Revision Skills

Some ideas

Glossary:

Make one for each topic. Write the keyword and a sentence to describe what each key word means (definition).

- If you do it on the computer put the list in alphabetical order. This makes it easier to check what a word means later if you forget it.

Flashcards:

On one side write the key words, chemical symbols, general equations etc. On the reverse write the meaning or answer.

- Test yourself using about 10 cards at a time. Look at the word side of the card and read the question. Say the answer OUT ALOUD. Check the back of the card.
- If you got it right put it in a "got right" pile. If you got it wrong put it in a "got wrong" pile.
- Move onto the next card and repeat the process until you have been through all the cards.
- Now repeat the process with cards from the "got wrong" pile until ALL your cards are in the "got right" pile.
- Shuffle the cards and try and go through all in one go!
- Make sure you revisit the cards regularly – you need to get the right answer five times (or more) before you can be sure of remembering the right answer.

Mix and match:

Write key words on one card and definition on another card. Label the backs of the cards 1A & 1B, 2A and 2B etc.

- Spread all the cards out face up and try and match them in pairs.
- Check you are correct by turning them over and checking the numbers written on the backs.
- Do it again (time yourself) but make sure you read each definition fully each time or it won't help you.

Summarising Key Points:

RAP! Useful when you are reading textbooks/Scipads/your notes. It is useful to be able to pick out the important information and make brief notes you can use later.

- **R**ead it. Read it twice if necessary and slowly.
- **A**sk yourself – what are the main points. Highlight the main points.
- **P**ut it in your own words. Summarise the main ideas so they makes sense to you – they must be in your own words. It is pointless to copy directly from the text.

Graphical Transformation:

Put the information into a visual (graphic) form that is easy to see and will help you remember the information. There are many types of graphic transformation that organise information in different ways. Find the one you feel most confident at using.

- Series of events chain. This transformation organises the information into a series of steps.
- Compare/contrast matrix. This matrix allows you to compare and contrast information in a clear and visual way. Put information in columns / table form.
- Spider map. Describe a central idea and the main ideas leading from this and lastly the detail of each main idea. Use as many main idea lines or legs as you like.
- Draw a copy of a diagram - but without the labels. Then try to fill in the labels from memory. Then annotate the labels with a brief description.

FEE:

Use FEE to revise your notes and/or answer exam questions.

- **F** = Fact. Write down the main fact.
- **E** = Explanation. Write the explanation about the fact – what does it mean?
- **E** = Example. Give a specific example about the fact.

Concept maps:

A concept of mind map is a visual way of organising key concepts and showing how these key ideas link together. There is NO RIGHT WAY of drawing a concept map and each person will draw it slightly differently. However there are some main steps to follow to ensure you organise your map logically.

- Write the key idea in the middle of the paper.
- Put in key words around the word and link them with arrows from the key idea.
- Write the idea next to the arrow that explains the link between the two words.
- Look for further links between the words, draw arrows and write in explaining ideas.

Mnemonics and acronyms:

- A mnemonic uses the first letter of each word to make up a funny sentence you will remember. The sillier the sentence the more likely you are to remember it. Knowing the first letter helps you remember what the key word/fact is. E.g. **H**arry **He Li**kes **Be**er **B**ottled **C**old **N**ot **O**verly **F**rothy… (Note: Don't memorise the first 20 elements in order as you will be given a Periodic table BUT you will need to know their names!)
- An acronym uses the first letter of the key fact but instead of making another word out of it uses the letters together to make up a new word. Again knowing the first letter helps you remember what the key word/fact is. E.g. MRSGREN, and ROYGBIV

Read, Cover, Write, Check:

This is probably the way that you used to learn for spelling tests. It is a good technique for diagrams, equations, lists of facts and much more.

- Read it.
- Cover it.
- Write out what you can remember.
- Check to see if you got it right.

Remind yourself over and over:

If you revise something today, by this time tomorrow you'll have forgotten at least some of it.

- Take another quick look the next day to "top up" your memory.
- Take another quick look next week.
- Keep "topping up" until the night before the exam.
- This doesn't take long to do. You should feel good because the stuff looks familiar each time you look at it and it is quick you can fit it in with your other revision.

General Advice

Work out "what could they ask me about this?"
For example, in a question about acids and alkalis, it's a safe bet that you'll be expected to know about the numbers on the pH scale, the colours that Universal Indicator goes in acids and alkalis, and what "neutralisation" means.

Practice on real exam questions:
The more you do, the better. Use past NCEA exam papers, and try and answer the questions under exam conditions. It does not matter if you get them wrong. You can then go and find out the right answers.

Be clear about what you are expected to know:
Or how do you know if you have revised it all? Get a checklist from your teacher or No Brain Too Small.

Identify your strong and weak areas:
Then you will know where to concentrate your efforts.
Go through your notes and put green ticks beside stuff that you are happy about, and red dots beside the bits you find more difficult.
Then you know where to focus your attention.
Turn the red dots into green ticks!

The easiest way to start is to break your work down into smaller chunks:
It is not as terrifying if you have lots of smaller sections to look at.
In Science, first break your work down into Biology, Chemistry and Physics.
The break the Chemistry (AS 90944 Demonstrate understanding of aspects of acids and bases**)** down into its three main sections.
Then break each section down into the 3-5 main ideas it contains.
It doesn't seem so big then!

AS 90944 Demonstrate understanding of aspects of acids and bases has been done as an example.

AS 90944 Demonstrate understanding of aspects of acids and bases

1. **ATOMS, IONS & FORMULA**	Structure of the atom – particles & location	● Nucleus : centre of atom – contains protons and neutrons ● Electrons: found in energy levels around nucleus ● Electrons fill energy levels starting with the one nearest to nucleus. 2, 8, 8 etc. ● Atomic No. = No. of protons. Mass No. = No. of protons PLUS No. of neutrons.
	Subatomic particles	● Charges: Protons (+), Neutrons (neutral), Electrons (-) ● Atoms are neutral overall since number of protons (+) = number of electrons (-) ● Protons & neutrons have equal mass; make up most of atom's mass. Electrons are very light.
	Ion formation	● Charged particles formed when atoms lose/gain electron(s) … …..to achieve a full valence shell as this is a stable arrangement. ● Metals lose electron(s) → positive ions; non-metals gain electron(s) → negative ions.
	Names of ions	● Metal ions – same name as the metal e.g. magnesium ion Mg^{2+} ● Watch out for Fe^{2+} iron(II) and Fe^{3+} iron (III) ions ● Non metal ions – from an element – name ends in "ide" e.g. chloride ● Non metal ions – from element with oxygen – name ends in "ate" ● Watch out for OH^- and NH_4^+: just need to learn hydroxide and ammonium names
	Writing & explaining ionic formulae	● The sum of the positive and negative charges must equal zero…….as the ionic compound is neutral overall e.g. $CuCl_2$ as Cu^{2+} with 2 x Cl^- ions (2+) + (2 x 1-) = 0 ● Remember brackets if a group is used more than once e.g. $Cu(OH)_2$, $Ca(HCO_3)_2$, $(NH_4)_2SO_4$
2. **ACIDS AND BASES**	Acids and bases: names / formulae	● Must know acids! Sulfuric, hydrochloric & nitric acid H_2SO_4 HCl HNO_3. ● These make salts: sulfates, chlorides and nitrates. ● Must know bases! Sodium hydroxide NaOH , ammonia NH_3.
	General equations for reactions & equations	● Acid + metal → salt + hydrogen ● Acid + base → salt + water Note: base = metal oxide or metal hydroxide ● Acid + carbonate / hydrogen carbonate → salt + water + carbon dioxide ● Balanced chemical equations; Put numbers in front of correct formula only e.g. 2HCl
	pH scale and indicators	● pH scale: 0-14 acid pH < 7, pH 7 = neutral, pH > 7 = alkaline. ● Solution acidic if $[H^+] > [OH^-]$, neutral if $[H^+] > [OH^-]$, alkaline if $[H^+] < [OH^-]$. ● Colours of UI. Red – orange – yellow – green – blue green – blue – purple. ● Litmus: red in acid, blue in alkali. No change in neutral solution.
	Visible signs of reactions & tests for gases	● Metal + acid - Observation: bubbles of colourless gas. ● Metal + carbonate - Observation: bubbles of colourless gas. ● Test for H_2 – gas burns with a squeaky pop. CO_2 – gas turns lime water cloudy.
	Making salts	● Acid + <u>excess</u> metal, base or carbonate (Note: Cu too unreactive to use). ● Warm to help react, filter off the unreacted metal, base or carbonate. Keep filtrate. ● Leave solution in warm place to allow water to evaporate to leave crystals.
3. **RATES OF REACTION**	What rate is & how it is measured	● Rate = amount / unit time "per unit time" e.g. per second, per minute. ● Measured by measuring volume of gas collected or mass of gas escaping. ● Measured by time for an event e.g. X to be hidden, or a solution to turn blue.
	Collision theory	● To react particles A and B must collide with each other (with the correct orientation) ● To be successful collisions A and B must collide with sufficient energy. ● Rate increases whenever there are more successful collisions/time.
	Factors affecting the rate of reaction	● Inc. surface area: more particles immediately exposed for collisions = more collisions/time. ● Inc. conc^n: more concentrated = more particles/volume so more collisions/time. ● Inc. temperature: particles moving faster = more collisions/time AND particles have more kinetic energy = more successful collisions/time. ● Add catalyst: lowers energy needed for successful collisions = more successful collisions/time .
	Rate graphs	● Steeper line = faster rate e.g. more gas given off / time. ● Horizontal line = reaction is complete. One reactant has run out / all be used up.