

# Acknowledgements:

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# Acronyms

AACC	American Association of Community Colleges
ACCJC	Accrediting Commission for Community and Junior Colleges
AMATYC	American Mathematical Association of Two-Year Colleges
AMS	American Mathematical Society
AP	Advanced Placement
ASA	American Statistical Association
ATD	Achieving the Dream
CAT	Classroom Assessment Techniques
CBMS	Conference Board of the Mathematical Sciences
CCCSE	The Center for Community College Student Engagement
CCRC	Community College Research Center
CCSS	Common Core State Standards
CCSSM	Common Core State Standards for Mathematics
COMAP	Consortium for Mathematics and Its Applications
GAIMME	Guidelines for Assessment and Instruction in Mathematical Modeling Education
GAISE	Guidelines for Assessment and Instruction in Statistics Education
GTO	Guaranteed Transfer Option
HLC	The Higher Learning Commission
IMPACT	Improving Mathematical Prowess And College Teaching
LAT	Learning Assessment Techniques
LMS	Learning Management System
M <sup>3</sup> Challenge	Moody's Mega Math Challenge
MAA	Mathematical Association of America
MSCHE	Middle States Commission on Higher Education
NADE	National Association of Developmental Education
NCCBP	National Community College Benchmark Project
NCES	National Center for Education Statistics
NCTM	National Council of Teachers of Mathematics
NEASC	New England Association of Schools and Colleges
NGA Center & CCSSO	National Governors Association Center for Best Practices & Council of Chief State School Officers
NRC	National Research Council
NSC	National Student Clearinghouse
NSCRC	National Student Clearinghouse Research Center
NSF	National Science Foundation
NWCCU	Northwest Commission on Colleges and Universities
OER	Open Educational Resources
PROWESS	PRoficiency, OWnership, Engagement, Student Success

PTK	Phi Theta Kappa
SACSCOC	Southern Association of Colleges and Schools, Commission on Colleges
SIAM	Society of Industrial and Applied Mathematics
SMP	Standards for Mathematical Practice
STEM	Science, Technology, Engineering, and Mathematics
TPSE Math	Transforming Post-Secondary Education in Mathematics
UDL	Universal Design for Learning
USDE	United States Department of Education

# Standards

## *Standards for Intellectual Development*

Address desired modes of student thinking and represent goals for student outcomes.

### **Standard I-1 Problem Solving**

Students will engage in substantial problem solving.

### **Standard I-2 Modeling**

Students will learn mathematics through modeling real-world situations.

### **Standard I-3 Reasoning**

Students will expand their mathematical reasoning skills as they develop convincing mathematical arguments.

### **Standard I-4 Connecting With Other Disciplines**

Students will develop the view that mathematics is a growing discipline, interrelated with human culture, and understand its connections to other disciplines.

### **Standard I-5 Communicating**

Students will acquire the ability to read, write, listen to, and speak mathematics.

### **Standard I-6 Using Technology**

Students will use appropriate technology to enhance their mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of their results.

### **Standard I-7 Developing Mathematical Power**

Students will engage in rich experiences that encourage independent, nontrivial exploration in mathematics, develop and reinforce tenacity and confidence in their abilities to use mathematics, and inspire them to pursue the study of mathematics and related disciplines.

## *Standards for Content*

Provide guidelines for the selection of content that will be taught throughout introductory college mathematics.

### **Standard C-1 Number Sense**

Students will perform arithmetic operations, as well as reason and draw conclusions from numerical information.

### **Standard C-2 Symbolism and Algebra**

Students will translate problem situations into their symbolic representations and use those representations to solve problems.

### **Standard C-3 Geometry**

Students will develop a spatial and measurement sense.

### **Standard C-4 Function**

Students will demonstrate understanding of the concept of function by several means (verbally, numerically, graphically, and symbolically) and incorporate it as a central theme into their use of mathematics.

**Standard C-5 Discrete Mathematics**

Students will use discrete mathematical algorithms and develop combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.

**Standard C-6 Probability and Statistics**

Students will analyze data and use probability and statistical models to make inferences about real-world situations.

**Standard C-7 Deductive Proof**

Students will appreciate the deductive nature of mathematics as an identifying characteristic of the discipline, recognize the roles of definitions, axioms, and theorems, and identify and construct valid deductive arguments.

## *Standards for Pedagogy*

Recommend the use of instructional strategies that provide for student activity and interaction and for students constructed knowledge.

**Standard P-1 Teaching and Technology**

Mathematics faculty will model the use of appropriate technology in the teaching of mathematics so that students can benefit from the opportunities it presents as a medium of instruction.

**Standard P-2 Interactive and Collaborative Learning**

Mathematics faculty will foster interactive learning through student writing, reading, speaking, and collaborative activities so that students can learn to work effectively in groups and communicate about mathematics both orally and in writing.

**Standard P-3 Connecting with Other Experiences**

Mathematics faculty will actively involve students in meaningful mathematics problems that build upon their experiences, focus on broad mathematical themes, and build connections within branches of mathematics and between mathematics and other disciplines so that students will view mathematics as a connected whole relevant to their lives.

**Standard P-4 Multiple Approaches**

Mathematics faculty will model the use of multiple approaches—numerical, graphical, symbolic, and verbal—to help students learn a variety of techniques for solving problems.

**Standard P-5 Experiencing Mathematics**

Mathematics faculty will provide learning activities, including projects and apprenticeships, that promote independent thinking and require sustained effort and time so that students will have the confidence to access and use needed mathematics and other technical information independently, to form conjectures from an array of specific examples, and to draw conclusions from general principles.

Standards for Intellectual Development, Content, & Pedagogy taken from *Crossroads in Mathematics* (AMATYC, 1995, p. 9-17).

## *Standards for Implementation*

### **Implementation Standard: for the Student Learning and the Learning Environment**

Mathematics faculty and their institutions will create an environment that optimizes the learning of mathematics for all students.

### **Implementation Standard: Assessment of Student Learning**

Mathematics faculty will use the results from the ongoing assessment of student learning of mathematics to improve curricula, materials, and teaching methods.

### **Implementation Standard: Curriculum and Program Development**

Mathematics departments will develop, implement, evaluate, assess, and revise courses, course sequences, and programs to enable students to attain a higher level of quantitative literacy and achieve their academic and career goals.

### **Implementation Standard: Instruction**

Mathematics faculty will use a variety of instructional strategies that reflect the results of research to enhance student learning.

### **Implementation Standard: Professionalism**

Institutions will hire qualified mathematics faculty, and these faculty will engage in ongoing professional development and service.

Implementation standards taken from *Beyond Crossroads in Mathematics* (AMATYC, 2006, p. 13-14).

## **References**

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