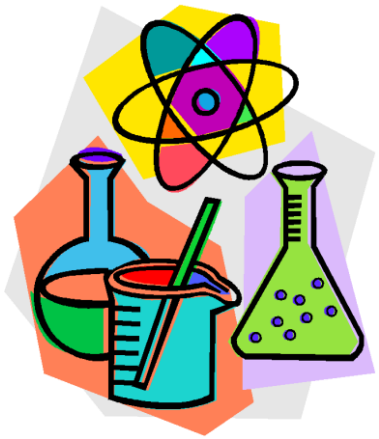
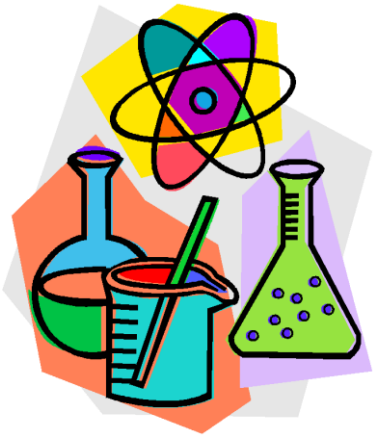
Name: _____
Class: _____

Yr 7 Science



Year 7 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 7. 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 7

Topics in Science

You need to know:

Cells

Uses of a microscope and its parts			
Structure of a plant and animal cell.			
Understand the functions of all the cell components (e.g. cell membrane decides what goes in and out of the cell)			
Different organ systems and the organs in theme (e.g. Nervous system – brain, spinal cord, nerves, eyes, ears, nose, tongue and skin). ○ Nervous system ○ Digestive system ○ Circulatory system ○ Structure of skin.			
Specialised cells			
Nerve cells			

Reproduction

Female Reproductive system – structure and function			
Male Reproductive system – structure and function			
Steps of IVF treatment			
Fertilisation or an egg and the growth of an embryo/foetus including uses of the organs below ○ Placenta ○ Umbilical cord (and what it transports to and from the baby)			
How twins are made – identical AND non-identical			
How are egg and sperm designed to do their job?			
How young survive – gestation periods; amount of eggs produced to ensure survival			
Puberty and the menstrual cycle			

Differences

			
Ways we are different – decided by genes AND environment			
How we use our differences in biometrics.			
What makes us different – GENES (one from mum and 1 from dad)			
Examples of genetic and environmental variation and characteristics decided by both			
Continuous variation and correlations (e.g. as height increases, so does shoe size)			
Instinctive behaviour and Learned behaviour.			

Classification

			
Understand the terms: ○ Biodiversity ○ Species ○ Fertile/infertile ○ Herbivore ○ Carnivore ○ Predators ○ Prey			
Be able to draw a food chain and comment on how if 1 organism changes it will disrupt the rest of the food chain			
Grouping animals (CLASSIFICATION) • Invertebrates → arthropods → insects → beetles • Vertebrates → Mammals, birds, reptiles, amphibians, fish • Key points for each group • Identify hard to place animals e.g. platypus and use information to put it into a group • Using keys to identify an animal			
Grouping plants ○ Flowering plants → has roots, makes seeds and flowers ○ Conifers → has roots, makes seeds and cones instead of flowers ○ Ferns → has roots and veins, makes spores, only reproduce when wet ○ Moss → no roots and veins, makes sports, only reproduce when wet.			

Acid Reactions

Acids and Alkalis and the hazard symbols			
The pH Scale Measuring pH Colours using universal indicator Why is testing acids and alkalis important? Concentrated and dilute solutions			
Neutralisation Uses of neutralisation			
Acids and Carbonates How carbonates react with acids (producing carbon dioxide) Testing carbon dioxide using limewater			
Acids and Metals How acids react with metals (producing hydrogen) Testing for hydrogen using a lit splint.			
Acid Reactions Acid + alkali → *a salt* + water Acid + carbonate → *a salt* + carbon dioxide + water Acid + Metals → *a salt* + hydrogen Writing word equations for chemical reactions			

Particles

Solids, Liquids and Gases Particle diagrams for solids liquids and gases			
Spreading Out Compressing liquids and gases Diffusion in liquids and gases			
Heating and Cooling Changing states Understanding melting and boiling points			
Dissolving How to speed up dissolving Saturated solutions			
Dissolving How to speed up dissolving Saturated solutions			
Gas Pressure and Density			

Elements and compounds

Elements What's everything made of? Knowing symbols for common elements			
Metal Properties of metals Metals with different properties (e.g. potassium, sodium & calcium) Properties of non-metals Elements in your body			
Compounds What is a compounds? Understand that compounds have different properties than the elements in them.			
Mixtures Know how to separate mixtures Properties of mixtures The difference between mixtures and compounds			

Chemical Reactions

What are Chemical Reactions? Differences between chemical and physical reactions The signs that a chemical reaction is happening			
Reversible changes How to separate mixtures made in reversible reactions (physical reactions) Distillation Chromatography			
Burning What you need for burning (oxygen, fuel and heat) Recognise the word *combustion* Understand word equations (reactants → products) Write word equations for combustion (burning) reactions			
Burning Hydrocarbons Examples of hydrocarbon fuels (petrol, diesel and methane) Products of burning hydrocarbons (carbon dioxide and water)			
Useful Chemical Reactions Photosynthesis *Carbon dioxide + water → glucose (sugar) + oxygen*			

Electricity

			
Using Electricity How circuits work (using a complete circuit) How to draw circuit diagrams			
Electric current Series circuits Parallel circuits How to measure electric current			
Voltage What "voltage" means The difference between current and voltage			
Magnetism Properties of magnets Magnetic materials Magnetic fields			
Electromagnets How to make electromagnets How to change the strength of an electromagnet Uses of electromagnets			

Energy

			
What is energy? Different forms of energy How energy can be stored How energy changes from one form to another			
Energy in food Living things need energy How to measure energy Food and exercise			
More energy Energy in food chains Fossil fuels Energy transfers			
Storing energy Potential energy Different forms of potential energy			
Energy supplies Non-Renewable energy Renewable energy			

Forces

Forces everywhere Gravity Friction Measuring force in Newtons			
Balancing forces Balanced and unbalanced forces How unbalanced forces can cause objects to speed up or slow down			
Friction Uses of friction Problems with friction How to reduce friction			
Weight and Mass Difference between weight and mass Floating and sinking Stretching			
Faster and Slower Why objects speed up Drawing/reading distance-time graphs Calculating speed			

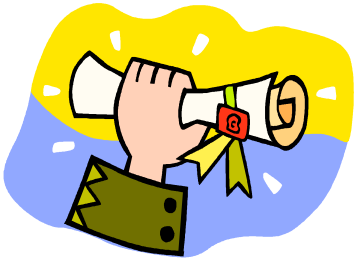
Space

On Earth What causes day and night & its length What causes the seasons			
Our Solar System Order of the planets Asteroids			
Orbits and the moon Understand what an orbit is Phases of the moon Eclipses of the sun and moon			
Artificial satellites Types or orbit Uses of artificial satellites			
The Universe What's in the universe The Big Bang			

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.

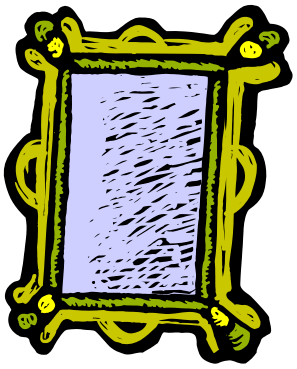
Although this booklet contains superb advice, great tips and fantastic study skills, the guide isn't as important as the person reading it – YOU! It is you who have to put them into practice and apply them to your work. If you do, we're sure that you will improve your performance and your study skills.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

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

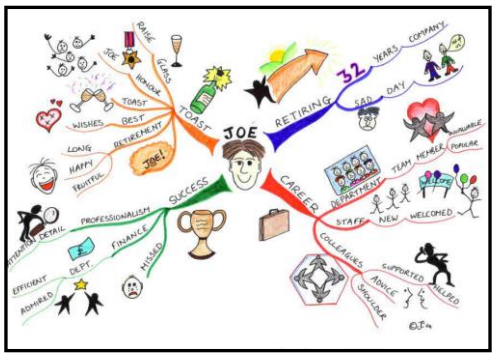
How to Revise...

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…

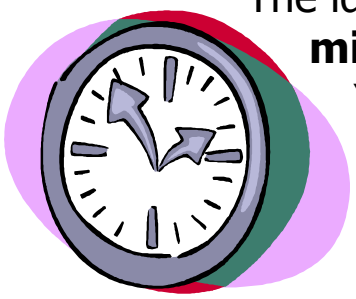
WHEN?

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...

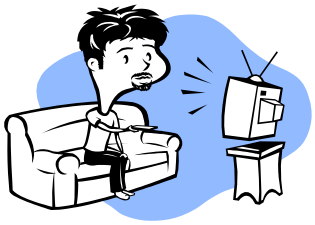
WHERE?

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!

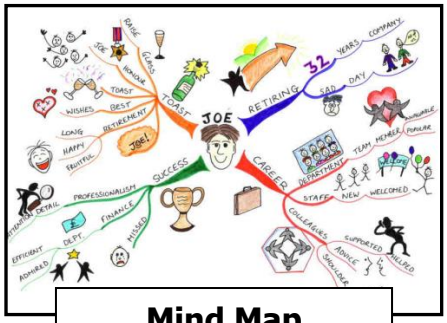
HOT TIP: don't forget the ISC and SSC

How to Revise...

HOW?

There are three easy steps to doing revision well:

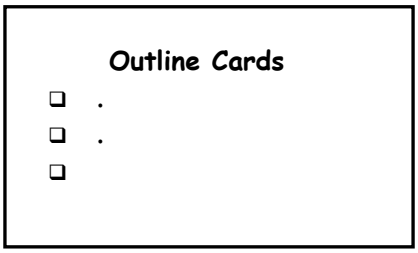
- ⋆ Change
- ⋆ Challenge
- ⋆ Treats



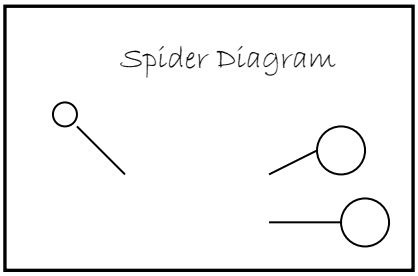
Mind Map

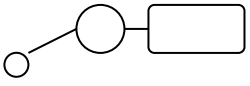
The first step is to try **change**. By changing what is in our exercise books or textbooks into a different form, we kick start our brains into action – we start thinking about new ways of presenting and digesting the information and start learning.

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





HOT TIP: Flick through outline cards before the test

How to Revise...

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

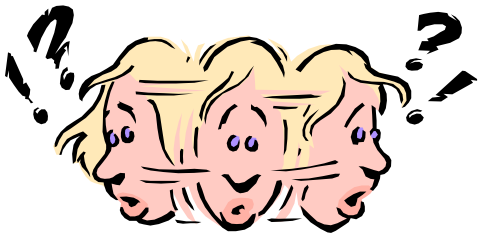
Challenge yourself to really sort out a topic that you have found difficult.

- 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!

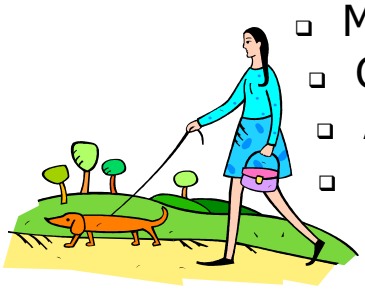
How to Revise…

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!

How to Revise...