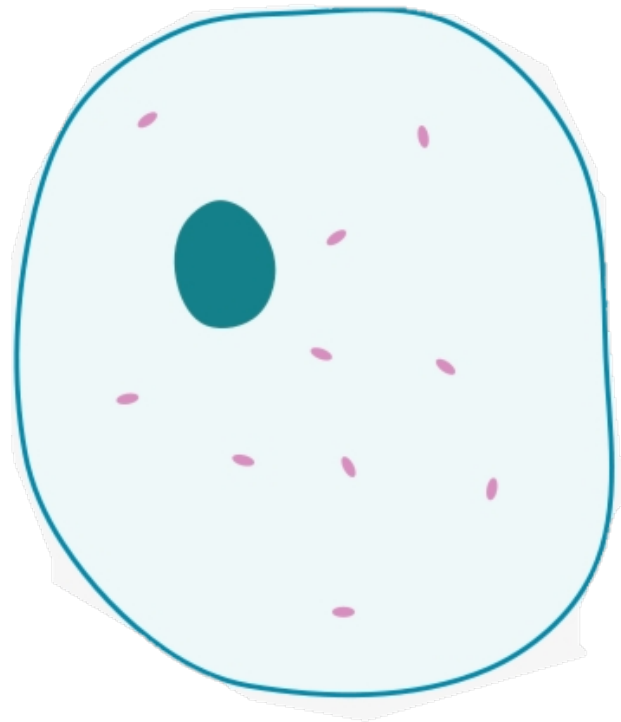
Biology



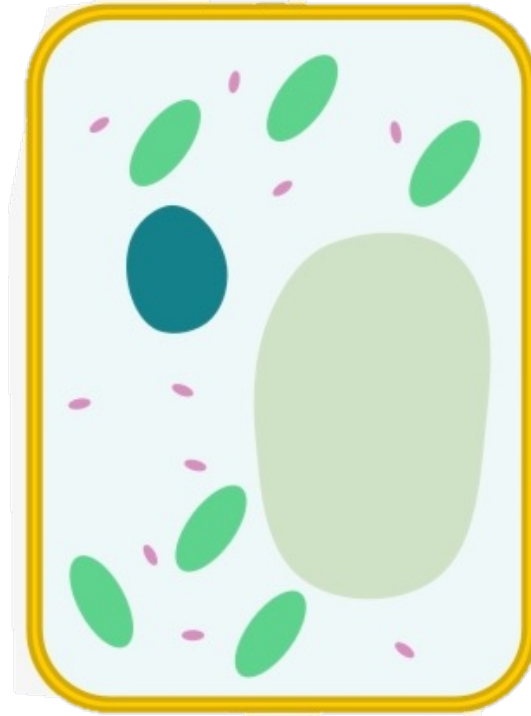
Example topic: What do you know from GCSE?

Can you draw a simple animal or plant cell?

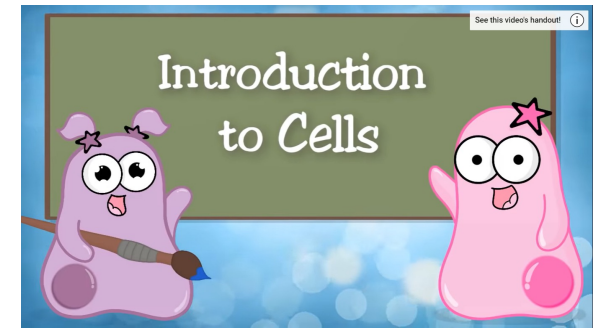
If so it would most likely look like the cells below.....



Can you label the simple components of an animal cell?

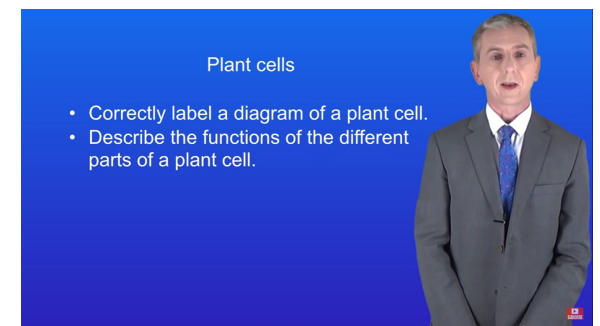
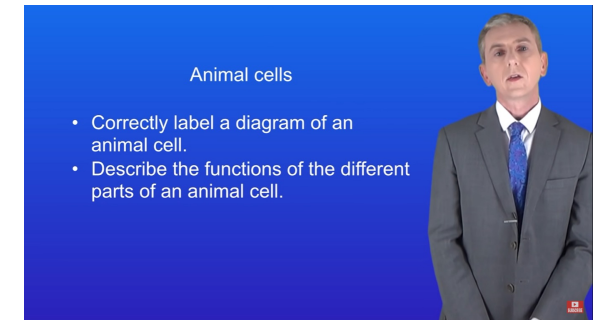


Can you label the simple components of a plant cell?



You may have watched videos like the one above or those below during high school, to help learn basic cell organelles.

Click on each for a reminder and label the cells to the left





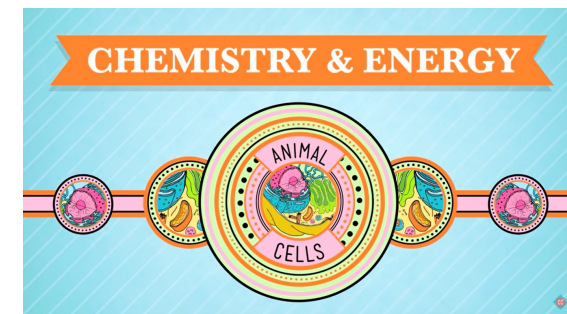
AQA

A-Level Biology

Cells:
Cell Organelles

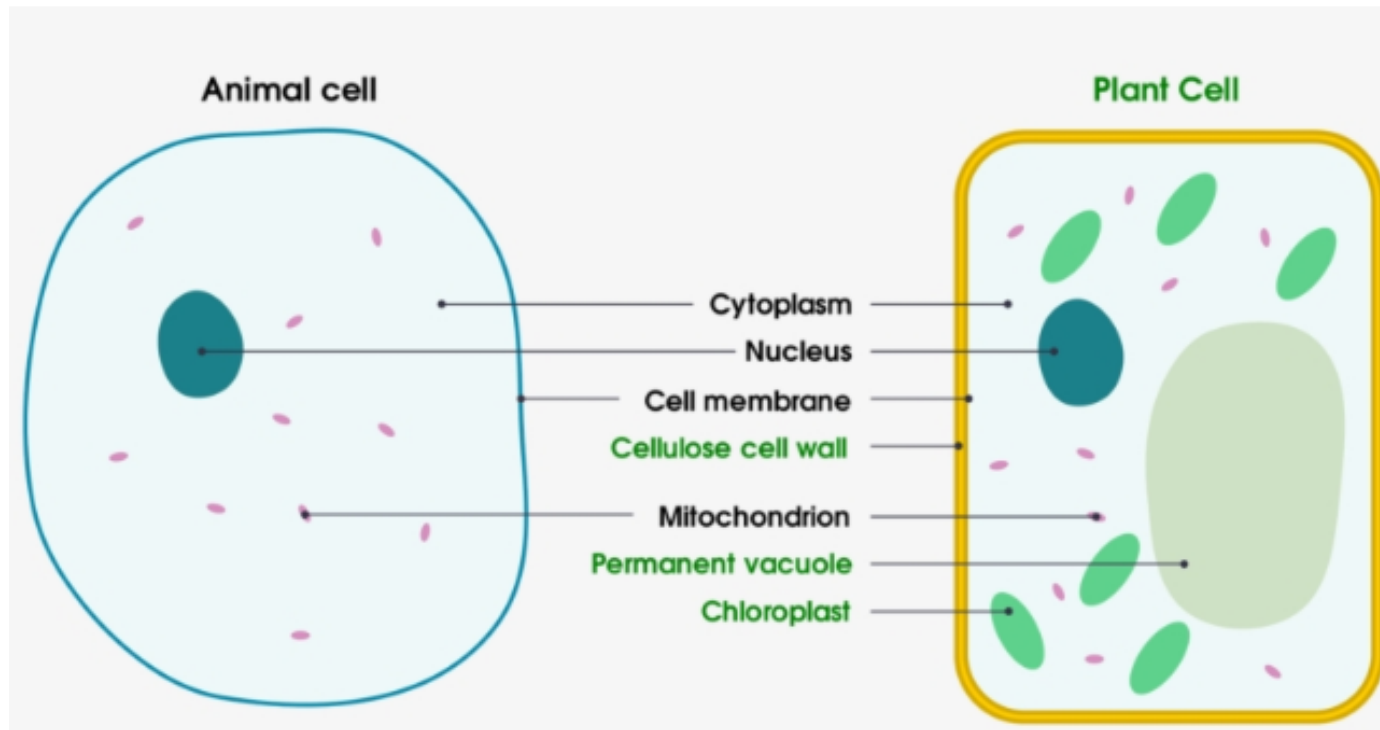


Watch the videos above and below.
Then draw and label these new
organelles onto your original
diagram.
Above is very informative.
Below, are a little more 'fun'
but with correct information also



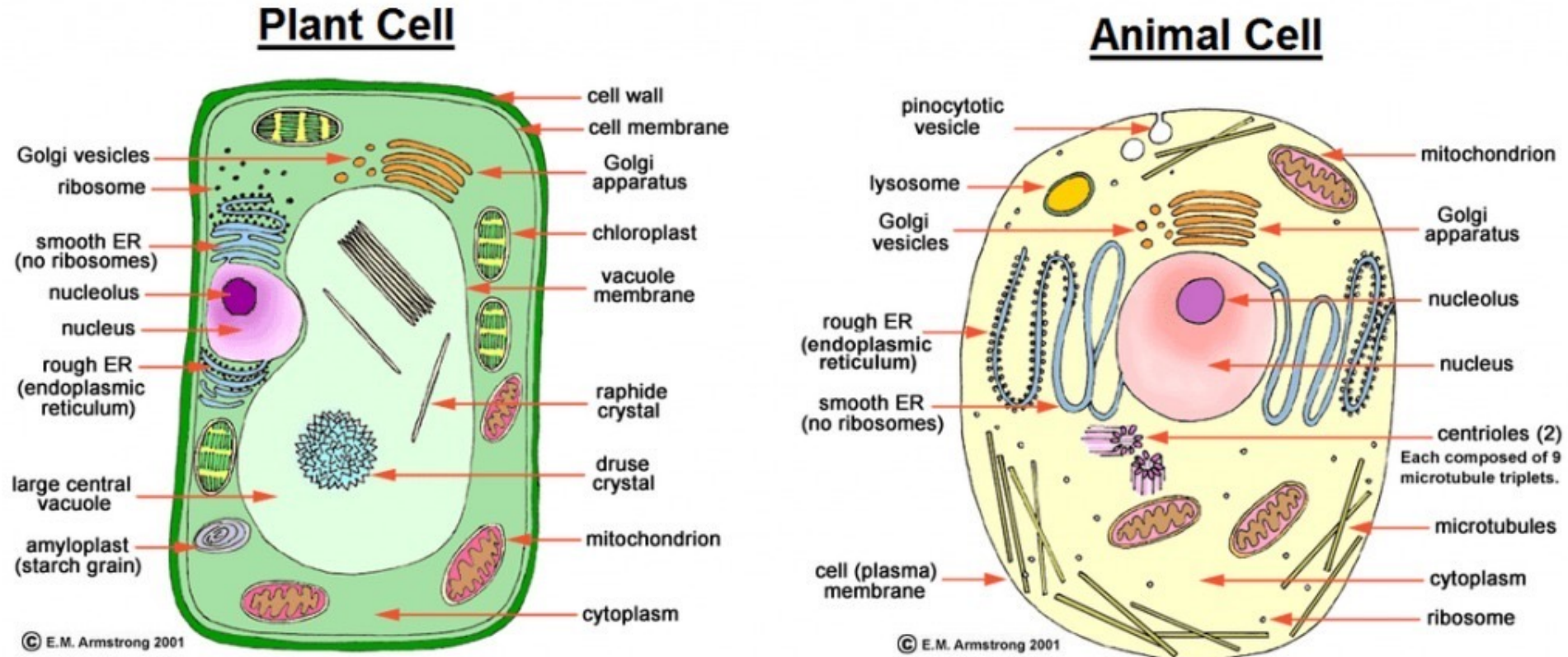
Example topic: What do you know from GCSE?

If you labelled the cells correctly, you should have come up with answers such as these:



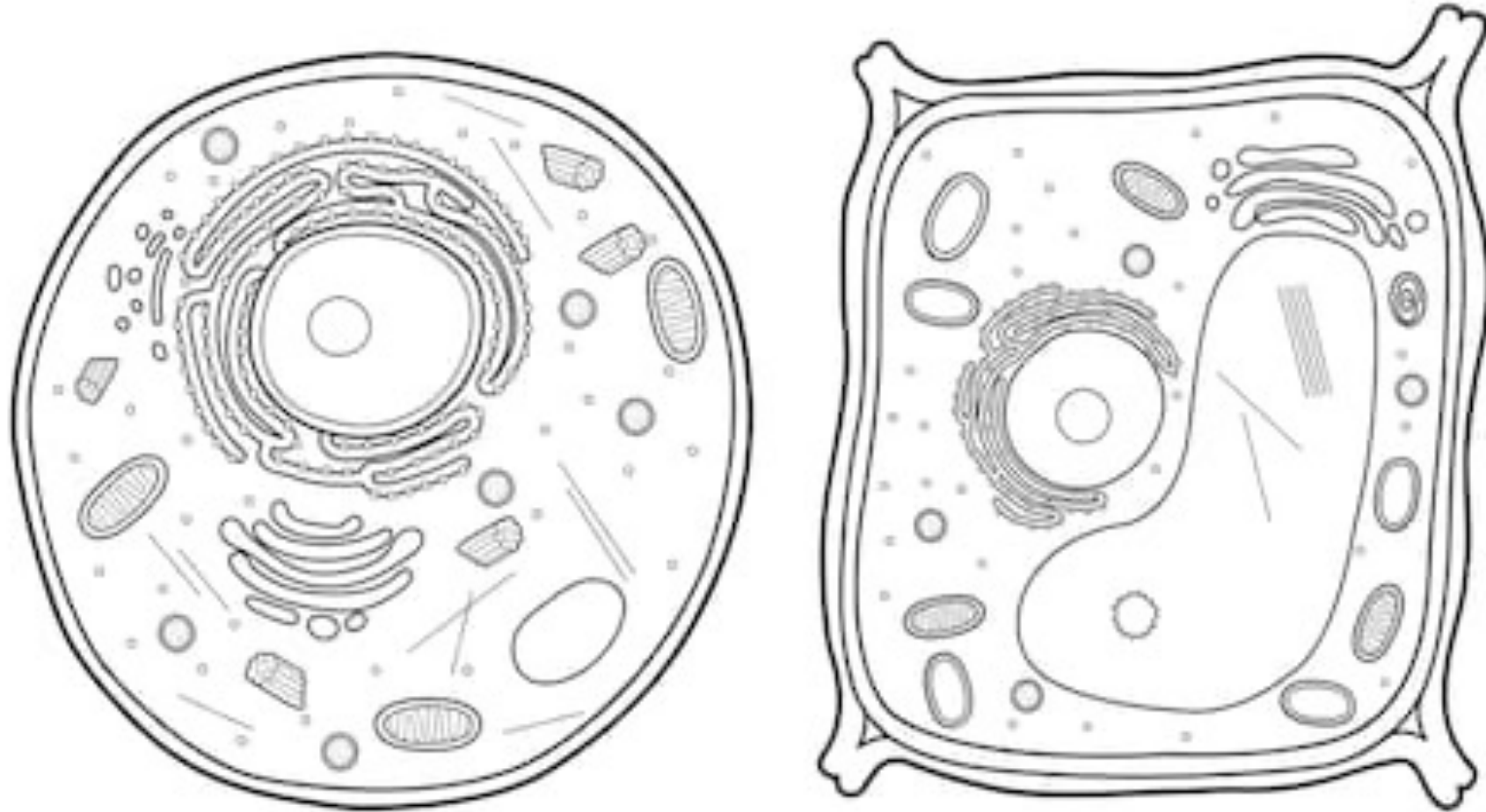
However, when you learn about cell organelles in Biology, there are many, many more.....

Biology in T Level Science.....



For many topics, we will take what you have learnt in GCSE, consolidate that theory and then build on it with more detail. In this topic for example, you learn about many more organelles in plant and animal cells, as well as their functions.

Have a go for fun – from memory.
How many of these organelles can you label?

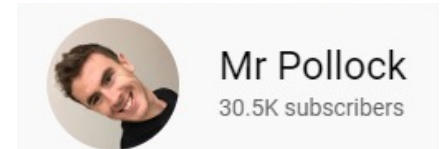
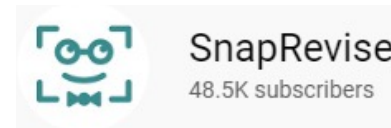
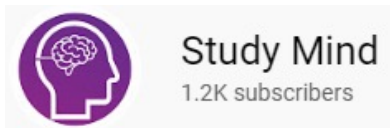


EXTENSION ACTIVITY

**Can you describe their
function also?**

Useful links and videos

There are lots of useful videos on YouTube to help consolidate your learning at Level 3 Biology. Below are just some of the YouTube users who regularly upload specific Biology videos:



We often use videos in Biology to ‘flip learning’.

If you have a YouTube account, it may be useful to subscribe to their pages in advance, so you can watch the relevant videos prior to learning the new content

Read ahead. Gain confidence. Enjoy Biology

Make sure you are confident coming to college with the content learnt during your GCSE years.

Biology at college builds on this content. Many of the topics you will have already learnt. We just add to it in more detail.

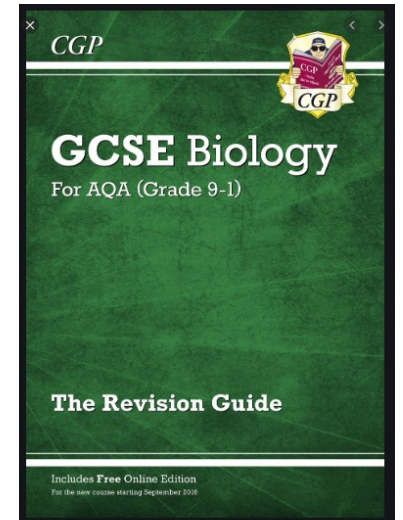
There are many new topics also though, so a solid understanding is vital to succeed

Use your high school notes and read ahead over the summer.

You may also wish to invest in a GCSE revision guide to help with this.



Good Luck



Chemistry



Here are some things you should ideally already know and what you will learn.

I already know....

I will learn....

Simple model of the atom

Atoms are made up sub atomic particles

Properties of metals and non-metals

Explain differences between metals and non –metals in terms of atomic structure and bonding

Difference between atoms, elements & compounds

Explain atoms are bonded to each other elements and compounds

How to represent chemical reactions using formulae and equations

Carry out reacting masses from balance symbol equations

How to use chemical symbols and formulae to represent elements and compounds

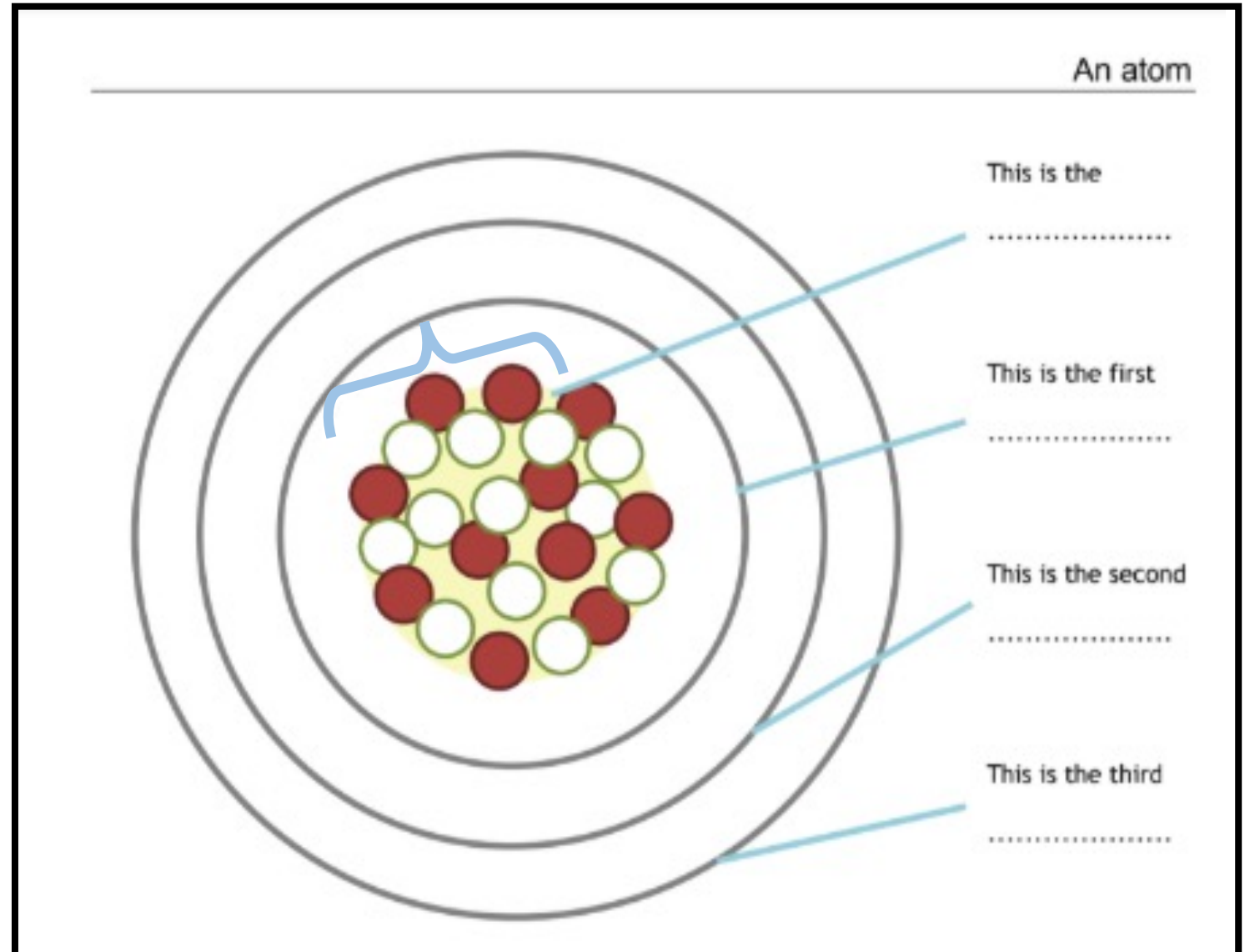
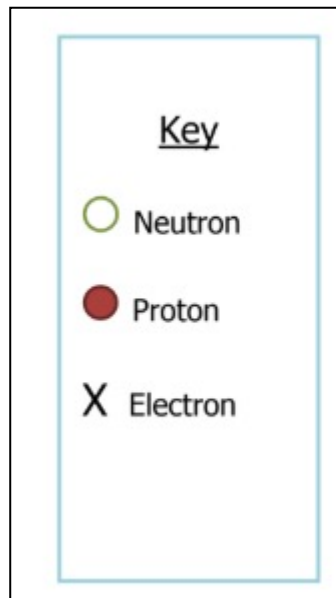
Knowing the structure of atoms and type of bonding involved

The conservation of mass in chemical reactions

Carry out mole calculations from balanced symbol equations

Can you complete following?

Part a



Can you find out the name of the element? (You will need a periodic table)

Part b

Key

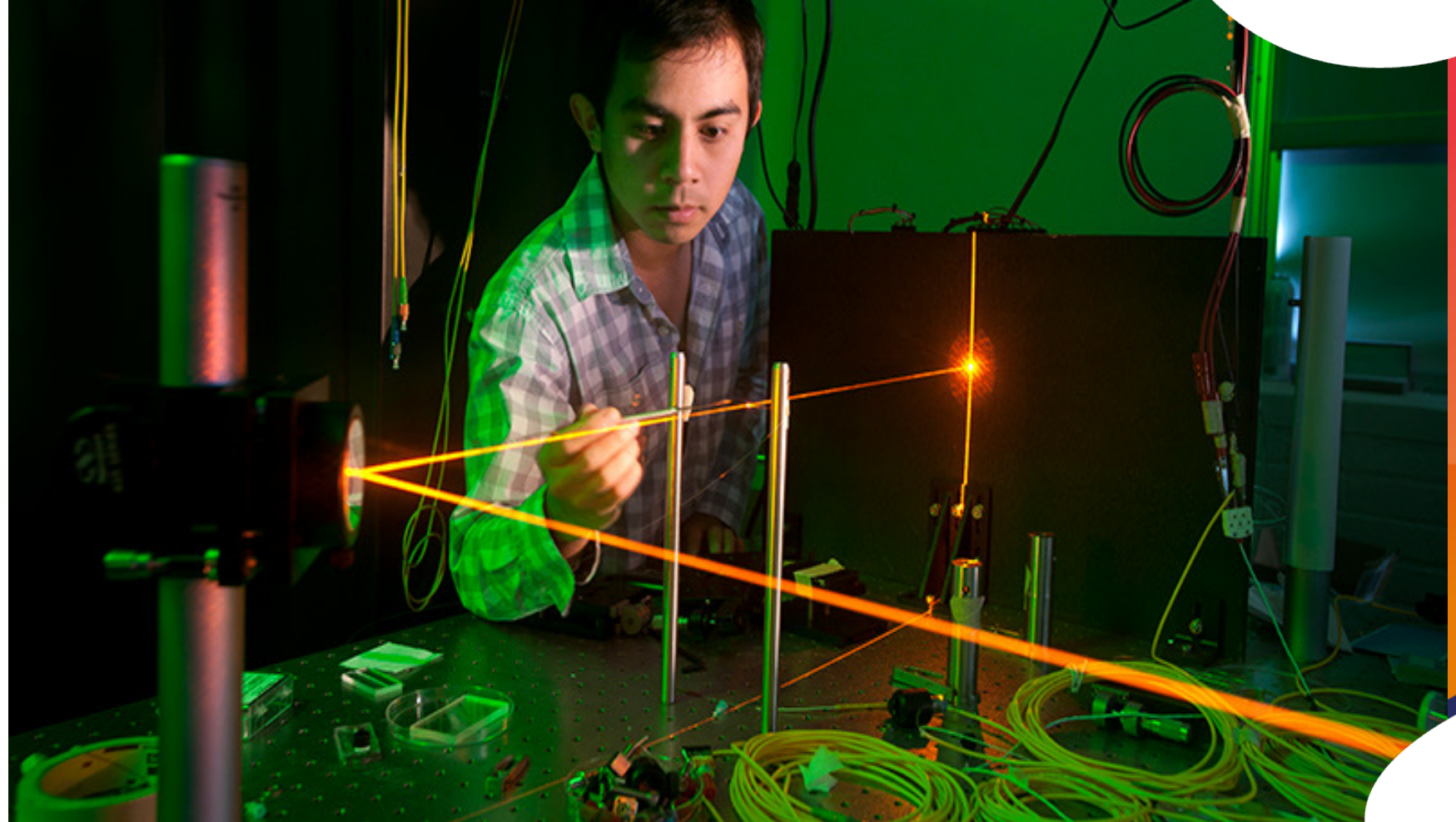
 Neutron

 Proton

X Electron

1. How many protons are there in the nucleus?
2. Now how many neutrons are in the nucleus?
3. How many electrons would this element have?
4. How did you work this out?
.....
5. What is the atomic number of this element?
6. How do you know this?
7. What is the mass number? How did you work this out?
.....
8. Put the correct number of electrons in each shell.
9. What group does this element belong to?
10. What name is given to this group?
11. This element is

Physics



Waves

Checklist of GCSE Topics you should be familiar with.

- Properties of waves (including any equations)
- Transverse and longitudinal waves (with examples of each)
- Reflection and refraction of waves
- Use of waves for detection e.g. ultrasound and P-waves/S-waves
- The electromagnetic (EM) spectrum
- Black body radiation

Tick off the topics you feel confident with. Use your GCSE notes/revision guide to go over any areas you are unsure about.

Useful videos:

- Here are some links to videos which you might find useful if you need to recap any of the topics in the checklist above (the videos are all short: under 10 mins):
- <https://www.youtube.com/watch?v=aCu4VRKMstA> – Covers the basics on wave properties, and longitudinal and transverse waves
- <https://www.youtube.com/watch?v=7v2gs8rdQzU> – Covers the EM spectrum
- https://www.youtube.com/watch?v=h4jvZ_zHKYY&list=RDCMUCaGEe4KXZrjou9kQx6ezG2w&index=3 – Covers P-waves and S-Waves
- <https://www.youtube.com/watch?v=KnIualWf6Rs&list=RDCMUCaGEe4KXZrjou9kQx6ezG2w&index=4> – Covers visible light and colour
- <https://www.youtube.com/watch?v=sgwZkP64rAc> – Covers sound waves and hearing
- <https://www.youtube.com/watch?v=WDBtOeXUdWQ> – Covers reflection
- <https://www.youtube.com/watch?v=UUC44Vg5pCI> – Covers refraction
- (BBC Bitesize is also a great resource for recapping topics!)

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Looking forward to meeting you in September!



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