# Level 2 Additional Mathematics Qualification Outline – Consultation Version

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# Introduction

This document provides a high-level overview of the proposed WJEC Level 2 Award in Additional Mathematics Qualification.

It is based on Qualifications Wales's Approval Criteria (key sections are included in Appendix 1). Our qualification **must** meet these requirements.

The qualification outline will provide a guide for the development of the Specification and Sample Assessment Materials (SAMs).

# Qualification Overview

Level 2 Additional Mathematics will reinforce the key mathematical skills that learners have developed by undertaking the GCSE Mathematics and Numeracy (Double Award), as well as enabling learners to develop an understanding of new concepts and mathematical approaches.

The qualification will support the five interdependent proficiencies that make up the Curriculum for Wales' principles of progression for the Mathematics and Numeracy Area by supporting learners to:
- develop deeper thinking, reasoning, communication, application and metacognitive skills through a mathematical approach to problem solving
- formulate and reinforce key mathematical skills
- develop an understanding of new concepts and mathematical approaches and the ability to apply them
- be creative in applying mathematics to challenging problems and to novel and abstract situations
- reason mathematically, make deductions and inferences, draw conclusions and engage with formal mathematical proof
- develop an awareness of the holistic nature of mathematics
- connect ideas within mathematics and between mathematics and other subjects.

# Qualification Structure

**Mandatory Units**

**Unit 1: Algebra**
Written examination
33.3% of qualification

**Unit 2: Calculus**
Written examination
33.3% of qualification

**Optional Units**

**Unit 3: Geometry and trigonometry**
Written examination
33.3% of qualification

**Unit 4: Statistics**
Written examination
33.3% of qualification

**Unit 5: Mechanics**
Written examination
33.3% of qualification

**Unit 6: Discrete and decision mathematics**
Written examination
33.3% of qualification

To receive the qualification, learners must complete three units, two of which must be Unit 1: Algebra and Unit 2: Calculus.

Learners who complete fewer than three units will receive unit certification for the successful completion of each unit.

These are the proposed percentages for the Level 2 Additional Mathematics assessment objectives (within a tolerance of +/- 5%):

| AO1 | **Recall and use their knowledge** of the prescribed content. | 65% |
|-----|---------------------------------------------------------------|-----|
| AO2 | **Select and apply** mathematical methods. | 20% |
| AO3 | **Interpret and analyse** problems and use mathematical reasoning to solve them. | 15% |

This will be a unitised qualification.
There is no hierarchy implied by the order in which the units are presented. Therefore, the order does not imply a prescribed teaching order.

# Unit Information

**Unit 1 – Algebra**

**The purpose of this unit is to:**
- formulate and reinforce key mathematical techniques
- strengthen manipulative algebraic skills

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will **not** be allowed in this examination.

**Unit 2 – Calculus**

**The purpose of this unit is to:**
- introduce and develop an understanding of new concepts relating to calculus, supporting progression to the further study of mathematics or a related discipline

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will be allowed in this examination.

**Unit 3 – Geometry and trigonometry**

**The purpose of this unit is to:**
- develop and strengthen the knowledge, skills and understanding of topics relating to geometry and trigonometry, and be able to apply them in different contexts

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will be allowed in this examination.
We propose that the examination will have some questions set in real-world contexts.

**Unit 4 – Statistics**

**The purpose of this unit is to:**
- introduce and develop an understanding of topics and concepts relating to statistics and probability, and be able to use the associated mathematical language and terminology effectively

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will be allowed in this examination.
We propose that the examination will have some questions set in real-world contexts.

**Unit 5 – Mechanics**

> **The purpose of this unit is to:**
> - introduce and develop an understanding of topics and concepts relating to mechanics, and be able to apply them in different contexts

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will be allowed in this examination.
We propose that the examination will have some questions set in real-world contexts.

**Unit 6 – Discrete and decision mathematics**

> **The purpose of this unit is to:**
> - introduce and develop an understanding of new concepts and mathematical approaches relating to discrete and decision mathematics, and be able to apply them to novel and abstract situations

The content will include topics that support the unit's purpose.
The duration of the examination is likely to be 45 minutes.
We propose that the use of a calculator will be allowed in this examination.
We propose that the examination will have some questions set in real-world contexts.

# Availability of assessments

The Approval Criteria states the following in relation to availability of assessments:
'In the first year the qualification is available, at a minimum, either the algebra or calculus units must be offered in the January window.'

We are considering only making available the assessment for Unit 1: Algebra in the first assessment window in January 2027, with the assessments for the remaining five units being available in the 2027 summer series.

After the first January window, Unit 1: Algebra, and Unit 2: Calculus will be available in every January and summer series. The remaining four optional units will be available in every summer series.

We are interested in hearing your views on the proposed availability of assessments for 2027.

# Consideration of manageability, engagement, validity and reliability

In developing this proposed qualification outline, we have considered manageability, engagement, reliability and validity, and how to balance these considerations in the context of the requirements of the Approval Criteria.

The size of the new Level 2 Additional Mathematics is 60-90 Guided Learning Hours (GLH), in comparison to the current qualification which is 130 GLH. The content selected for each unit will be considered in line with the GLH, to ensure that it is manageable to teach within the time.

The new, optional units that are being introduced in the new qualification will allow centres to use teacher expertise beyond the mathematics department to deliver the qualification. For example, Physics teachers could teach Unit 5: Mechanics. This supports the idea of cross-curricular teaching as well as manageability in centres.

The new Level 2 Additional Mathematics will continue the intention of the current qualification to support learners progressing to A Level Mathematics, through giving learners a flavour of topics that appear at A Level. Introducing new units covering different topics will engage a broader range of learners that may be interested in other subjects post-16.

The requirement for learners to take three examinations for the new qualification has been set by the regulator. To balance the demands of additional examinations on learners, we are proposing that each unit has a 45 minute exam (total assessment time of 2 hours 15 minutes in comparison to the current 2 hours 30 minute paper). Our proposed arrangements for the availability of assessments will provide further opportunity for centres to spread the assessment burden of this qualification.

We believe that the purpose and content of the qualification can be validly assessed by examination, and a mix of question types can help us maximise validity. When we develop assessments, we will ensure that all tasks target the relevant construct, that there is an appropriate balance of content covered over time and that there is alignment between assessment items and learning outcomes. Where appropriate, we will use data available to us on how an assessment has functioned. To ensure reliability, we will make sure that the units target the same assessment objective weightings each series and have a consistent level of demand each series, that marking criteria will be developed and assessors will be trained on how to apply them consistently.

We will continue to consider manageability, engagement, reliability and validity, at each stage of qualification development.

# APPENDIX

## Key information from Approval Criteria

The following information has come directly from Qualifications Wales's (Approval Criteria Level 2 Additional Mathematics) – our qualification must meet these requirements.

**Purpose**

1. The **Level 2 Additional Mathematics** must:
    1.1. be designed primarily for Learners between the ages of 14 and 16
    1.2. build on the conceptual understanding Learners have developed through their learning from 3–14, as well as that from GCSE Mathematics and Numeracy
    1.3. support teaching and learning by providing demanding, relevant and engaging content and assessment that relates to and supports the Curriculum for Wales, including its four purposes
    1.4. give Learners an opportunity to strengthen the formal mathematical techniques necessary for further mathematical study for those who may want to study mathematics or a related discipline post-16
    1.5. provide meaningful, fair and accurate information on Learner achievement within a subject that highlights what Learners know, understand and can do

**Aims**

2. The **Level 2 Additional Mathematics** qualification must:
    2.1. allow Learners to explore a range of knowledge, skills and understanding in relation to mathematics
    2.2. provide opportunities for Learners to be assessed in a variety of relevant and meaningful contexts
    2.3. provide opportunities, where appropriate, for Learners to engage with and consider the Curriculum for Wales' cross-cutting themes:
        2.3.1. local, national and international contexts
        2.3.2. the diversity of representations, perspectives, themes and contributions, including people from Black, Asian and minority ethnic groups
        2.3.3. relationships and sexuality education
        2.3.4. human rights education
        2.3.5. careers and work-related experiences
    2.4. provide opportunities, where appropriate, for Learners to engage with and consider sustainability[1]
    2.5. be of Comparable demand to other Level 2 qualifications across the UK

3. The **Level 2 Additional Mathematics** qualification must support Learners to:
    3.1. develop deeper thinking, reasoning, communication, application and metacognitive skills through a mathematical approach to problem solving
    3.2. formulate and reinforce key mathematical skills
    3.3. develop an understanding of new concepts and mathematical approaches and the ability to apply them
    3.4. be creative in applying mathematics to challenging problems and to novel and abstract situations

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[1] Sustainability is mandatory within the new Curriculum for Wales and will form part of every *Learner's* education throughout their learning journey.

3.5. reason mathematically, make deductions and inferences, draw conclusions and engage with formal mathematical proof
3.6. develop an awareness of the holistic nature of mathematics
3.7. connect ideas within mathematics and between mathematics and other subjects