Government of **Western Australia**
School Curriculum and Standards Authority

Summary report of the 2018 ATAR course examination:
Mathematics Methods

Year	Number who sat	Number of absentees
2018	4417	42
2017	4328	42
2016	4540	48

Examination score distribution–Written
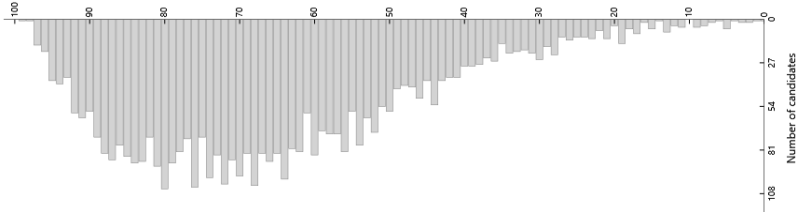
Summary

The examination consisted of two sections, Section One: Calculator-free and Section Two: Calculator-assumed. Most candidates attempted all questions. The examination was accessible, with most candidates achieving a good result. There were, however, several discriminating questions in both sections.

Attempted by 4417 candidates	Mean 65.60%	Max 98.69%	Min 0.67%

Section means were:

Section One: Calculator-free Attempted by 4417 candidates	Mean 69.88% Mean 24.46(/35)	Max 35.00	Min 0.00
Section Two: Calculator-assumed Attempted by 4415 candidates	Mean 63.33% Mean 41.16(/65)	Max 63.69	Min 0.00

General comments

- Setting out of working was good and in logical steps.
- Some setting out of solutions in sequential steps demonstrated a high level of understanding.
- Numerous solutions were just calculations with no reference to what had been calculated.
- Questions which required a brief description were not answered well. Candidates seemed to miss the point of what was being asked.
- Deficiency in basic number skills was evident in numerous scripts. Examples included:
  - evaluating $\sqrt{0.16} = 0.04$, $\frac{1}{10} = 1 \times \frac{3}{10}$, $0.8^2 = 0.16$, $\left(\frac{4}{5}\right)^2 = \frac{16}{5}$, $\frac{5}{5} \times 10 = \frac{160}{10 \times 5^5}$ where the factor of ten was multiplied in both the numerator and denominator
  - $10 \times \frac{25}{16} \times \frac{1}{125} = 2 \times \frac{5}{16} \times \frac{1}{25} = \frac{25}{25}$ where the factor of five was cancelled twice in the denominator.
- There was a lack of details as to what each set of calculations represented.

- Candidates appear to be efficient in the use of CAS calculators but some do not query unrealistic results to check for errors. In some cases when answers were ridiculous, candidates did not check why.
- Use of CAS calculators does not necessarily demonstrate candidates' understanding of the concepts involved. Thus, candidates are encouraged to show details of the method they use.
- Drawing of graphs still requires improvement, with sufficient detailed features and a higher level of neatness.

Advice for candidates
- Express solutions with explanation rather than just calculations.
- Questions that ask for descriptions or explanations need to be answered in sufficient detail to ensure full marks.
- Do not blindly believe an answer from the calculator. Ensure that it makes sense in the context of the question.
- Take care when sketching graphs.

Advice for teachers
- Make interpretation of solutions an area of focus. As was the case last year, candidates were proficient at performing calculations but performed poorly when asked to interpret their results.
- Understanding of the Fundamental Theorem of Calculus can be used to determine the results of the integration of a complex function was done poorly again this year.
- Candidates struggled to demonstrate a full understanding of logarithmic graphs, rectilinear motion, confidence intervals and sample proportion.

Comments on specific sections and questions
Section One: Calculator-free (52 Marks)
Candidates performed well in this section. Questions involving probability distributions and basic calculus were well attempted. However, candidates struggled with how sample size relates to the width of confidence intervals and the use of The Fundamental Theorem of Calculus to show results.

Section Two: Calculator-assumed (99 Marks)
This section proved more difficult than Section One. Many candidates coped well with standard calculations but struggled with the interpretation of solutions. Many were unable to demonstrate a full understanding of the more difficult concepts presented in questions 8, 11, 13 and 17.