

EXTERNAL ASSESSMENT SPECIFICATIONS

MATHEMATICS METHODS - FOUNDATION (MTM315117)

External Assessment Specifications inform the development of external assessments. The primary audience for this document is the course Setting Examiner and Exam Critics. It may also be of use to teachers and students.

These specifications must be read in conjunction with the Course Document.

The external assessment consists of a **3 hour written examination**

The criteria to be externally assessed are:

Written examination:

- Criterion 4: manipulate algebraic expressions and solve equations
- Criterion 5: understand linear, quadratic and cubic functions
- Criterion 6: understand logarithmic, exponential and trigonometric functions
- Criterion 7: use differential calculus in the study of functions
- Criterion 8: understand experimental and theoretical probabilities and of statistics

WRITTEN EXAMINATION CONTENT

- A representative sample, encompassing a large proportion of the targeted course content areas, tests the standard of skills, knowledge and understanding of a candidate
- The relative weighting of items is indicated by
 - The relative allocation of marks, and
 - Space for responses
 - Sub questions (for example 1a, 1b or 1ai, 1a(ii)) must have an individual mark allocation
 - For items or sub items worth:
 - One (1) mark items, no workings are required for a correct answer
 - Correct answer with or without working = 1 mark
 - Correct answer with some incorrect working = 1 mark
 - Incorrect answer with some correct working = 0.5 mark
 - Two (2) mark items, learners are required to show relevant working
 - Correct answer with relevant working = full marks
 - Correct answer with no working = maximum 1.5 marks
 - Correct answer with some incorrect working = partial marks
 - Incorrect answer with some correct working = partial marks
 - Incorrect answer with incorrect working = no marks
 - Three (3) or more mark items, learners are required to show relevant working
 - Correct answer with relevant working = full marks
 - Correct answer with no working = maximum half marks
 - Correct answer with some incorrect working = partial works
 - Incorrect answer with some correct working = partial marks
 - Incorrect answer with incorrect working = no marks
- Approximately a mark per minute with 80 marks in Part 1 and 100 marks in Part 2 (not more items – just more opportunity to demonstrate knowledge and understanding of relevant criteria).

WRITTEN EXAMINATION STRUCTURE

The examination paper is divided into two parts, each with five (5) sections:

- Part 1 and Part 2 are of unequal weighting as indicated by time and mark allocations
- The parts are in two separate item-and-response booklets
- Part 1 is collected 80 minutes after examination commencement, from which time calculators may be used. (Part 2 can be commenced at any stage without calculator usage in the 80 minute period.)

The following specifications for each part are outlined in the table on the following pages:

- The distribution across the parts of:
 - Criteria
 - Course content (topics)
 - Time and mark allocations
- Number and type of items.

Section	Part 1 Calculators are NOT allowed to be used. 5 sections	Part 2 Calculators are allowed to be used. 5 sections
Criteria	Criteria 4, 5, 6, 7, 8	Criteria 4, 5, 6, 7, 8
Elements	C4, 5, 7, 8 includes all elements C6 includes all elements except 4, 5 and 9 where it specifies the use of technology	C4, 5, 6, 7, 8 includes all elements
Course coverage	<ul style="list-style-type: none"> • Algebraic expressions and solving equations • Linear, quadratic and cubic functions • Logarithmic, exponential and trigonometric functions • Differential calculus • Statistics and probability One topic per section which are equally weighted.	<ul style="list-style-type: none"> • Algebraic expressions and solving equations • Linear, quadratic and cubic functions • Logarithmic, exponential and trigonometric functions • Differential calculus • Statistics and probability One topic per section which are equally weighted.

Number and nature of items	From 3 to 6 per section, with a total allocation of 16 marks per section. (Each item may be broken into sub items which will each have their own mark allocation)	From 3 to 6 per section, with a total allocation of 20 marks per section. (Each item may be broken into sub items which will each have their own mark allocation)
Compulsory or optional	All	All
Item type(s) / format (See Attachment I for definitions and exemplars)	A balance of items ranging from short to extended formats (no item or sub item will have more than 10 marks allocated) Extended items include a balance of routine and non-routine contexts. All closed-ended responses.	A balance of items ranging from short to extended formats (no item or sub item will have more than 10 marks allocated) Extended items include a balance of routine and non-routine contexts. All closed-ended responses.
Response time	80 minutes	100 minutes
Mark / rating allocation (weighting must be specified)	80 marks	100 marks

SPECIFIC MATERIALS AND EQUIPMENT APPROVED FOR USE BY CANDIDATES

- A calculator approved by TASC
- External examination Information Sheet for Mathematics Methods Foundation

ASSESSMENT

A set of solutions or a marking tool will be developed by the Setting Examiner, provided to markers at the marking meeting that follows the external written examination; and will be available from TASC in the following year.

The external assessment must include items that, separately or together, give opportunities to demonstrate the standards from rating C to rating A.

Final results will be awarded as a rating of A, B, C, t or z in the above criteria. These ratings are used in determining the final award according to the algorithm in the course document.

WRITTEN EXAMINATION CHECKLIST

PART I

SECTION A

- assesses examinable aspects of Criterion 4
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION B

- assesses examinable aspects of Criterion 5
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION C

- assesses examinable aspects of Criterion 6 (excluding tech. aspects of elements 4, 5, 9)
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION D

- assesses examinable aspects of Criterion 7
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION E

- assesses examinable aspects of Criterion 8
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all items and sub items
- no item or sub item worth more than 10 marks

PART 2

SECTION A

- assesses examinable aspects of Criterion 4
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION B

- assesses examinable aspects of Criterion 5
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION C

- assesses examinable aspects of Criterion 6
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION D

- assesses examinable aspects of Criterion 7
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all questions and sub items
- no question or sub questions worth more than 10 marks.

SECTION E

- assesses examinable aspects of Criterion 8
 - provides a list of all content points that have been included
- provides opportunities to demonstrate standards from rating C to rating A
 - provides a list of all elements from C to A that have been included
- includes a representative sample of course content
- comprises three to six questions.
- marks clearly indicated for all items and sub items
- no item or sub item worth more than 10 marks

ATTACHMENT 1

Item types

The form in which candidates must answer

- Short response format

These items are composed of a brief prompt that demands a response to some stimulus material that varies from a single response to a few written points. This sort of item is suited to assessing the candidate's ability:

- To recall specific information and methods related to key content
- To apply rehearsed methods to familiar situations
- To demonstrate understanding of key concepts in unseen stimulus material.

Exemplars:

Solve the following for x

(a) $4x - 3 = 7x - 20$ (1 mark)

(b) $\frac{x+1}{2} - \frac{x-2}{5} = 7$ (2 marks)

- Extended response format

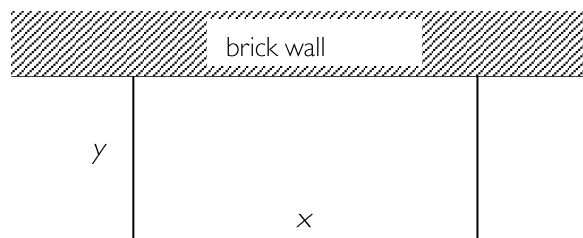
These items involve multi-stage responses of increasing complexity. Greater complexity may be due to one or more of the following:

- A greater cognitive demand of mathematical concepts
- The necessity to select appropriate data and/or formulae
- Justification of a response via a logical line of reasoning.

Exemplar:

Three sides of a rectangular garden bed are formed by 31 metres of wooden border. The fourth side is a brick wall. The area of the garden is 114 m^2 .

Use simultaneous equations with x metres being the length and y metres being the width garden bed, determine the possible dimensions of the garden bed.



(4 marks)