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THE ULTIMATE STUDY GUIDE HANDBOOK for EHS

General Study Skills: Mastering the Basics

This page covers foundational skills that apply to every subject. Success in school starts with effective time management, organization, and active learning.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Time Management	**Spaced Practice (The Gold Standard)**	Instead of "cramming," study a topic in short, frequent intervals (e.g., 30 minutes every day for a week). Your brain solidifies memories during rest.
Active Recall	**The Question-Answer Method**	After reading a section, close your book and try to explain the key concepts out loud or write them down without looking at your notes. This tests what you *actually* know.
Note-Taking	**The Cornell Method**	Divide your paper: a narrow column on the left for keywords/questions, a wide column on the right for lecture notes, and a section at the bottom for a summary. Review the left column daily.
Organization	**"Chunking" Tasks**	Break large assignments (like a research paper) into small, manageable steps (e.g., "Find 3 sources," "Write Introduction," "Outline Body"). This prevents overwhelm and procrastination.
Concentration	**The Pomodoro Technique**	Work intensely for 25 minutes, then take a short 5-minute break. After four cycles, take a longer 15-30 minute break. This keeps your focus sharp.
Mindset	**Positive Association**	Study a specific subject at the same time and in the same place each day. Your brain will associate that time/location with "Math Mode" or "History Mode," helping you focus faster.

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Active Study	Khan Academy's Study Skills Resources	Offers detailed guides on effective learning strategies, not just subject content.
Spaced Repetition	Spaced Repetition Video	Re-engage your memory at strategic times to prevent forgetting. This is a helpful strategy instead of cramming right before an exam.
Time Management	The Pomodoro Technique Guide (Article)	Discover how to implement this focused study method for enhanced productivity effectively.
Note-Taking	Cornell Note-Taking System Template	Provides a visual template and detailed explanation of this highly effective method.
Mind Mapping	MindMeister (Online Mind Mapping Tool)	Great for visual learners to connect and organize concepts across subjects.
Positive Association	Positive Association - YouTube	TED Talk on how we can use positive associations to engage students in their learning.

Teacher Tip - General

Use 3 different highlighters and mark what you know or don't know on your review sheet

Mark information down in this manner:

*Green- I know it
*Yellow- Some Knowledge
*Red- Don't Know

Your goal is to make the yellow become green and the red become yellow

Start Studying NOW if you haven't already!

- Complete all review packets.
- Be present and alert for all in-class review days.
- Be sure to get a good night's sleep EACH night and eat breakfast!

General Teacher Tips

- Focus on what you don't understand
- Complete as much of the study guide as you can WITHOUT using your notes
- Remember to ask the question - *Why was this important?* as you go through all the terms
- While prepping for essay questions, you will create connections between important people, terms, and events as you outline your potential responses

Math Study Skills: Focus on Practice, Not Memorization

Math is a sequential subject; new concepts build on old ones. Success requires consistent practice and a deep understanding of *how* and *why* a formula works.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Practice	**Work the Examples**	Do not just read the textbook's sample problems. Cover the solution, work the problem yourself, and then check your steps against the book. If you get stuck, work backwards. Practice math every day for at least 5 to 15 minutes. Record: Formulas and step-by-step processes, example problems and their answers, common mistakes & corrections.
Diagnose Errors	**Work with Mistakes**	For each mistake, identify the type: • Calculation error • Misread question • Concept misunderstanding • Wrong strategy • Then write the fix.
Learning New Formulas	**Elaboration and Non-Examples**	When you learn a theorem or formula, find an example that *fits* it and an example that *doesn't* fit (a non-example). This helps you understand the boundaries of the rule.
Note-Taking	**The "Why" vs. the "How"**	In your notes, write down the *steps* to solve a problem (the "how") but also write the *conceptual reason* for using those steps (the "why"). Ask yourself: What rule am I using? Why does it work? Can I solve this a different way?

		Try this approach: • Summary - short explanation of the concept • Example - one or two fully solved model problems • Exceptions - tricky cases, common pitfalls, special rules • Color-code steps (definitions, formulas, answers, warning signs)
Tools	**Supportive Resources**	Graphing calculators: Use them to visualize, check, and confirm—not to skip thinking. Online tools (Desmos, Khan Academy, GeoGebra): Great for interactive practice and conceptual understanding.
Review	**Interleaved Practice**	Instead of doing 20 problems from one section (blocking), mix up practice problems from different chapters (e.g., 5 problems from Chapter 1, 5 from Chapter 3, 5 from Chapter 5). This forces your brain to identify the correct method, mimicking a real test.
Problem Solving	**Visualize Word Problems**	For word problems, draw a quick diagram, set up a table, or sort the problem into "Given," "Find," and "Need" categories before setting up the equation.
Test-taking	**Strategies**	Preview the test - Scan all problems first to allocate time Start with easy points - Build confidence and score early before tackling harder questions Show all work clearly - You can earn partial credit even if you make a mistake Review your work: • Check units, signs, and arithmetic • Plug answers back into equations • Estimate to see if answers are reasonable • Use alternate methods when possible

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Math Practice/Tutorials	Khan Academy Math	Provides thousands of free lessons and practice problems for all math levels, from basic algebra to calculus.
Formula Review	Math is Fun - Explanations and Formulas	Clear, simple explanations of complex mathematical concepts and terminology.
Study Tips	Suggestions for Improving Math Study Skills (Cuesta College)	Offers practical advice on mindset and classroom preparation.
Virtual Flashcards	Quizlet	Excellent for drilling definitions, vocabulary, and formulas.

Teacher Tips - Math

- Make sure to practice solving problems by re-doing your work without looking at solutions
- Looking over your previous solutions is less effective than actually re-working practice problems

Additional Website Resources

If you're stuck on a concept: Use Purplemath

If you need practice and drill: Try IXL, if you have access to this program; EffortlessMath; or Mathway

If you want a deeper understanding: Use Brilliant, Wolfram, or MathWorld

If your course uses graphs/transformations: Use Desmos

English Study Skills: Reading and Writing

English success is built on active reading, deep comprehension, and clear, effective writing. It's about engaging with the text and communicating your analysis.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Reading Comprehension	Annotate and Question	Don't just highlight. Write notes in the margin: Circle unfamiliar words, summarize paragraphs, identify literary devices, and ask questions like, "Why did the character do that?" Reading the Write Way: A Guide for Annotating Your Reading Assignments
Vocabulary	**Contextual Guessing**	Vocabulary in Context Look for synonyms: Tim said, "I am starving." He was **famished** because he had not eaten all day. (*synonym of starving)* Look for antonyms: My dog is so overweight that he is **obese**. He has not been thin since he was a puppy. (*antonym of thin*) Look for examples or general clues: I knew Mark's **ailurophobia** was in full force because he began trembling and stuttering when he saw my cat, Ludwig, slink out from under the bed. ("He began trembling and stuttering when he saw my cat" are clues he was afraid of the cat.) Use your knowledge of prefixes, suffixes, and roots Electrocardiogram (**electro**=electric +**cardio**=heart + **gram**= to record) A record of the heart's electrical activity

Writing Preparation	**Claim-Evidence-Reasoning**	Review notes and study guides from class. Refresh yourself on character names, conflicts, themes, symbols. Look back at important scenes and quotes that your teacher pointed out. Remember that all ideas must be supported by evidence and then analysis, the "what happened" and the "why it is important."

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Reading Practice	CommonLit	Provides free, high-quality reading passages and full ELA curriculum materials (Grades 6-12).
Vocabulary Building	Quizlet AI-Powered Free Online Flashcards for Studying | Kahoot!	Use or create digital flashcards for key literary terms and high-utility vocabulary words. CREATE YOUR OWN! Repetition with flash cards works!
Writing & Grammar	Purdue Online Writing Lab (OWL)	The definitive guide for academic writing, citation styles (MLA/APA), and grammar rules.
Reading Comprehension	ReadTheory PDF Annotation with Kami | Your Guide to Interactive Learning Tools	Offers adaptive reading comprehension practice tailored to your specific reading level. Practice marking up readings. Use Kami or print hard copies to annotate readings - highlighting, talking to the text, asking questions in the borders around the text

Grammar Practice	Grammar | Arts and humanities | Khan Academy	**A brief introduction to grammar:** Grammar is the collection of rules and conventions that make languages go.
Test Prep	11 best online assessment tools: Make learning stick in 2025 - Mentimeter	Create their own test questions - mimicking the style of question on the upcoming test. Students can use online tools like Google Forms, Kahoot!, and Quizlet to create their own tests. These platforms offer various features such as different question types, automatic grading, and the ability to share tests with classmates for collaborative study.
Two Column Notes	Two Column Notes Template	**Two-column notes** are a simple, structured note-taking strategy used to help students organize information, improve comprehension, and support studying.
The 5 W's (and a 6th question)	The 5 W's Metho…	**The 5 W's are a set of basic, essential questions** used to gather complete information about a topic, event, or situation. The 5 W's Are: 1. Who? – Who is involved? Who is affected? 2. What? – What happened? What is the issue or topic? 3. When? – When did it happen? When will it occur? 4. Where? – Where did it happen? Where is it located? 5. Why? – Why did it happen? Why is it important? Sometimes a 6th question, "How?" is also added.

Science Study Skills: Concepts, Connections, and Diagrams

Science—whether biology, chemistry, or physics—requires you to move beyond definitions and understand complex *processes* and *systems*.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Understanding Concepts	**The Feynman Technique**	Choose a complex concept, and try to explain it out loud (or in writing) as simply as possible to an imaginary person who has never heard of it. If you get stuck, go back to your source material.
Memorization	**Mnemonic Devices & Acronyms**	Use phrases or associations to remember lists (e.g., **P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally for order of operations). Create your own for complex terminology.
Note-Taking	**Concept Mapping**	Start with a central idea. Draw branches to sub-topics, and then link those sub-topics together with arrows labeled with words that explain the *relationship* (e.g., "causes," "is composed of," "leads to"). Examples of topics to use a concept map: EX: Anatomy (types of body membranes)
Lab Reports	**The Three Sections**	Focus on: (1) **Purpose:** What are you trying to prove/discover? (2) **Data:** The objective results. (3) **Conclusion:** How does your data *support or refute* your initial purpose? Focus on ECR explanations - Evidence, Claims, and Reasoning
Review	**Draw and Reproduce Diagrams**	Science relies heavily on visuals (molecular structures, cell diagrams, process flowcharts). Practice drawing and labeling these key diagrams from memory.

Systems Model	**Identify Components and Describe Relationships**	• **Know the Parts** – Identify all components and how they connect. • **Draw a Diagram** – Use arrows to show inputs, outputs, and interactions. • **Find Patterns** – Look for cycles and cause-and-effect relationships. • **Use Examples** – Connect the model to real systems you already understand. • **Ask "What If?"** – Predict how changes to one part affect the whole system. • **Break It Down** – Study each part separately, then put it all together. • **Explain It** – Practice describing the system to someone else. • **Know Key Terms** – Review words like input, output, feedback loop, and equilibrium. • **Think Cause + Effect** – Always connect actions to results. • **Compare Systems** – Look for similarities between different scientific systems

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Visual Learning	Crash Course on YouTube	High-quality, engaging video summaries for Biology, Chemistry, Physics, and more. SCROLL DOWN to the Physical and Life Sciences Section.
Concept Practice	Quizlet	Ideal for mastering scientific terminology, vocabulary, and definitions. Choose your subject (SCIENCE) and then the subsection of science under the drop down menu.

Science Study Tips	Study Tips for Science (Article)	Provides guidance on budgeting time and reading science textbooks effectively.
Interactive 3D	PhET Interactive Simulations	Free, fun, interactive simulations for physics, chemistry, and earth science topics. Go to the SIMULATIONS Tab and then choose the topic under the drop down menu.

1. Weekly Study Plan Template

Purpose: Helps students map out their science review sessions by topic and due dates.

Sections: https://www.canva.com/planners/templates/student/ **OR** https://www.notion.com/templates/category/student-planner

- This Week's Topics
- Key Vocabulary to Review
- Labs / Projects Due
- Practice Questions to Complete
- Reflection (What I Still Need Help With)

2. Science Cornell Notes Template

Purpose: Reinforces comprehension and recall using the Cornell format tailored to science lessons.
Template Link: https://suburbanscience.com/science-cornell-notes/ **OR** https://templatelab.com/cornell-notes/ **OR** https://en.wikipedia.org/wiki/Cornell_Notes#/media/File:Cornell_note_system.jpg

Includes:

- Essential Question
- Vocabulary / Diagrams
- Summary Box for Concept Connections

3. Lab Study Organizer

Purpose: Organize lab results and prepare for practical exams.
Template Link:

https://www.notion.com/templates/category/study-planner?srsltid=AfmBOorSo4wL5g-sXYvwjyt4_3m771Uz8TawENy6mpHbJr8ngt1YqG0J

Columns:

- Lab Title
- Main Concept
- Hypothesis
- Key Results
- Takeaways

4. Unit Review Template https://www.notion.com/templates/category/test-prep

Purpose: Helps students summarize each science unit before exams.

- Main Concepts
- Important Formulas
- Sample Questions
- Common Mistakes

Study Resource Links by Subject

🔬 General Science Study Skills

- Khan Academy – High School Science Courses
- Crash Course YouTube Science Playlist
- Quizlet Science Flashcards - ALL types
- Study.com – Science Study Guides https://study.com/learn/science.html

🧬 Biology

- Bozeman Science Videos — concise topic reviews
- HHMI Biointeractive — free classroom resources
- BioMan Biology Games — gamified study tools

⚗️ Chemistry

- ChemCollective Virtual Labs
- Khan Academy Chemistry
- Chemguide — excellent for in-depth concept reviews

🌡️ Physics

- Physics Classroom Tutorials
- HyperPhysics (Georgia State University)
- PhET Interactive Simulations — interactive online experiments

🌿 Environmental Science / Earth Science

- EPA Student Resources
- USGS Education Resources
- National Geographic Education

Top Tips:

- Review notes *within 24 hours* of class.
- Teach a concept to a peer.
- Use color coding for diagrams.
- Practice *graph interpretation* weekly.
- Recreate labs mentally before exams.

Social Studies Study Skills: Context, Connections, and Chronology

Social Studies (History, Geography, Economics, Government) is less about isolated facts and more about understanding *context* and **Change Over Time (COT)**.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Contextualization	**The 5 W's + H**	For every key person, event, or term, identify: **Who, What, Where, When, Why,** and **How** it connects to the broader theme. This builds context.
Note-Taking	**Chronological Outlines**	Organize your notes in order of occurrence. Use graphic organizers (timelines, flowcharts) to visually trace cause-and-effect relationships and see the sequence of events.
Analysis	**Source Evaluation (Primary/Secondary)**	When reading historical documents, ask: Who created this? When? Why? What is the *bias*? What is the *purpose*? This helps you read critically.
Review	**"Teach It" and Debate**	The best way to know if you understand a historical event is to teach it to someone else. Better yet, argue both sides of a historical debate (e.g., the causes of the American Civil War).
Essay Writing	**Focus on Theme/Thesis**	History essays require a clear argument (thesis). Ensure your topic sentences show how your specific facts (names, dates, places) support that central argument.

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Historical Content	Crash Course History on YouTube	Fast-paced, high-level summaries of global and U.S. history events and concepts.
Current Events/Civics	Civics Resources from C-SPAN Classroom	Provides video clips and discussion guides for government and current event topics.
Study Tips	Study Tips for Learning History (Article)	Focused strategies on how to approach history courses and prepare for assessments.

World Language Study Skills: Immersion and Daily Practice

Learning a language is an everyday skill that relies on muscle memory and consistent exposure. Focus on the four core skills: reading, writing, listening, and speaking.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Vocabulary/Grammar	**Daily 15-Minute Review**	Dedicate a short, non-negotiable block of time (15-30 min) every day to review a specific grammar topic that you've covered in class (verb conjugation, adjective endings, subjunctive mood, etc.) and vocabulary review, including use of your online flashcards. Do this *in addition* to regular homework.
Listening/Speaking	**Shadowing**	Listen to a native speaker (podcast, video) and try to immediately repeat what they say, matching their intonation and speed. This builds pronunciation and speaking fluency.
Reading	**Bilingual Reading**	Read short, simple texts in the target language alongside their English translation (or vice-versa). This helps you absorb structure and vocabulary naturally.
Immersion	**Change Your Digital Life**	Change your phone's language, label objects in your home with their target language names, or listen to foreign-language music/podcasts while doing chores.
Writing	**Journaling**	Write a few sentences or a short paragraph daily about your day, your feelings, or what you plan to do

		tomorrow. Focus on correct grammar and vocabulary you recently learned.

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Daily Practice	Exam Study Guides Duolingo Quizlet Bablingua (Spanish Classes)	Gamified lessons for vocabulary and basic grammar reinforcement (available for most languages).
Flashcard System	Anki (Spaced Repetition Software)	Uses science-based algorithms to show you flashcards right before you forget them, optimizing long-term retention.
Pronunciation/Listening	Forvo	A huge database of words pronounced by native speakers from around the world.

General Study Skills: Focus and Wellness

This page focuses on the physical and psychological skills needed to support your learning process.

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Prioritization	**The Eisenhower Matrix**	Classify tasks into four categories: **Urgent/Important** (Do it now), **Not Urgent/Important** (Schedule it), **Urgent/Not Important** (Delegate/minimize), and **Not Urgent/Not Important** (Eliminate).
Reducing Stress	**Take Purposeful Breaks**	Breaks should be restorative. Step away from your desk, stretch, get a glass of water, or listen to music. Avoid non-stop scrolling, which isn't mentally restful.
Test Anxiety	**Brain Dump**	When the test starts, immediately write down any formulas, dates, or concepts you are afraid of forgetting onto the scrap paper. This frees your working memory.
Learning Styles	**Multimodal Approach**	Use different sensory methods: **Visual** (diagrams, color-coding), **Auditory** (reading notes aloud, listening to lectures), and **Kinesthetic** (drawing, walking while reciting).
Review/Editing	**The Two-Step Check**	When checking your work (for tests or essays): (1) Review the content, then (2) review the mechanics (spelling, grammar, clarity, formatting). Don't try to do both at once.

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Mindfulness/Focus	Insight Timer (Meditation App)	Helps improve concentration and manage stress/anxiety before tests or long study sessions.
Time Management	Trello or Notion (Project Management)	Great for visually organizing all your assignments, due dates, and study materials in one place.
Critical Thinking	5 Tips to Improve Your Critical Thinking (Article)	Provides guidance on moving from simple understanding to deep, analytical thought.
Wellness	Reducing Test Anxiety (Guide)	Offers practical advice and techniques for calming nerves and maintaining focus during exams.

Here are some strategies that may help reduce your test anxiety:

1. **Establish a consistent pretest routine.** Learn what works for you, and follow the same steps each time you get ready to take a test.
2. **Learn relaxation techniques.** To help you stay calm and confident right before and during the test, perform relaxation techniques, such as deep breathing, relaxing your muscles one at a time, or closing your eyes and imagining a positive outcome.
3. **Don't forget to eat and drink.** Your brain needs fuel to function. Eat the day of the test and drink plenty of water.

Math/Science Crossover: Problem-Solving and Application

This page highlights skills crucial for both quantitative subjects (Math and Physics) and process-heavy subjects (Chemistry and Biology).

Key Skills & Strategies

Skill Area	Specific Technique	Helpful Hints
Understanding Processes	**Input-Process-Output**	For any scientific or mathematical process, clearly define: **Input** (What variables start this process?), **Process** (What steps occur?), and **Output** (What is the result?).
Formula Mastery	**Formula Cards**	Write the formula on one side of a flashcard and a simple *description* of what it calculates and the *units* for each variable on the other side.
Error Analysis	**The Mistake Log**	Keep a dedicated notebook or section for every problem you get wrong. Write down the problem, your incorrect work, and a brief explanation of the *exact nature* of your mistake (e.g., "Algebra error," "Missed a unit conversion," "Used the wrong formula").
Calculation Checks	**Estimation**	Before calculating the final answer, estimate what the answer *should* be. If your final answer is wildly different, you know you made an error.
Complexity Management	**Simplify the Problem**	If a problem is too complex, try solving it with smaller, simpler numbers first to understand the structure, and then apply that structure to the original problem.

Essential Tools & Resources

Resource Type	Recommended Link	Why It Helps
Science Visuals	The Visual Dictionary	Excellent for finding and understanding scientific diagrams and detailed visual information (e.g., human anatomy, machinery).
Math/Science Video Lessons	Professor Leonard on YouTube	Known for comprehensive, in-depth lectures on various math and physics topics.
Practice Testing	Practice Test Generator (Search Term)	Use a search engine to find free tools that let you input terms/concepts and generate practice quizzes.
Scientific Calculator Reference	Symbolab	A step-by-step calculator and problem solver that shows you the process, which is critical for learning.

The Ultimate Study Skills Guide: Mastering Academics

This guide brings together useful strategies in four key areas: general study skills, math-related subjects, analytical subjects, and language learning.

1. Foundational Skills: Time Management, Focus, and Wellness

These techniques are essential for optimizing your environment and mindset, regardless of the subject.

A. Time and Task Management

Skill Area	Specific Technique	Goal and Application
Prioritization	**The Eisenhower Matrix**	Classify tasks into four categories: **Urgent/Important** (Do now), **Not Urgent/Important** (Schedule), **Urgent/Not Important** (Delegate/Minimize), and **Not Urgent/Not Important** (Eliminate).
Schedule	**Spaced Practice (The Gold Standard)**	Study in short, frequent intervals (e.g., 30 minutes daily for a week) instead of "cramming." This is critical for solidifying long-term memory.
Concentration	**The Pomodoro Technique**	Work intensely for **25 minutes**, followed by a short **5-minute break**. This prevents burnout and keeps focus sharp during long study sessions.
Organization	**"Chunking" Tasks**	Break down large, overwhelming assignments (like a research paper) into small, manageable steps (e.g., "Find 3 sources," "Write Thesis Statement").

B. Focus, Note-Taking, and Review

Skill Area	Specific Technique	Goal and Application
Active Recall	**The Question-Answer Method**	Close your book or notes and try to explain key concepts out loud or write them down. If you struggle, that's where you need more study.
Note-Taking	**The Cornell Method**	Divide your paper into three sections: a narrow column for keywords/questions, a wide column for lecture notes, and a section at the bottom for a summary.
Learning Styles	**Multimodal Approach**	Engage different senses: **Visual** (diagrams, color-coding), **Auditory** (reading notes aloud), and **Kinesthetic** (drawing, pacing while reciting).
Test Anxiety	**Brain Dump**	Before starting a test, immediately write down any formulas, dates, or complex terminology you fear forgetting onto your scrap paper.

C. Essential Tools & Resources (General & Wellness)

Resource Type	Recommended Link	Why It Helps
Active Study	Khan Academy's Study Skills Resources	Offers detailed guides on effective learning strategies, not just subject content.
Time Management	The Pomodoro Technique Guide (Article)	Learn how to implement this focused study method for better productivity.
Project Planning	Trello or Notion (Project Management)	Great for visually organizing all your assignments, due dates, and study materials.

Mindfulness/Focus	Insight Timer (Meditation App)	Helps improve concentration and manage stress/anxiety before study sessions.

2. Quantitative and Process Mastery (Math & Science Crossover)

These skills are vital for subjects that require calculation, logical sequencing, and understanding cause-and-effect.

A. Core Crossover Techniques

Skill Area	Specific Technique	Helpful Hints
Error Analysis	**The Mistake Log**	Keep a dedicated log of every problem you get wrong. Write the problem, your incorrect work, and the *exact nature* of the mistake (e.g., "Algebra error," "Wrong unit conversion").
Complexity Mgt.	**Simplify the Problem**	If a word problem is too hard, substitute small, simple numbers to understand the core logical structure, then apply that structure to the original problem.
Formula Mastery	**Formula Cards**	Write the formula on one side and a description of what it calculates, including the **units for each variable**, on the other.
Process Study	**Input-Process -Output**	For any scientific or mathematical process, define the **Input** (variables/materials), the **Process** (the steps), and the **Output** (the result/product).
Calculation Checks	**Estimation**	Before doing the final calculation, estimate what the answer *should* be. If your calculated answer is drastically different, you know there is an error.

B. Essential Tools & Resources (Crossover)

Resource Type	Recommended Link	Why It Helps
Step-by-Step Help	Symbolab	A step-by-step calculator and problem solver that shows you the process, critical for learning.
In-Depth Lectures	Professor Leonard on YouTube	Comprehensive, in-depth lectures on various college-level math and physics topics.
Science Visuals	The Visual Dictionary	Excellent for understanding scientific diagrams and detailed visual information (e.g., anatomy).

3. Subject-Specific Study Strategies

A. Math Study Skills: Focus on Practice, Not Memorization

Skill Area	Specific Technique	Why It Works
Practice	**Work the Examples**	Cover the textbook solution, work the problem completely yourself, and then check your steps against the book. If stuck, work backwards one step.
Review	**Interleaved Practice**	Instead of blocking study (20 problems from one section), mix up practice problems from different, non-sequential chapters. This forces your brain to correctly identify the method needed for each problem.

Understanding	**Elaboration and Non-Examples**	When learning a formula, find an example that *fits* the rule and an example that *violates* the rule. This defines the boundaries of the concept.

Resource Type	Recommended Link	Why It Helps
Practice/Tutorials	Khan Academy Math	Provides thousands of free lessons and practice problems for all math levels.
Formula Review	Math is Fun - Explanations and Formulas	Clear, simple explanations of complex mathematical concepts and terminology.
Virtual Flashcards	Quizlet	Excellent for drilling definitions, vocabulary, and formulas.

B. Science Study Skills: Concepts, Connections, and Diagrams

Skill Area	Specific Technique	Why It Works
Understanding	**The Feynman Technique**	Explain a complex concept (e.g., cellular respiration) out loud as simply as possible to an imaginary fifth-grader. If you use jargon or get confused, you don't know it well enough.
Visualization	**Draw and Reproduce Diagrams**	Practice drawing and labeling key visuals from memory (molecular structures, cell cycles, process flowcharts). Science tests rely heavily on visual recall.

Note-Taking	**Concept Mapping**	Start with a central idea, draw branches to sub-topics, and use **labeled arrows** to explicitly define the *relationships* between the ideas ("causes," "is composed of," "leads to").

Resource Type	Recommended Link	Why It Helps
Visual Learning	Crash Course on YouTube (Science)	High-quality, engaging video summaries for Biology, Chemistry, Physics, and more.
Interactive 3D	PhET Interactive Simulations	Free, fun, interactive simulations for physics, chemistry, and earth science topics.
Concept Practice	Quizlet	Ideal for mastering scientific terminology, vocabulary, and definitions.

C. English Language Arts (ELA) Skills: Analysis & Communication

Skill Area	Specific Technique	Why It Works
Reading	**Annotate and Question**	Write notes in the margin: circle unfamiliar words, summarize paragraphs, identify literary devices, and ask critical questions about the text's purpose.
Essay Structure	**Reverse Outlining**	After writing a draft, read only the topic sentence of each body paragraph. If those sentences don't clearly prove your thesis, your essay lacks logical flow and must be revised.

Evidence	**Use a Quote Sandwich**	Every quote must be: (1) **Introduced** (top bun), (2) the direct **Quote** itself (meat), and (3) followed by your **Explanation** of how it proves your point (bottom bun/condiments).

Resource Type	Recommended Link	Why It Helps
Writing & Grammar	Purdue Online Writing Lab (OWL)	The definitive guide for academic writing, citation styles (MLA/APA), and grammar rules.
Reading Practice	CommonLit	Provides free, high-quality reading passages and full ELA curriculum materials.
Adaptive Reading	ReadTheory	Offers adaptive reading comprehension practice tailored to your specific reading level.

D. Social Studies Skills: Context, Connections, and Chronology

Skill Area	Specific Technique	Why It Works
Context	**The 5 W's + H**	For every key person, event, or term, identify: **Who, What, Where, When, Why,** and **How** it connects to the broader historical theme.
Analysis	**Source Evaluation**	When reading documents, ask: Who created this? When? What is the *bias*? What is the *purpose*? This prevents accepting historical narratives at face value.

Review	**"Teach It" and Debate**	Teach a historical event or concept to a friend. If you can explain the **causes, events, and consequences** clearly, you have mastered the context.

Resource Type	Recommended Link	Why It Helps
Primary Sources	Library of Congress Digital Collections	Access to millions of historical documents, photos, and artifacts for primary source analysis.
Historical Content	Crash Course History on YouTube	Fast-paced, high-level summaries of global and U.S. history events and concepts.
Civics/Government	Civics Resources from C-SPAN Classroom	Provides video clips and discussion guides for government and current event topics.

E. World Language Skills: Immersion and Daily Practice

Skill Area	Specific Technique	Why It Works
Vocabulary	**Daily 15-Minute Review**	Language acquisition requires muscle memory. Dedicate a short, non-negotiable block of time *every single day* to flashcards, verb conjugations, and grammar review.
Listening/Speaking	**Shadowing**	Listen to a native speaker (podcast, audio clip) and immediately try to repeat what they say, matching their intonation and speed. This builds muscle memory for speaking.

Writing	**Journaling**	Write a few short sentences daily about your day or future plans using only the target language. Focus on applying new grammar and vocabulary correctly.
Immersion	**Change Your Digital Life**	Change your phone's language setting, label household objects, or listen to foreign-language music/podcasts. Consistent exposure is key.

Resource Type	Recommended Link	Why It Helps
Daily Practice	Duolingo	Gamified lessons for vocabulary and basic grammar reinforcement.
Flashcard System	Anki (Spaced Repetition Software)	Optimizes long-term retention by showing you flashcards right before you forget them.
Pronunciation/Listening	Forvo	A huge database of words pronounced by native speakers from around the world.

Step 1	**Breakup into 4 Groups of Core Subjects (ENGLISH, MATH, SCIENCE, SOCIAL STUDIES)**
Step 2	**On the board or a piece of paper, each group should brainstorm different study techniques/tricks that work for them based on their assigned Core Subject.**
Step 3	**Each group should share strategies. Call upon upperclassmen to be the leaders here!**
Step 4	**Whole- Class Discussion Questions:** **Do all techniques work for all subjects? How do you study differently**

	depending on the subject or type of assessment? Do all techniques work for all learners? Consider different types of learning (visual, auditory, kinesthetic, etc.)

Step 1: Watch this introductory video on helpful study skills for high school and college students:
Studying for Exams: Crash Course Study Skills #7

Step 2: Take notes on the suggested strategies for success.
How to Study for Midterms and Exams

How to Create a Study Schedule: Watch This: How to Make a Productive Study Schedule

Flashcard Templates:

- Digital Flashcards Template
- Quizlet

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