HSC Maths Exam - Mark Saver Advice

1. The HSC isn't just about the final number - it's about *method, clarity, and relevance*.
2. Many marks are for process, not just the result.
3. Slow down for keywords like: *exact*, *show that*, *prove*, *hence*, *state domain*, *to 2 decimal places*.

Calculations & Algebra

- Write down all pronumerals/variables with values
- Write formulas *before* substituting numbers (cosine rule, probability, integration, etc.)
- Watch for **negative signs** (especially in differentiation, quadratics, logs)
- Don't round until the **final answer** (carry 4-5 sig. figs. in working)
- Double-check calculator mode: **degrees ↔ radians**
- Check if the answer is **reasonable** (e.g., probability between 0-1, area not negative)

Working & Notation

- Show **clear steps** for every calculation (method marks)
- Use correct notation:
  - Integrals → include "+ C" and "dx"
  - Approximations → use ≈ not =
  - Vectors, sets, trig functions → use proper symbols
- Label graphs (axes, intercepts, asymptotes, units)
- Final answer clearly boxed or underlined

Answering the Question

- Carefully read what's asked (solve for x, give area, state probability, etc.)
- Include **units** where needed (cm^2, %, years)
- For worded problems, write a **conclusion statement** (e.g., "Therefore, the maximum volume is 120 cm^3")
- If exact values are asked: leave as surds/fractions, not decimals

Exam Strategy

- Attempt **every question** - even a few steps = method marks
- Don't get stuck - move on and come back
- Use the formula sheet actively - don't rely on memory alone
- Check part (b), (c) questions → often depend on earlier results
- In multiple-choice: eliminate silly options before guessing

Special Traps

- **Algebra** - Most common algebra traps are expanding or cancelling incorrectly, mishandling negatives, misusing indices/surds, or forgetting restrictions, like denominators $\neq 0$ or $|x|$ needing two cases
- **Trigonometry** - check if question is in radians or degrees
- **Logarithms** - check domain restrictions (no log of negative/zero)
- **Probability** - total must add to 1; probabilities can't be negative
- **Differentiation/Integration** - check whether they asked for derivative, equation of tangent, or area
- **Statistics** - label mean, median, standard deviation correctly; check IQR steps

HSC Maths Exam - Common Errors

Mathematical / Conceptual Errors

- **Incorrect formula recall** (e.g., misremembering the cosine rule, integration formulas, or probability rules)
- **Sign errors** (e.g., dropping a negative in differentiation, solving equations incorrectly)
- **Algebraic slips** (expanding brackets wrongly, errors in factorisation, index laws mistakes)
- **Miscalculations** (wrong arithmetic, especially under exam pressure)
- **Mixing up concepts** (e.g., confusing permutations vs combinations, radians vs degrees, variance vs standard deviation)
- **Not recognising conditions** (domain restrictions, extraneous roots in log/equation questions)

Working / Communication Errors

- **Not showing sufficient working** - HSC markers often require clear steps for method marks
- **Unclear reasoning** - skipping logical steps makes it hard for a marker to follow
- **Incorrect or missing notation** (e.g., leaving out "dx" in integrals, misusing ≈ vs =)
- **Inconsistent rounding** (rounding too early, or not following instructions like "2 decimal places")
- **Not labelling diagrams or graphs** (axes, scales, asymptotes, intercepts)
- **Poorly set-out solutions** - messy work can hide mistakes and make it unclear if reasoning is valid

Interpretation Errors

- **Not answering the actual question** - e.g., finding x but forgetting to state the required *area* or *probability*
- **Ignoring units** (e.g., writing "3" instead of "3 cm^2")
- **Forgetting contextual restrictions** (e.g., time can't be negative, probability can't exceed 1)
- **Not writing a concluding statement** when required (e.g., "Therefore, the maximum area is…")

Exam Technique Errors

- **Leaving blanks** - even partial attempts can earn method marks
- **Not checking answers** (especially when they seem unreasonable)
- **Spending too long on one hard question** and losing time for easier ones
- **Misreading the question** - especially multi-part questions where part (b) depends on part (a)
- **Not using the calculator correctly** (wrong mode: degrees vs radians, entering probability functions incorrectly)
- **Copying from calculator display incorrectly** (rounding error, wrong decimal)

Specific HSC Traps

- **Forgetting to justify reasoning in proofs/derivations** (e.g., just writing the answer without the proof)
- **Not stating conditions for probability / statistics questions**
- **Mixing up exact vs approximate values** (e.g., giving a decimal when the question asked for exact surds/fractions)
- **Not drawing/using diagrams in geometry & calculus word problems**
- **Skipping explanation for non-calculator questions** (marker needs to see the process, not just the answer)