**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 (cm², %, years)
* For worded problems, write a **conclusion statement** (e.g., “Therefore, the maximum volume is 120 cm³”)
* 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 ≠ 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 cm²”)
* **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)