

# A blueprint for mathematics education

# maths Snapshots

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## ACME's blueprint...

1. All young people value mathematics and develop confident, positive attitudes to learning and using it.
2. They are mathematically fluent and can reason and solve problems within mathematics, in other contexts and in their daily lives.
3. They are taught by well-qualified, effective and inspirational teachers of mathematics.
4. They study appropriate and engaging mathematics up to the age of 18.
5. Policies that make this happen are joined-up, long-term, evidence-informed, transparent and well-designed.

The Advisory Committee on Mathematics Education (ACME) is an independent committee that utilises its expertise to develop advice to influence mathematics education policy. ACME undertakes evidence-informed analysis, harnessing and reflecting the expertise of the mathematics community.

## 1. Valuing Mathematics

All young people value mathematics and develop confident, positive attitudes to learning and using it.

- Learners come to understand that mathematics is crucially important in a wide range of scientific, technological, economic and social contexts.
- They recognise the intrinsic power and beauty of mathematical ideas as well as the usefulness of mathematics for individual citizens to realise their personal and educational aspirations.
- Qualifications encourage students to gain confidence and develop a positive attitude towards mathematics.
- Assessment and accountability regimes support progressive development in mathematics learning.
- Teachers develop a classroom culture and offer tasks that enable all students to develop confidence and competence as learners of mathematics.
- Mathematical study is appealing and motivating, with content that is engaging for students and their teachers.

## 2. Competent learners

All young people are mathematically fluent and can reason and solve problems within mathematics, in other contexts and in their daily lives.

- Learners experience mathematics as a highly interconnected subject. They reason mathematically and can identify and conjecture patterns, relationships, and generalisations.
- Learners develop mathematical fluency, conceptual understanding and can select appropriate techniques to solve problems in a range of mathematical, educational and general contexts.
- Learners interpret and evaluate mathematical solutions, moving freely between verbal, graphical, diagrammatic and mathematical representations of a situation.
- They communicate mathematical findings clearly and effectively and evaluate different solutions.

## ACME's blueprint for mathematics education

ACME has provided advice on mathematics education since 2002. This paper draws together ACME principles developed over many years as a blueprint for mathematics education. Future papers in the series will explore a range of policy issues that fall within the five overarching themes in ACME's blueprint.



### 3. Specialist teachers for all

**All young people are taught by well-qualified, effective and inspirational teachers of mathematics.**

- There is a good supply of teachers of mathematics who enjoy their work and remain within the profession.
- Teachers have sound mathematical, pedagogical and subject-specific pedagogical knowledge.
- Subject-specific career-long professional development is an entitlement and responsibility.
- Teacher education and professional development fosters interactions between teachers and researchers.
- Teachers of mathematics actively collaborate in professional learning networks.

### 4. Mathematics for all to 18

**All young people study appropriate and engaging mathematics up to the age of 18.**

- All learners experience a challenging and engaging curriculum appropriate to their needs and interests.
- They experience mathematics in a deep, rich and connected way rather than being accelerated through a fragmented, test-driven curriculum.
- Mathematics assessment and accountability measures incorporate the full range of mathematical knowledge, skills, understanding and the ability to use mathematics to solve problems.
- A suite of distinctive, well-designed and well-understood post-GCSE qualifications enables all learners to study mathematics to 18.

### 5. Better mathematics education policy

**Mathematics education policies are joined-up, long-term, evidence-informed, transparent and well-designed.**

- Mathematics education reforms are carefully integrated, with thorough understanding of their interactions and systemic effects.
- Education policy is developed with appropriate mathematics specialist expertise at all stages of the policy process.
- A full range of evidence is used constructively to produce well-designed policy.
- Sufficient time is allocated for curriculum and assessment development, piloting and introduction.
- Thorough, formative evaluation of existing and new initiatives is valued and ongoing.
- Educational reforms and developments that impact, directly or indirectly, upon mathematics classrooms take into account the value and uniqueness of mathematics in education and society.

#### What is the Maths Snapshots series?

ACME's Maths Snapshots series provides background on some of the most important issues in mathematics education. The papers set out the policy landscape and provide evidence and advice about policy issues, challenges and opportunities. They will help those interested in mathematics education policy to understand the key issues.