YEAR 12 STARTER KIT | 2027

Chemistry

Understanding matter, reactions, and the world around us

SACE Stage 2 | South Australia

C

In Stage 2 Chemistry, you develop your understanding of how the physical world is chemically constructed, the interaction between human activities and the environment, and the use that human beings make of the planet's resources.

Welcome to Stage 2 Chemistry

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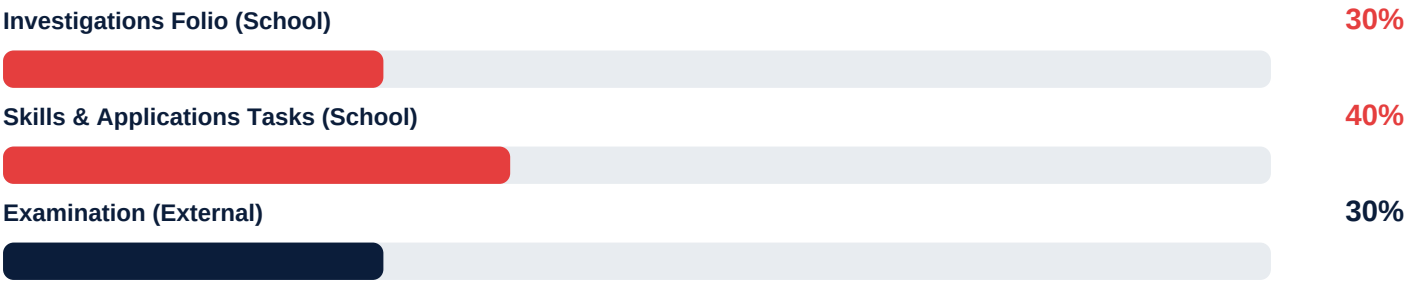
What You Should Know from Stage 1

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?

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- Weekly classes with exam-focused practice
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Physics

From projectile motion to the structure of the atom

SACE Stage 2 | South Australia

P

Stage 2 Physics covers mechanics, electromagnetism, and modern physics. You'll explore how the universe works at scales from the subatomic to the cosmic, using mathematical models to describe and predict physical phenomena.

Welcome to Stage 2 Physics

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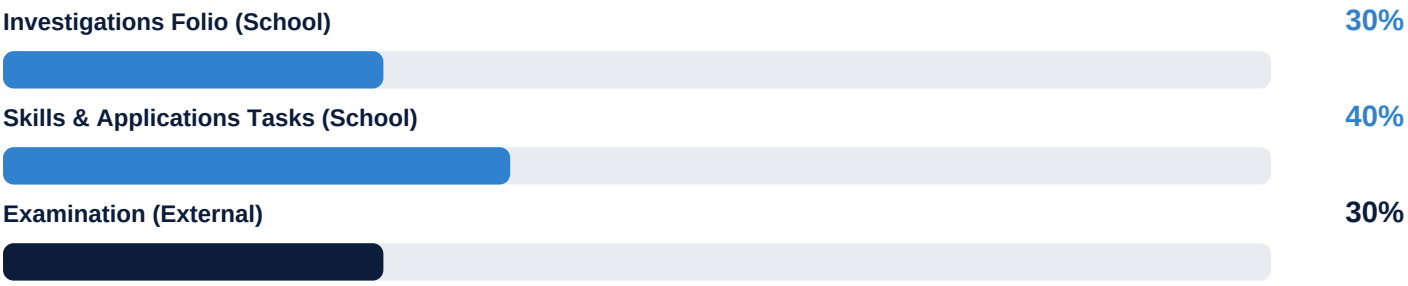
What You Should Know from Stage 1

Before diving into Stage 2 Physics, 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.

- [x] Linear motion (SUVAT equations)
- [x] Newton's laws and forces
- [x] Energy, work, and power
- [x] Electric circuits (Ohm's law, series/parallel)
- [x] Wave properties (frequency, wavelength, speed)

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 Physics is organised into 3 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Motion and Relativity

- Projectile motion (2D kinematics)
- Forces and momentum (impulse, conservation)
- Circular motion and gravitation
- Special relativity (time dilation, length contraction)

2 Electricity and Magnetism

- Electric fields and Coulomb's law
- Motion of charged particles in electric fields
- Magnetic fields and forces on conductors
- Motion of charged particles in magnetic fields
- Electromagnetic induction (Faraday's law, Lenz's law)

3 Light and Atoms

- Wave behaviour of light (interference, diffraction)
- Wave-particle duality (photoelectric effect)
- Structure of the atom (Bohr model, spectra)
- Standard Model of particle physics

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.

F = ma

Newton's second law of motion

p = mv; impulse = F x delta t

Momentum and impulse

v = 2 x pi x r / T

Speed in circular motion

F = k q1 q2 / r^2

Coulomb's law

EMF = -N x delta phi / delta t

Faraday's law of induction

E = hf; Ek = hf - W

Photoelectric effect

Insider Tips from Our Tutors

Vector Components Are Everything

In projectile motion and forces, always resolve into horizontal and vertical components first. Draw a diagram for every problem — it's the single best habit you can build.

Relativity Isn't Scary

Special relativity questions follow a pattern: identify the proper time/length, apply the Lorentz factor, and check your reference frames. Practice with the formulas until they're automatic.

Link Electricity to Magnetism

Topic 2 flows logically: electric fields → charges in E fields → magnetic fields → charges in B fields → induction. Understanding each transition makes the whole topic click.

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 Forgetting to resolve vectors into components

Nearly every mechanics question requires horizontal and vertical components. Students who skip this step get the wrong answer even when they know the physics.

X Sign errors in momentum and energy

Define your positive direction at the start and stick with it. Momentum is a vector — direction matters. Energy is scalar — it does not have direction.

X Confusing proper time/length in relativity

Proper time is measured by the observer in the same frame as the event. Proper length is measured by the observer at rest relative to the object. Getting these backwards reverses your answer.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Master projectile motion and momentum
- Complete circular motion and gravitation
- Start first Investigation Folio task

Term 2 (Weeks 1-10)

- Complete Topic 2 (Electricity and Magnetism)
- This is the densest topic — allocate extra study time
- Practice linking E-fields to B-fields to induction

Term 3 (Weeks 1-10)

- Complete Topic 3 (Light and Atoms)
- Finish all school assessment tasks
- Start past paper practice — weekly timed sessions

Term 4 / Exam Prep

- Complete 5+ full past exams under timed conditions
- Review formula sheet — know every formula and when to use it
- Focus weak topics: most students struggle with induction and relativity

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

Always draw a diagram — force diagrams, circuit diagrams, ray diagrams. They clarify the problem and earn marks.

Strategy 2

State the relevant physics law or principle before applying it (e.g. "By conservation of momentum...").

Strategy 3

Check units at every step. If you end up with kg.m/s when you expected Newtons, you have made an error.

Strategy 4

For relativity questions, clearly identify the reference frames and state which observer measures what.

Ready to Ace Physics?

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Mathematical Methods

Calculus, statistics, and the language of change

SACE Stage 2 | South Australia

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Stage 2 Mathematical Methods extends your calculus and statistics knowledge. You'll master differentiation, integration, probability distributions, and statistical inference — essential tools for university-level STEM.

Welcome to Stage 2 Mathematical Methods

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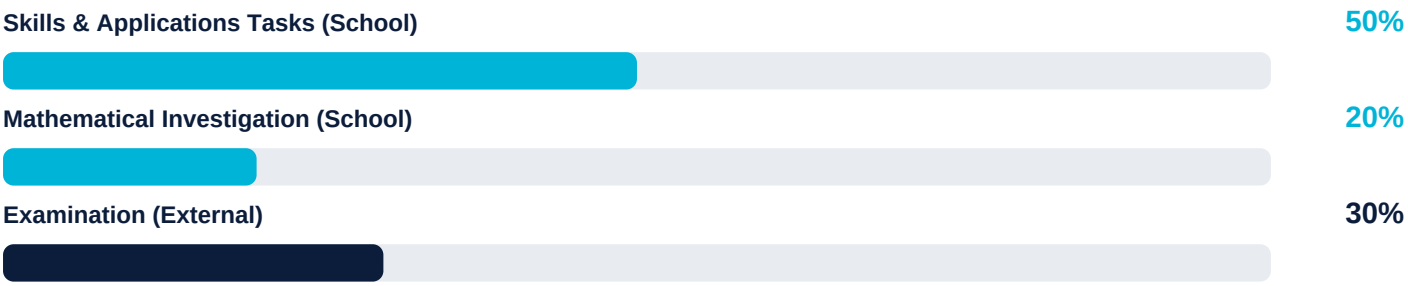
What You Should Know from Stage 1

Before diving into Stage 2 Mathematical Methods, 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.

- ☑ Functions and graphs (linear, quadratic, polynomial)
- ☑ Introduction to differentiation (first principles)
- ☑ Trigonometric ratios and the unit circle
- ☑ Exponential functions and growth/decay
- ☑ Probability fundamentals

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 Mathematical Methods is organised into 6 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Further Differentiation and Applications

- Introductory differential calculus (review)
- Differentiation rules (chain, product, quotient)
- Exponential functions and their derivatives
- Trigonometric functions and their derivatives
- The second derivative and concavity

2 Discrete Random Variables

- Discrete random variables and probability distributions
- The Bernoulli distribution
- Repeated Bernoulli trials and binomial distribution

3 Integral Calculus

- Anti-differentiation
- The area under curves
- Fundamental theorem of calculus
- Applications of integration

4 Logarithmic Functions

- Solving exponential equations with logarithms
- Logarithmic functions and their graphs
- Calculus of logarithmic functions

5 Continuous Random Variables

- Introduction to continuous random variables
- Normal distributions (z-scores, probabilities)
- Sampling distributions

6 Sampling and Confidence Intervals

- Confidence intervals for a population mean
- Population proportions
- Confidence intervals for a population proportion

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.

d/dx [f(g(x))] = f'(g(x)) x g'(x)

Chain rule for differentiation

integral of x^n dx = x^(n+1) / (n+1) + c

Power rule for integration

P(X=x) = nCx p^x (1-p)^(n-x)

Binomial probability formula

z = (x - mu) / sigma

Standard normal z-score

CI = x-bar +/- z* x (s / sqrt(n))

Confidence interval for the mean

Insider Tips from Our Tutors

Chain Rule is King

The chain rule appears in nearly every calculus question. Practice it until it's automatic — most "hard" differentiation questions are just the chain rule combined with product or quotient rules.

Investigation Tips

Your mathematical investigation (max 2000 words) is worth 20%. Choose a real-world context, clearly state your aim, use multiple representations (algebraic, graphical, numerical), and reflect on limitations.

Statistics Is Half the Course

Topics 2, 5, and 6 are all statistics. Many students focus too heavily on calculus and underestimate the stats content. The confidence interval topic is new and will definitely appear in the exam.

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 Forgetting the chain rule

If the function is a composition (something inside something), you need the chain rule. The #1 differentiation error is treating f(g(x)) as if g(x) were just x.

X Confusing definite and indefinite integrals

Indefinite integrals need + c. Definite integrals give a number (the area). Forgetting + c on indefinite integrals loses marks; adding it to definite integrals shows confusion.

X Statistics: ignoring context

When interpreting confidence intervals or hypothesis results, you must refer back to the real-world context. "We are 95% confident..." must say confident about WHAT, in context.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Master differentiation rules (chain, product, quotient)
- Complete Topic 1 (Further Differentiation)
- Start Topic 2 (Discrete Random Variables)

Term 2 (Weeks 1-10)

- Complete integration (Topic 3) and logarithms (Topic 4)
- Submit mathematical investigation draft
- Practice switching between calculus and stats

Term 3 (Weeks 1-10)

- Complete continuous random variables and sampling (Topics 5 & 6)
- Finalise all school assessment tasks
- Begin exam revision with past papers

Term 4 / Exam Prep

- Do 5+ full past exams under timed conditions
- Review formula sheet — know every formula and when to apply it
- Practice confidence interval interpretation — this is new and will be examined

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

The exam has two booklets: one calculator-free, one technology-active. Practise both formats.

Strategy 2

For "show that" questions, you MUST use the given method and arrive at the given answer — no shortcuts.

Strategy 3

In stats questions, always define your variables and state the distribution (e.g. X ~ B(n, p)).

Strategy 4

Check your calculus answers by differentiating your integral or substituting back into the original.

Ready to Ace Mathematical Methods?

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General Mathematics

Practical maths for real-world decisions

SACE Stage 2 | South Australia

G

Stage 2 General Mathematics focuses on using mathematical models for real-world applications — from financial planning and statistics to networks and optimisation. It's ideal for students heading into business, health sciences, or social sciences.

Welcome to Stage 2 General Mathematics

Stage 2 General Mathematics focuses on using mathematical models for real-world applications — from financial planning and statistics to networks and optimisation. It's ideal for students heading into business, health sciences, or social sciences.

What You Should Know from Stage 1

Before diving into Stage 2 General Mathematics, 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.

- [x] Linear functions and their graphs
- [x] Matrices and basic operations
- [x] Univariate statistics (mean, median, std dev)
- [x] Networks and graph theory basics
- [x] Simple and compound interest

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 General Mathematics is organised into 6 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Modelling with Linear Relationships

- Simultaneous linear equations
- Linear programming (constraints, feasible regions)

2 Modelling with Matrices

- Application of matrices to network problems
- Application of matrices to transition (Markov) problems

3 Statistical Models

- Bivariate statistics (correlation, regression)
- The normal distribution

4 Financial Models

- Models for saving (compound interest, annuities)
- Models for borrowing (loans, amortisation)

5 Discrete Models

- Critical path analysis
- Assignment problems (Hungarian algorithm)

6 Open Topic

- Teacher-selected topic relating to student interests
- E.g. game theory, codes and ciphers, fractals

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.

A = P(1 + r/n)^(nt)

Compound interest formula

z = (x - mu) / sigma

Standardising for normal distribution

r = (n x sum(xy) - sum(x) x sum(y)) / ...

Pearson's correlation coefficient

y = a + bx

Least-squares regression line

Repayment = PV x r / (1 - (1+r)^(-n))

Loan repayment formula

Insider Tips from Our Tutors

Investigation Is Worth 30%

The mathematical investigation carries 30% of your school assessment. Pick a genuine real-world scenario (e.g. modelling a savings plan or analysing sports data), collect real data, and critically evaluate your model's limitations.

Technology Is Your Friend

You can use your graphics calculator or approved software in the exam. Learn how to use the matrix, statistics, and finance functions — they save huge amounts of time.

Financial Maths Is Predictable

Loan and savings questions follow set patterns. Master the TVM (Time Value of Money) solver on your calculator, and always check your answer makes real-world sense.

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 Rounding too early in financial calculations

Carry full precision through every step and only round the final answer. Early rounding in compound interest or loan calculations compounds the error across periods.

X Confusing correlation with causation

A high correlation coefficient does NOT mean one variable causes the other. The exam specifically tests whether you understand this distinction.

X Linear programming: testing wrong vertices

Students often test all vertices of the feasible region but forget to check that each vertex actually satisfies ALL constraints. Always verify.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Master linear programming (Topic 1)
- Complete matrices and network applications (Topic 2)
- Start statistical models (Topic 3)

Term 2 (Weeks 1-10)

- Complete financial models (Topic 4)
- Submit mathematical investigation draft — this is worth 30%
- Use your calculator's TVM solver fluently

Term 3 (Weeks 1-10)

- Complete discrete models (Topic 5) and open topic (Topic 6)
- Finalise all school assessment tasks
- Begin exam revision — focus on financial and stats questions

Term 4 / Exam Prep

- Complete 5+ past exams under timed conditions
- Review calculator functions — matrices, stats, finance
- Practice critical path analysis and assignment problems

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

Know your calculator inside out — TVM solver, matrix operations, stats functions. It is your biggest advantage.

Strategy 2

For financial questions, clearly state what each variable represents (PV, FV, n, r, PMT).

Strategy 3

In network/graph questions, show your working on the diagram itself — label edges, mark paths.

Strategy 4

Read the question twice. General Maths questions are context-heavy and the maths is often simpler than you think.

Ready to Ace General Mathematics?

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Specialist Mathematics

Proof, complex numbers, vectors, and advanced calculus

SACE Stage 2 | South Australia

S

Stage 2 Specialist Mathematics is designed for students with a strong mathematical background who are aiming for STEM degrees. It extends Mathematical Methods with proof, complex numbers, 3D vectors, and differential equations.

Welcome to Stage 2 Specialist Mathematics

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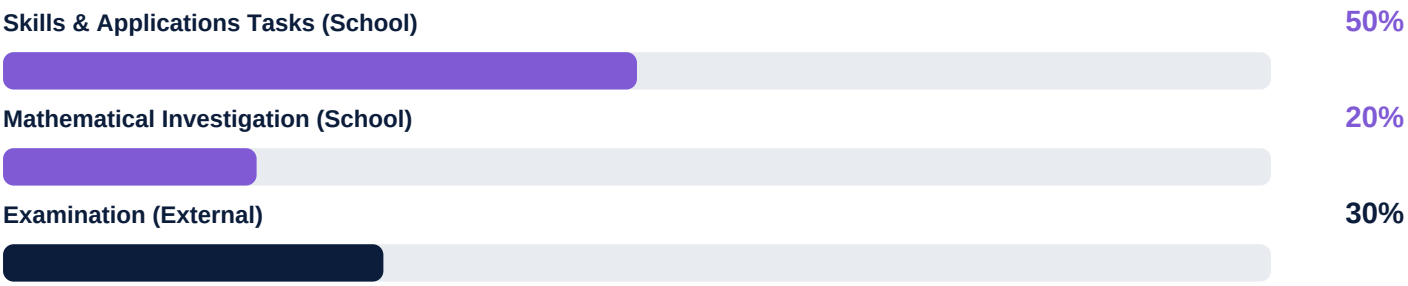
What You Should Know from Stage 1

Before diving into Stage 2 Specialist Mathematics, 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.

- [x] Stage 2 Mathematical Methods (co-requisite)
- [x] Proof and logical reasoning
- [x] Trigonometric identities
- [x] Vectors in 2D
- [x] Polynomial division and factor theorem

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 Specialist Mathematics is organised into 6 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Mathematical Induction

- Proof by mathematical induction (divisibility, sums, inequalities)

2 Complex Numbers

- Cartesian and polar forms
- The complex (Argand) plane
- Roots of complex numbers (De Moivre's theorem)
- Factorisation of polynomials over C

3 Functions and Sketching Graphs

- Composition of functions
- One-to-one functions and inverses
- Sketching graphs (rational functions, absolute value)

4 Vectors in Three Dimensions

- Algebra of vectors in 3D (dot and cross product)
- Vector and Cartesian equations of lines and planes
- Systems of linear equations

5 Integration Techniques and Applications

- Integration by substitution and by parts
- Partial fractions
- Applications: volumes of revolution, arc length

6 Rates of Change and Differential Equations

- Implicit differentiation
- Differential equations (separable, slope fields)
- Parametric equations (polynomial and trig)
- Related rates and velocity vectors

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.

z = r(cos(theta) + i sin(theta)) = r cis(theta)

Polar form of a complex number

z^n = r^n cis(n theta)

De Moivre's theorem

a . b = |a||b| cos(theta)

Dot product of vectors

a x b = |a||b| sin(theta) n-hat

Cross product of vectors

integral u dv = uv - integral v du

Integration by parts

dy/dx = f(x) g(y) => integral dy/g(y) = integral f(x) dx

Separable differential equations

Insider Tips from Our Tutors

! Induction Has a Template

Every induction proof follows: (1) prove base case, (2) assume true for k, (3) prove for k+1 using the assumption. The "trick" is always in step 3 — practice algebraic manipulation to bridge the gap.

! Complex Numbers Are Beautiful

Once you see complex numbers on the Argand plane, multiplication becomes rotation and scaling. Polar form makes powers and roots elegant. Draw diagrams for every question.

! Specialist Builds on Methods

You must be strong in Methods content (especially calculus) before tackling Specialist. The integration techniques here assume you've already mastered basic integration.

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 Incomplete induction proofs

Students often skip clearly stating the inductive hypothesis or fail to show exactly where they use the k assumption in the k+1 step. The marker checks for these explicitly.

X Polar vs Cartesian form errors

When converting between forms, watch the quadrant of the argument. atan(y/x) gives the wrong angle in Q2 and Q3 — you must adjust.

X Vectors: forgetting direction of cross product

The cross product is NOT commutative: a x b = -(b x a). Use the right-hand rule to determine direction, and always check your sign.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Master mathematical induction (Topic 1)
- Complete complex numbers (Topic 2)
- Start functions and graph sketching (Topic 3)

Term 2 (Weeks 1-10)

- Complete 3D vectors (Topic 4) — this is substantial
- Submit mathematical investigation draft
- Keep your Methods skills sharp alongside Specialist

Term 3 (Weeks 1-10)

- Complete integration techniques (Topic 5) and DEs (Topic 6)
- Finalise all school assessment tasks
- Begin past paper practice — weekly timed sessions

Term 4 / Exam Prep

- Do 5+ full past exams under timed conditions
- Review formula sheet — especially integration formulas and vector identities
- Weak areas for most students: DEs, parametric equations, volumes of revolution

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

Induction proofs almost always appear. Drill the template until it is automatic: base case, assume k, prove k+1.

Strategy 2

For complex number questions, sketch the Argand diagram. Most geometric questions become obvious when drawn.

Strategy 3

In vector questions, state whether you are using dot product (scalar result) or cross product (vector result).

Strategy 4

This is the hardest SACE maths subject. If you run out of time, show the setup even if you cannot finish — partial marks are available.

Ready to Ace Specialist Mathematics?

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Biology

From DNA to ecosystems — understanding life

SACE Stage 2 | South Australia

B

Stage 2 Biology explores the diversity of life through molecular biology, cell biology, homeostasis, and evolution. You'll investigate how living systems maintain themselves and change over time.

Welcome to Stage 2 Biology

Stage 2 Biology explores the diversity of life through molecular biology, cell biology, homeostasis, and evolution. You'll investigate how living systems maintain themselves and change over time.

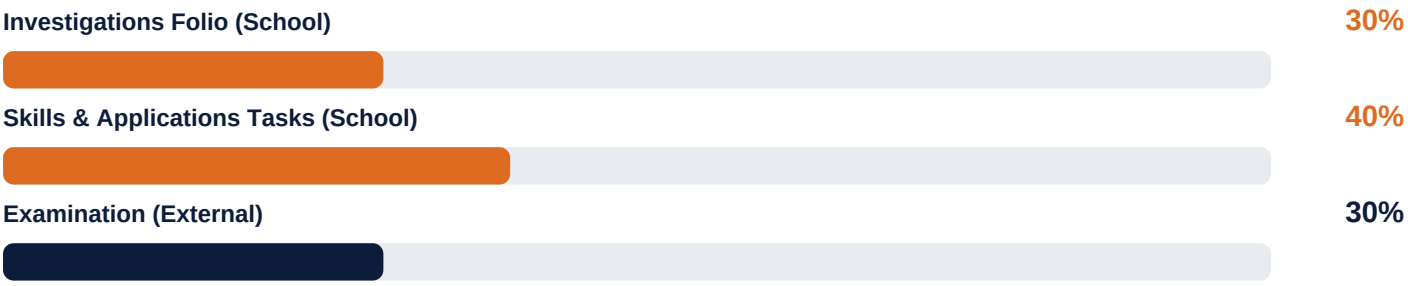
What You Should Know from Stage 1

Before diving into Stage 2 Biology, 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.

- [x] Cell structure (prokaryotic and eukaryotic)
- [x] Basic genetics (Mendel, Punnett squares)
- [x] Classification of living things
- [x] Ecosystems and food webs
- [x] Scientific investigation skills

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 Biology 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 DNA and Proteins

- DNA structure and semi-conservative replication
- Gene expression: transcription and translation
- Mutations and their effects
- Gene regulation and epigenetics
- Biotechnology (PCR, gel electrophoresis, CRISPR)

2 Cells as the Basis of Life

- Cell theory and cell types
- Membrane structure and transport
- Cellular respiration (aerobic and anaerobic)
- Photosynthesis (light and dark reactions)
- Cell division (mitosis and meiosis)

3 Homeostasis

- Feedback mechanisms (negative and positive)
- Thermoregulation (ectotherms vs endotherms)
- Osmoregulation and excretion
- Neural and hormonal control
- Immune response

4 Evolution

- Evidence for evolution (fossil, molecular, comparative)
- Natural selection and adaptation
- Speciation and biodiversity
- Human evolution
- Classification and phylogenetics

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.

DNA: A-T, C-G base pairing

Complementary base pairing rules

mRNA codon table (64 codons -> 20 amino acids)

Genetic code for translation

C6H12O6 + 6O2 -> 6CO2 + 6H2O + ATP

Summary equation for aerobic respiration

6CO2 + 6H2O -> C6H12O6 + 6O2

Summary equation for photosynthesis

Hardy-Weinberg: p^2 + 2pq + q^2 = 1

Allele frequency in populations

Insider Tips from Our Tutors

Draw Everything

Biology is visual. Draw and label DNA replication forks, cell membranes, feedback loops, and phylogenetic trees. Diagrams in your exam answers score marks that words alone miss.

Science as a Human Endeavour

One of your investigation folio tasks must focus on how science connects to society (ethics, technology, environmental impact). Choose a topic you're genuinely interested in — CRISPR and gene editing is a popular and rich choice.

Link the Topics

The four topics connect: DNA (Topic 1) codes for proteins that drive cellular processes (Topic 2), which maintain homeostasis (Topic 3), and variation in DNA drives evolution (Topic 4). Exam questions often cross topic boundaries.

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 Describing instead of explaining

The exam asks you to EXPLAIN mechanisms. "DNA is copied" scores nothing. "Helicase unwinds the double helix, DNA polymerase adds complementary nucleotides in the 5' to 3' direction" scores full marks.

X Ignoring the command word

Compare, contrast, evaluate, discuss, and explain all require different things. "Compare" needs both similarities and differences. "Evaluate" needs a judgement.

X Weak experimental design

Your investigation folio requires proper controlled variables, repeated trials, and processed data with uncertainty. Students who skip these lose marks on the easiest parts.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Master DNA replication, transcription, and translation (Topic 1)
- Learn biotechnology techniques (PCR, gel electrophoresis)
- Start first Investigation Folio task

Term 2 (Weeks 1-10)

- Complete cell biology (Topic 2) — respiration and photosynthesis
- Start homeostasis (Topic 3)
- Submit Investigation Folio draft

Term 3 (Weeks 1-10)

- Complete homeostasis and evolution (Topics 3 & 4)
- Finalise all school assessment tasks
- Begin exam revision — diagram practice is key

Term 4 / Exam Prep

- Complete 5+ past exams under timed conditions
- Draw and label every key diagram from memory
- Practice linking across all 4 topics — exam questions cross boundaries

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

Use correct scientific terminology. "Cell eating" = 0 marks. "Phagocytosis" = full marks. The exam rewards precision.

Strategy 2

Draw labelled diagrams wherever possible — DNA replication forks, feedback loops, cell membranes. They often earn marks that words alone miss.

Strategy 3

For extended response questions, structure your answer: state the concept, explain the mechanism, give a specific example.

Strategy 4

Time is tight in Biology exams. If a question asks for TWO examples, give exactly two — extra examples waste time.

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English

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Stage 2 English develops your skills in analysing how texts create meaning and in producing your own texts for different purposes and audiences. You'll study novels, poetry, drama, film, and media texts.

Welcome to Stage 2 English

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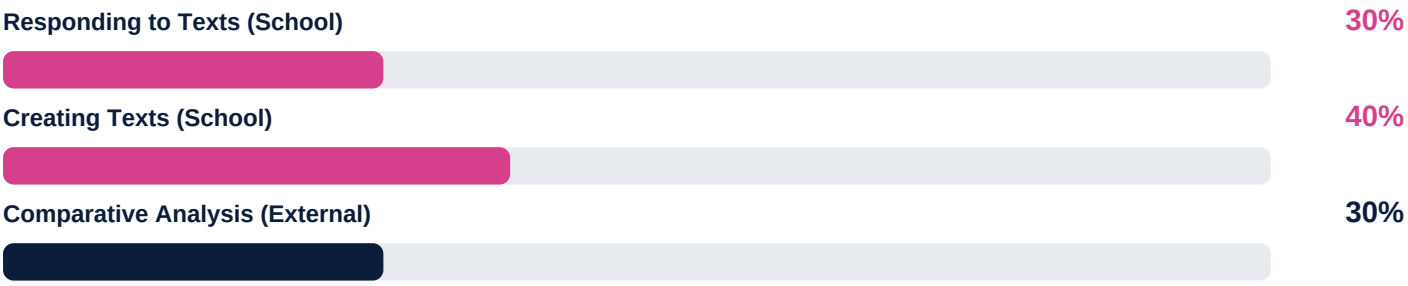
What You Should Know from Stage 1

Before diving into Stage 2 English, 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.

- [x] Essay writing and text analysis
- [x] Understanding of literary techniques
- [x] Experience with different text types
- [x] Oral presentation skills
- [x] Research and referencing

How You'll Be Assessed

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



Topics You'll Cover

Stage 2 English is organised into 3 main topics. Each topic builds on the last, so staying on top of the content week by week is crucial.

1 Responding to Texts

- Analysing language features and stylistic techniques
- Exploring ideas, perspectives, and cultural contexts
- Comparing texts across different text types
- Evaluating how context shapes meaning
- Shared and independently chosen texts

2 Creating Texts

- Writing for different purposes (persuasive, imaginative, analytical)
- Developing personal voice and style
- Experimenting with language and text conventions
- Writer's statement — justifying creative decisions
- Self-editing, drafting, and refining

3 Comparative Analysis (External)

- Comparing two independently chosen texts
- Evaluating language features and conventions
- Analysing how texts represent ideas and perspectives
- Independent research and critical thinking
- Maximum 2000 words

Key Frameworks 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.

TEEL: Topic, Explain, Evidence, Link

Paragraph structure for analytical writing

Language features: metaphor, simile, imagery, symbolism

Key literary techniques to identify

Context: historical, social, cultural, political

Lenses for analysing texts

Tone + mood + register = voice

Elements that create a writer's voice

Audience + purpose + context = text type

Framework for creating texts

Insider Tips from Our Tutors

! Text Categories for AT1

You must respond to texts from at least 2 categories: (1) extended texts like novels, (2) poetry, (3) drama, (4) film/TV, (5) media texts. At least one response must be written and at least one oral/multimodal. Written responses total max 2000 words; oral max 6 minutes.

! Creating Texts — Variety Matters

You create 2-3 texts plus a writer's statement (max 1000 words). Your texts must show variety in text type, purpose, and/or audience. Total max 4000 words (3000 for texts + 1000 for writer's statement). The writer's statement is where you explain and justify your creative choices.

! Comparative Analysis Strategy

Your external assessment compares two self-chosen texts (max 2000 words). Pick texts with enough in common to compare meaningfully but enough difference to sustain analysis. Start reading widely early in the year so you have strong text options.

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 Retelling the story instead of analysing

The marker wants analysis of HOW the author creates meaning, not a summary of WHAT happens. Every paragraph should name a technique and explain its effect.

X Generic writer's statement

Your writer's statement must justify YOUR creative decisions — why you chose that form, audience, language. "I used imagery to engage the reader" is too vague. Be specific.

X Comparative analysis: treating texts separately

The external assessment requires genuine comparison — not Text A then Text B. Each paragraph should weave both texts together around a shared idea or technique.

Your Year 12 Study Timeline

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

Term 1 (Weeks 1-10)

- Begin reading your shared and chosen texts
- Start first Responding to Texts task
- Build a glossary of literary techniques with examples

Term 2 (Weeks 1-10)

- Complete Responding to Texts tasks (AT1)
- Start Creating Texts (AT2) — experiment with forms and voices
- Begin selecting texts for your Comparative Analysis

Term 3 (Weeks 1-10)

- Finalise Creating Texts + writer's statement
- Draft your Comparative Analysis — get teacher feedback early
- Finalise all school assessment tasks

Term 4 / Exam Prep

- Refine and polish your Comparative Analysis (max 2000 words)
- Proofread carefully — errors in your external piece hurt your grade
- Have someone else read your comparative for clarity and flow

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

The Comparative Analysis is submitted, not sat in an exam hall. Use this to your advantage — draft, revise, and polish multiple times.

Strategy 2

Use the TEEL structure (Topic, Explain, Evidence, Link) for every analytical paragraph.

Strategy 3

Quote SHORT, specific evidence. Long block quotes waste your word count. A well-chosen phrase is more powerful.

Strategy 4

Your writer's statement is worth marks. Don't rush it — it shows the marker you made deliberate, informed choices.

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