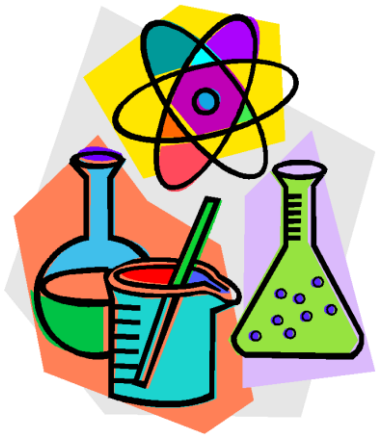
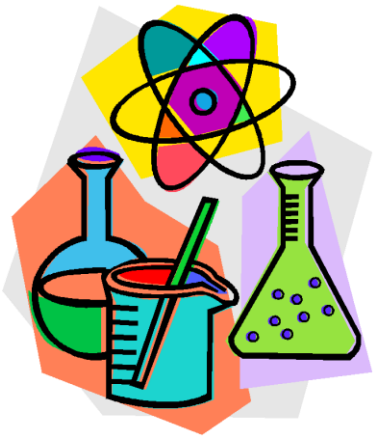
Name: _____
Class: _____

Yr 8 Science



Year 8 Science topics and guide to revision



You will find:

- Your revision checklists (biology, chemistry and physics)
- A guide to good revision

Use this guide to check that you cover all the topics you have studied this year in Year 8. It has all the topic headings and some things you should do to help you revise. You can use your revision guides and the internet to help you revise.

Revision top tips

- Start early
- Make revision cards, notes or mind maps.
- Define key terms.
- Use colour and diagrams
- Try some practise questions.

YEAR 8

Topics in Science

You need to know:

Life Support

Respiration in cells			
The role of blood in the body to carry materials			
Breathing How the lungs work Gas exchange in red blood cells Alveoli and diffusion of oxygen into the bloodstream Smoke damage			
Circulatory system The heart as a double pump Arteries, veins and capillaries			
Keeping fit Heart & breathing rate and fitness Plaque in arteries & risk factors			
Digestive system Uses of proteins, starch and fats Organs and their uses			
Using nutrients Food groups Vitamins and minerals			

Keeping Healthy

3 types of microbe: Virus, Fungus, Bacteria			
Harmful microbes are called pathogens			
Examples of illnesses caused by microbes *Bacteria → vomiting and diarrhoea, TB and meningitis*			
Body's defences • Hydrochloric acid • Blood clots • Mucus and cilia • White • blood cells & antibodies			
Avoiding microbes <u>Keeping clean</u> Disinfectants & bleach <u>Faeces</u> Sewage works → sterilised water <u>Food</u> - salmonella, chilled foods <u>Preventing infection</u> – stop the spread of a cold <u>STI's</u> – staying safe, HPV and chlamydia			

Immunity & vaccines			
Drugs – understand their effects Stimulants – e.g. nicotine Hallucinogen – e.g. cannabis Depressant – e.g. alcohol			

People and the environment

Animals and their adaptions			
Competition (in food chains) and adapting to change			
Food chains and food webs incl. key words e.g. carnivore, consumers, producers			
Photosynthesis and leaf structure			
Passing on energy, pyramids of numbers			
Cost of food → use of fertilisers, insecticides and herbicides			

Shaping Life

Advantages of being part of a pack; ranking animals in a pack			
Learned behaviours and changing animals behaviours (use of rewards)			
Improving pets – selective breeding			
Improving pets – selective breeding and its problems			
Making improvements – genetic engineering and growing medicines			
Choices about cheap food Intensive farming and use of GM crops			

The Periodic Table

What is an element & symbols			
Elements and compounds for life – potassium, sodium chloride (salt)			
What is a compound			
Organising elements – how to understand the periodic table Metals and non-metals Transition metals Alkali metals (group 1)			
Noble gases Helium, neon, argon, krypton, xenon, radon Properties of noble gases			
Halogens Fluorine, chlorine, bromine, iodine, astatine Properties of halogens gases Halogens in your body e.g. hydro**chloric** acid			
Vital Non-Metals Hydrogen Oxygen Nitrogen Carbon – diamond, graphite			
Silicon – uses, semi-metal, gemstones (amethyst)			

Inside materials

Gases – diffusion, noble gases, gas molecules (O_2), gas compounds (CO_2)			
Our atmosphere Made of nitrogen, oxygen, argon and carbon dioxide Used to be hydrogen and helium Greenhouse gases			
Molecules *Nitrogen monoxide (NO)* *Dinitrogen oxide (N_20)* *Nitrogen Dioxide (NO_2)* *Carbon monoxide (C0) in the blood*			
Polymers – polythene, properties of polymers, natural polymers			
Inside solids – metals (properties) and salts (properties)			

Metal Reactions

			
Metals vs metal alloys Melting points of metals			
Metals and water reactions Potassium, sodium, lithium and calcium react vigorously with water to make Hydrogen gas.			
Metals and acids Some metals react with dilute acids to make hydrogen and a salt			
Metals and oxygen Make an oxide			
The Reactivity series and linking it to the periodic table			

Rock Cycle

			
Volcanic eruptions, lava, magma			
Work of vulcanologists			
Igneous rock • Properties • Formation • Granite vs. basalt			
Fossils - formation			
Sedimentary rock • Properties • Formation • Weathering – chemical, biological and freeze-thaw • Erosions • Sandstone, claystone, mudstone, limestone			
Metamorphic rock • Properties • Formation			
The Rock cycle			

Heating and Cooling

How to read a thermometer accurately Know the temperature is measured in °C			
The difference between heat and temperature			
Understand that when heat energy is given to particles it makes them move and collide with one another.			
Understand the term "**conduction**" Describe what is meant by a good conductor of heat.			
Understand the term convection and give examples of where it is found it liquids and gases.			
Understand the term radiation and describe materials that are good and bad radiators of heat. *White → reflects heat → wear white on a hot day* *Black → absorbs heat*			
Understand that most heat energy travels by conduction, convection or radiation.			
Energy cannot be created or destroyed – it just changes from one type of energy to another (recap of some Year 7 material)			
Be able to understand and draw Sankey Diagrams.			

Light

Understand the basics of light Light is a wave It travels in straight lines Transparent; translucent; opaque			
Draw and label a detailed reflection diagram Angle of incidence; angle of reflection; ray of incidence; angle of reflection			
Draw and label a detailed refraction diagram Explain total internal refraction and how it is used in optical fibres.			
Dispersion of light White light can be split into a spectrum of 7 colours (you need to know these) The colours of the spectrum can be combined to form white light again			
Colour The retina of the eye is sensitive to light Different coloured light has different wavelengths Coloured objects reflect their own colour and absorb the rest Coloured filters only let their own colour pass through.			

Sound

Describe what caused sound and how it travels Explain why sound cannot travel through a vacuum.			
State how sound is measured (decibels) Describe why loud sounds can be dangerous for our hearing			
Understand that the pitch (high or low) of a note depends on the frequency of a sound wave. Frequency is measured in hertz (Hz) Animals have different audible ranges.			
Echoes – what are they How do we use ultrasound Calculating distance using echoes.			
Factors that affect how high or low a note is The thickness or string The length of the string The tension in the string			

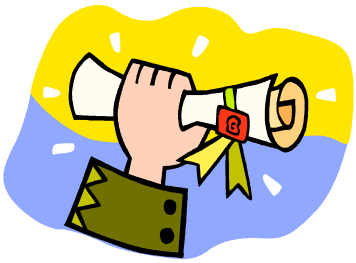
Moving Around

Understand that unbalanced forces will result in movement			
Levers Understand the terms pivot, load and effort, and label these on a diagram Describe some uses of levers			
Pendulums The time for a swing depends on the length of the string			
Circular motion Explain the term "centripetal force" – a force towards the centre of the circle			
Revise the terms "air resistance" and "friction" Describe what causes the acceleration of an object Explain what is meant by "terminal velocity"			
Pressure Calculate the pressure of an object using the following equation Pressure (Pa) = Force (N) / Area (cm^2) Make sure you know this equation and your units! Explain some uses of pressure e.g. snowshoes			

How to Revise...

WELCOME

Welcome to revision guide for Key Stage Three students.



Unfortunately, there is no easy way to pass tests, but we can give you lots of tips on how to use your study time more effectively. This guide has been written to remind students about how to revise and how to learn. Many of the learning and revision strategies in this booklet are applicable to a vocabulary test in Year Seven and to the final examination of a degree level course.

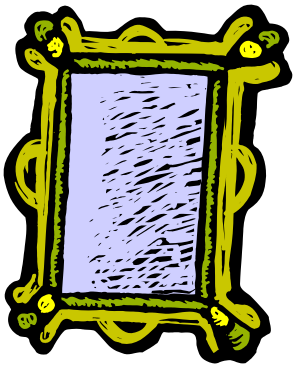
Although this booklet contains superb advice, great tips and fantastic study skills, the guide isn't as important as the person reading it – YOU! It is you who have to put them into practice and apply them to your work. If you do, we're sure that you will improve your performance and your study skills. But to get better at something, you have to practise!

So, over to you – happy studying and good luck!

How to Revise...

Revision means "to look at again". You need to look at things again as part of learning as well as in preparation for exams. But we need **active** ways to do this "looking again".

Revision gives time for reflection and learning. You can start to see the big picture, you can add in more details and examples. You may discover something you still don't understand and you can ask your teacher about it again.



The idea is to "revise" each major section of your work shortly after you have finished it. For instance, you could draw a Mind Map of each major topic you cover. Keep the Mind Maps because they will be very useful for revising before tests.

HOT TIP: be active and change the way you think

How to Revise…

WHY?

1. Revision helps learning
2. Revision increases your achievement in tests
3. Achievement in tests give you wider choices later on
4. Achievement will make everyone proud of you!
5. You will feel great!

It is important to be positive about yourself because people who think they can do well find it easier to learn. Think about five things which you felt good about doing – scoring a goal, asking someone out … think about how you felt when you did those things….and get yourself into a positive frame of mind.

HOT TIP: get yourself a vision of success

How to Revise...

WHEN?

Make sure you know when your tests are. Teachers will revise with you and give you advice about how much revision to do, what you should revise and many will give you special notes to help with revising.

Make yourself a **revision timetable**.

- Fill in leisure, relaxation and family commitments
- Put in some sessions that you can devote to revision
- Share out the available revision sessions between your subjects
- Allow extra sessions if you know some subjects will take longer than others
- Vary the subjects – don't do all your Maths revision on day one!
- Here's an example for *one* weekend:

	Morning	Morning	Afternoon	Evening
Saturday	Football	Maths; geography	Science; RE	Video
Sunday	English; tech	Lunch at gran's	Still at gran's	French; history

The ideal length to revise one topic is **25 to 45 minutes**.

You remember more at the beginnings and the ends of sessions, so create more beginnings and ends by stopping for a brief break or doing a brain gym exercise.

HOT TIP: stop and start – create brief breaks

How to Revise...

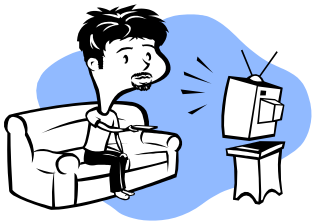
WHERE?

The ideal study room is light, airy, quiet, with shelves and a desk. Some people are lucky enough to have this and enjoy working in it. Don't worry if you haven't got this. You can still try to get some of the elements.

Vary your revision place. It's a good idea to put up posters, lists and post-it notes in other places in the house.

Some students find they revise well with friends and it is a good idea to do this sometimes as a bit of variety and fun.

Ban the television! Television is too distracting, so make sure it is turned off when you are working. Remember to keep a space in your revision timetable for your favourite programmes.



Lots of students find that some background music helps the revision process. Classical music such as Mozart can help to stimulate your brain waves. Avoid music with lyrics as you are likely to concentrate on these rather than your work!

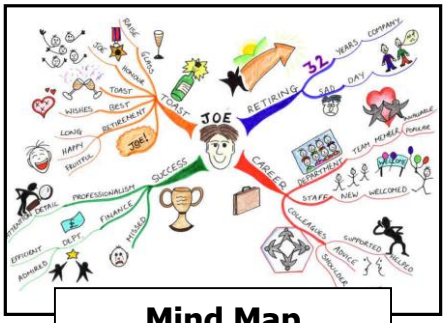
HOT TIP: don't forget the ISC and SSC

How to Revise...

HOW?

There are three easy steps to doing revision well:

- ⋆ Change
- ⋆ Challenge
- ⋆ Treats



Mind Map

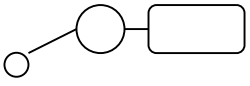
The first step is to try **change**. By changing what is in our exercise books or textbooks into a different form, we kick start our brains into action – we start thinking about new ways of presenting and digesting the information and start learning.

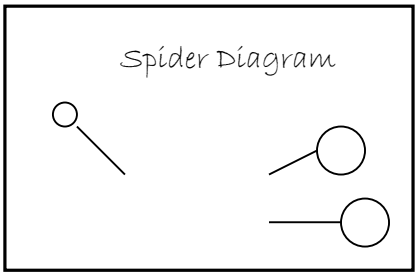
Ways to change things:

- Make diagrams
- Labelled drawings
- Time-lines (for history)
- Mind maps
- Charts and flowcharts (for processes)
- Audio tapes (great for languages)
- Outline cards
- Mnemonics
- Use colours and highlighters

Outline Cards

- .
- .
-





HOT TIP: Flick through outline cards before the test

How to Revise...

We work best when we are faced with a **challenge**.

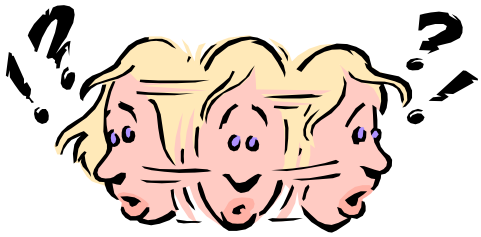
Challenge yourself to really sort out a topic that you have found difficult.

- Will taking a new approach and turning it into a chart, diagram or Mind Map help?

- Get someone to test you after you have learned something new.

- We learn extremely well when we have to teach someone else – why not try teaching one of your parents, a brother or sister, your grandparents or even your friends?

- Get them to ask you questions about what you have just taught them – can you answer their questions?



HOT TIP: Believe in yourself – you CAN do it!

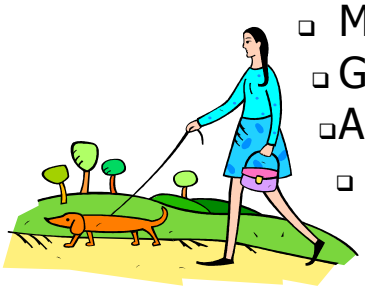
How to Revise…

Don't forget to allow yourself some **treats**. Break up your revision sessions and plan some treats to look forward to: fruit, chocolate, a drink, ten minutes in the garden, glancing at a magazine, going for a walk…whatever will motivate you.

Remember, breaking up your revision gives you more stops and starts and more stops and starts increase your learning.

Relaxation is important to help you stop feeling the pressure of tests and getting stressed. Find a simple technique that works for you and practice using it when you are stressed or can't sleep. Have you tried:

- A warm bath
- Visualising yourself passing the test
- Brain gym exercises
- Stroking a pet
- Deep breathing
- Meditating
- Going for a walk
- Asking someone to give you a head massage
- Yoga
- Losing yourself in some soft music?



HOT TIP: Feed your brain! Fresh fruit, water, fish and vegetables give you brain power!