PRE-APPROVED LEARNING AND ASSESSMENT PLAN

Stage 1 Mathematics

*This pre-approved learning and assessment plan is aligned with Stage 1 Pre-Mathematical Methods Program 3 – Semester 3.*

Pre-approved learning and assessment plans are for *school use only*.

* Teachers may make changes to the plan, retaining alignment with the subject outline.
* The principal or delegate endorses the use of the plan, and any changes made to it, including use of an addendum.
* The plan does not need to be submitted to the SACE Board for approval.

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| School |  | Teacher(s) |  |

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| SACE  School Code | | |  | Year |  | Enrolment Code | | | | |  | Program Variant Code (A–W) |
| Stage | Subject Code | | | No. of Credits (10 or 20) |
|  |  |  |  | **1** | **M** | **A** | **M** | **10** |  |

**Addendum – changes made to the pre-approved learning and assessment plan**

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| Describe any changes made to the pre-approved learning and assessment plan to support students to be successful in meeting the requirements of the subject. In your description, please explain:   * what changes have been made to the plan * the rationale for making the changes * whether these changes have been made for all students, or for individuals within the student group. |

**Endorsement**

The use of the learning and assessment plan is approved for use in the school. Any changes made to the plan support student achievement of the performance standards and retain alignment with the subject outline.

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| Signature of principal or delegate |  | Date |  |

| Assessment Type and Weighting | Name and details of assessment | Assessment Design Criteria | | Assessment conditions (e.g. task type, word length, time allocated, supervision) |
| --- | --- | --- | --- | --- |
| C&T | R&C |
| Skills and Applications Tasks  Weighting 75% | **SAT 1: Vectors in the Plane.** Key questions and key concepts from Topic 9.  The content covers key questions and key concepts within subtopics 9.1, and 9.2 and 9.3.  SAT 1 will focus on both routine and complex type questions The complex questions require students to apply the key concepts such as vector projections to solve problems in a variety of contexts and some require interpretation of the results. Construction of graphical representations may be required to support their problem-solving strategies.  Appropriate and effective use of electronic technology is expected. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2,3,4 | 1,2,3,4 | Supervised written assessment.  Total time: 60 minutes  Calculator permitted  1 A4 page of handwritten notes |
| **SAT 2: Calculus.** Key questions and key concepts from Topic 6. The content covers key questions and key concepts within subtopics 6.1, 6.2, 6.3, 6.4 and 6.5.  SAT 2 is divided into two parts:  Part 1 will be completed without a calculator and involve first principles and the derivatives of polynomials.  Part 2 will be completed with a calculator and focus on more complex derivations, the properties of derivatives and applications. Conjecture work will be incorporated.  Routine questions will address questions on rate of change and computation of polynomial functions. Complex questions will involve first principles and application of derivatives. Conjecture question(s) will be presented.  Appropriate and effective use of electronic technology is expected. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2,3,4 | 1,2,3,4,5 | Supervised written assessment.  Part 1 : 20 minutes  No calculator permitted  Part 2 : 40 minutes  Calculator permitted  1 A4 page of handwritten notes |
| **SAT 3: Further Trigonometry.** Key questions and key concepts from Topic 10, covering subtopics 10.1 and 10.2.  Routine questions will require algebraic solutions to simple trigonometric equations and relationships.  The complex questions require students to apply the key concepts to solve problems in a variety of contexts in relation to solving trigonometric equations and incorporating relations. Some require interpretation of the results. Construction of graphical representations will be required to support algebraic solutions to some trigonometric equations.  Appropriate and effective use of electronic technology is expected. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2,3,4 | 1,2,3,4 | Supervised written assessment.  Total time: 60 minutes  Calculator permitted  1 A4 page of handwritten notes |
| Mathematical Investigation  Weighting 25% | **Modelling With Derivatives – Cake Tin Optimisation.** This investigation is based on Topic 6 – Introduction to Calculus. Students develop a conjecture on how to optimise the volume of an open cake tin, given it is to be made from cutting the corners of a piece of square tinplate. The model is further explored when students consider cutting the corners from a rectangular plate to form the cake tin. Conjectures will be made based on observations made from calculations completed. Students are then given the opportunity to prove their conjectures through the use of calculus. | 1,2,3,4 | 1,2,3,4,5 | 1 week to complete. Some class time is allowed to support verification.  Maximum of 8 A4 pages.  Appropriate investigation report format as described in the Mathematics subject outline. |
| ***Four assessments.*** *Please refer to Stage 1 Mathematics subject outline.* | | | | |

**Stage 1 Mathematics**

**Assessment Overview**

The table below provides details of the planned tasks and shows where students have the opportunity to provide evidence for each of the specific features of both assessment design criteria.