YEAR 12 STARTER KIT | 2027

Chemistry

Understanding matter, reactions, and the world around us

SACE Stage 2 | South Australia

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Welcome to Stage 2 Chemistry

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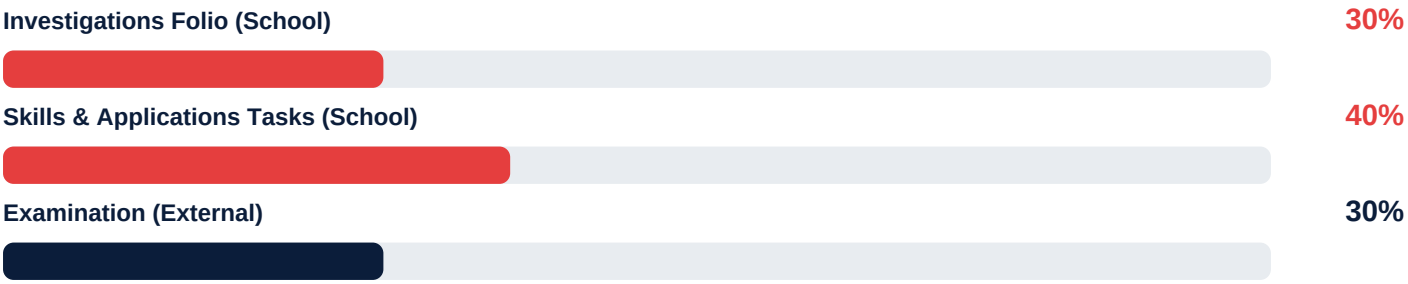
What You Should Know from Stage 1

Before diving into Stage 2 Chemistry, make sure you're confident with these Stage 1 foundations. If any feel shaky, revise them in the holidays — it'll make your Year 12 start so much smoother.

- ☑ Atomic structure and bonding
- ☑ Acids, bases, and pH calculations
- ☑ Mole concept and stoichiometry
- ☑ Introduction to organic chemistry naming
- ☑ Experimental design and data analysis

How You'll Be Assessed

Stage 2 Chemistry is assessed through school assessment (70%) and external assessment (30%). Here's the breakdown:



Topics You'll Cover

Stage 2 Chemistry is organised into 4 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Monitoring the Environment

- Global warming and climate change
- Photochemical smog
- Volumetric analysis (titrations)
- Chromatography
- Atomic spectroscopy

2 Managing Chemical Processes

- Rates of reactions
- Equilibrium and yield
- Optimising production (Haber process, Contact process)

3 Organic and Biological Chemistry

- Naming and drawing organic structures
- Alcohols, aldehydes, and ketones
- Carbohydrates and carboxylic acids
- Amines, esters, and amides
- Triglycerides and proteins

4 Managing Resources

- Energy — fossil fuels, biofuels, electrochemistry
- Water — purification, desalination, testing
- Soil — pH, nutrients, fertilisers
- Materials — polymers, alloys, nanomaterials

Key Formulas and Concepts

These are some of the most important formulas and concepts you'll use throughout the year. Bookmark this page — you'll come back to it often.

pH = -log10[H+]

Calculate pH from hydrogen ion concentration

c = n / V

Concentration (mol/L) = moles / volume

n = m / M

Moles = mass / molar mass

q = m x c x delta T

Heat energy in calorimetry

Keq = [products] / [reactants]

Equilibrium constant expression

Insider Tips from Our Tutors

Master Stoichiometry Early

Stoichiometry underpins almost every calculation in Stage 2 Chemistry — from titrations to equilibrium. If you nail the mole concept and balanced equations in Term 1, everything else builds on it.

Organic Chemistry Naming

Learn the IUPAC naming conventions systematically: identify the longest carbon chain, number from the end nearest to the first substituent, and name functional groups in order. Flashcards work brilliantly here.

Investigations Folio

Your practical investigation report (max 1500 words) must include a clear research question, hypothesis, controlled variables, processed data with uncertainties, and a critical evaluation. Deconstruction evidence is limited to 4 sides of A4 (min font size 10).

Common Mistakes to Avoid

Our tutors have seen these mistakes cost students marks year after year. Learn from others' errors so you don't repeat them.

X Not showing working in calculations

Even if you get the right answer, the exam awards marks for method steps — moles, balanced equations, unit conversions. Always show every step.

X Mixing up Ksp, Ka, and Keq

Each equilibrium constant has a specific expression. Know which concentrations to include and which to leave out (pure solids and liquids are excluded).

X Weak organic chemistry naming

Students lose easy marks by forgetting to number carbon chains from the correct end or missing functional group suffixes. Practice IUPAC naming until it is automatic.

Your Year 12 Study Timeline

A term-by-term plan to stay on top of Stage 2 Chemistry. Adapt this to your school's order of topics, but keep the revision schedule tight.

Term 1 (Weeks 1-10)

- Master stoichiometry and mole calculations
- Complete Topic 1 (Monitoring the Environment)
- Start first Investigation Folio task

Term 2 (Weeks 1-10)

- Complete Topics 2 & 3 (Chemical Processes + Organic)
- Submit Investigation Folio draft
- Build organic chemistry flashcards

Term 3 (Weeks 1-10)

- Complete Topic 4 (Managing Resources)
- Finalise all school assessment tasks
- Begin exam revision — past papers weekly

Term 4 / Exam Prep

- Complete 5+ past exams under timed conditions
- Review data booklet — know where every formula is
- Focus on weak topics with targeted practice

Exam Day Strategies

When exam day arrives, these strategies will help you maximise your marks. Print this page and stick it on your wall in the weeks leading up.

Strategy 1

Read the data booklet before the exam starts — know where key formulas and tables are.

Strategy 2

For multi-step calculations, clearly label each step (e.g. "Step 1: Find moles").

Strategy 3

In extended response questions, use specific chemical terminology and balanced equations.

Strategy 4

Time management: ~1.5 minutes per mark. Don't spend 10 minutes on a 2-mark question.

Ready to Ace Chemistry?

- All tutors are med students with 99+ ATARs
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- Aligned to the SACE Stage 2 curriculum
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