# Pre-approved Learning and Assessment Plan

Stage 2 Essential Mathematics (aligns with Program 2)

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) |
|  |  |  | **2018** | **2** | **M** | **E** | **M** | **20** |  |

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 overview

Stage 2 Essential Mathematics – 20 credits

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 all of the assessment design criteria.

Assessment Type 1: Skills and Applications Tasks – weighting 30%

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| Assessment details | Assessment design criteria | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| CT | RC |
| Topic One: Scales, Plans and Models  The content covers key questions and key concepts within subtopics 1.1 and 1.2. Students apply their knowledge and skills to a range of routine and complex questions.  Part A: Non-calculator section (30 minutes) – Subtopic 1.1 to 1.2  Part B: Calculator section (20 minutes) – Subtopic 1.2  Clear and logical communication of solutions and correct use of notation and terminology are required. Use of appropriate equipment for constructing and taking measurements from scaled representations is required. | 1,2,4 | 1,3 | Supervised written assessment.  Part A: no calculator, no notes  Part B: calculator access.  One A5 page of handwritten notes permitted for calculator section only.  Total time: 50 minutes |
| Topic Three: Business Applications  Students demonstrate mathematical knowledge and skills of key questions and key concepts from Business Applications subtopics 3.1, 3.2 and 3.3. Students apply their knowledge and skills to a range of routine and complex questions in a variety of contexts. The complex questions require students to apply the key concepts to solve problems and interpret results in a variety of contexts. Most questions require the aid of electronic technology. Correct use of notation and terminology are required. | 1,2,4 | 1,2,3,4 | Supervised written assessment.  One side of one A4 page of handwritten notes permitted.  Total time: 50 minutes |
| Topic Five: Investments and Loans  Mathematical knowledge and skills based upon the key questions and key concepts from all subtopics are assessed. Students require access to technology to solve a range of financial calculations on investments using both simple and compound interest (including future value annuity calculations). Problems will be set in context and opportunities for interpretation of the mathematical results will be provided throughout the test. Correct use of notation and terminology are required. | 1,2,4 | 1,3 | Supervised written assessment.  One A4 page of handwritten notes permitted.  Total time: 50 minutes |
| Topic Two: Measurement  Mathematical knowledge and skills based upon the key questions and key concepts from all subtopics are assessed. The assessment includes both routine and complex problems, some requiring the rearrangement of formulas.  Part A: Non-calculator section (20 Minutes) – Parts of Subtopic 2.1 to 2.3  Part B: Calculator section (30 minutes) –Subtopic 2.1 to 2.3. The formula sheet will include formulae for circumference, area, volume, surface area, Simpsons rule, Pythagoras’ theorem, sine, cos and tan ratios and the sine and cosine rule.  Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2,4 | 1,2,3,4 | Supervised written assessment.  Part A: no calculator, no notes  Part B: calculator access allowed, formulae sheet is provided and one side of one A4 page of handwritten notes permitted.  Total time: 50 minutes |

Assessment Type 2: Folio – weighting 40%

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| Assessment details | Assessment design criteria | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| CT | RC |
| Topics One and Two: Scales, Plans, and Models and Measurement  In this folio task students utilise skills that they have developed in Subtopics 1.2, 2.1 and 2.2. They design and cost a garden renovation for a backyard. Students first design and draw scale diagrams, including where possible composite and/or irregular shapes for some of the aspects of the redesign. From these diagrams they calculate the materials needed. They will then cost the renovation. Students are required to consider the reasonableness of their results by examining the underlying assumptions and limitations of their mathematical model. | 2,3 | 1,2,3,5 | 3 weeks to complete. Some class time is allowed to support verification.  Maximum of 8 single-sided A4 pages.  Appropriate format as described in the Stage 2 Essential Mathematics subject outline. |
| Topic Four: Statistics  In this task students are required to use their knowledge of the key content from subtopics of 4.1 to 4.3 to explore the connection between kilometres travelled and the selling price of a specific brand/model of car. Students’ use a sampling technique to select a sample of data for car prices and the distance travelled for two different brands/models of car. The data should be collected from a variety of sources including internet advertisements and/or newspapers etc. They analyse the data collected on the selling price of the cars and the respective distance they have travelled, and determine if there is a causal link between distance travelled and the selling price of each model/brand of car using correlation techniques. Students consider if one brand/model holds its value better than the other investigated. They discuss the reasonableness of their results by examining the limitations of their mathematical model. | 1,2,3,4 | 1,2,3,4,5 | 3 weeks to complete. Some class time is allowed to support verification.  Maximum of 8 single-sided A4 pages.  Appropriate format as described in the Stage 2 Essential Mathematics subject outline. |
| Topic Five: Investments and Loans  In this task students investigate home loan options considering charges on loan accounts and comparison rates. After choosing a bank loan they investigate how the interest paid for a particular loan amount for a home can be minimised. Investigations include reducing the term of the loan, making greater payments, making a lump sum payment and increasing the frequency of payments and possibly combinations of these. They also consider the full cost of the loan for each of the interest minimisation methods considered, and consider the reasonableness of their results, and discuss any limitations to their mathematical model. | 1,3 | 1,2,3,4,5 | 3 weeks to complete. Some class time is allowed to support verification.  Maximum of 8 single-sided A4 pages.  Appropriate format as described in the Stage 2 Essential Mathematics subject outline. |

External Assessment: Examination – weighting 30%

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| Assessment details | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
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| External Assessment | 2-hour external examination.  Access to electronic technology required.  Students may refer to one unfolded A4 sheet (two sides) of hand-written notes.  Students answer questions on the following three topics:   * Topic 2: Measurement * Topic 4: Statistics * Topic 5: Investment and Loans   The examination consists of a range of problems, some focusing on knowledge, routine skills, and applications, and others focusing on analysis and interpretation. Students provide explanations and arguments, and use correct mathematical notation, terminology, and representation throughout the examination. |

*Eight assessments.**Please refer to the Stage 2 Essential Mathematics subject outline.*