

2025 NAEP Mathematics Framework Update



National Assessment of Educational Progress (NAEP)

- Congressionally-mandated independent measure of student achievement
- Reports group-level performance (no results for individual students or schools)
- Reports scale scores and achievement levels
- Provides state-level and district-level results in several subject areas
- Administered by the National Center for Education Statistics (NCES)

National Assessment Governing Board

An independent bipartisan board established by Congress in 1988 to oversee and set policy for all aspects of NAEP:

- Determine the assessment schedule
- **Develop assessment frameworks**
- Review and approve assessment and survey items
- Design methodology to ensure valid and reliable assessment
- Set achievement levels
- Release the Nation's Report Card

NAEP Frameworks

- **Developed through a comprehensive, inclusive, and deliberative process**
- **Describe the content and format of a NAEP assessment**
 - What to measure at each grade
 - How to measure it
 - How achievement levels are to be represented
- **Written for diverse audience of educators, policymakers, and the public**

Why Update the Mathematics Framework?

The NAEP Mathematics Assessment has not yet been informed by:

- Recent standards, curricula, and instruction
- Research on cognitive development over last 20 years
- Latest perspectives on nation's future needs and desirable levels of achievement

Framework Update Project Milestones

Project Kickoff

- September 20, 2018

Visioning Panel Meeting

- November 7-8, 2018

Development Panel Meetings

- December 5-6, 2018
- January 9-10, 2019
- February 12-13, 2019

Public Comment Period

- April 22-June 7, 2019

Final Review

- June 8-30, 2019

Final Framework Documents

- Submitted to Governing Board: July 1, 2019

Mathematics Framework Panel Representation

Visioning and Development Panel were drawn from the following stakeholder groups:

- Teachers
- State and District Directors
- Policymakers from Educational Organizations
- Content Specialists
- Business Representatives
- Researchers and Technical Experts

National Council of Teachers of Mathematics
TODOS: Mathematics for ALL
Conference Board of the Mathematical Sciences
Mathematical Association of America
Council of the Great City Schools
Association of State Supervisors of Mathematics
Business Roundtable
National School Boards Association
National Association of Elementary School Principals
National Association of Secondary School Principals

Visioning Panel

Chair: Suzanne Wilson, University of Connecticut

Broad participation: Teachers, Assessment and Content Experts, State and Local Administrators, Policymakers, Business Representatives, and Researchers

One 2-day meeting in Washington, DC

— November 2018

Development Panel

Chair: Suzanne Wilson, University of Connecticut

Broad participation: Teachers, Administrators, Assessment and Content Experts, and Researchers

Three 2-day meetings in Washington, DC

- December 2018
- January 2019
- February 2019

Current NAEP Mathematics Framework

Chapter One: Overview

Chapter Two: Framework for the Assessment
(i.e., Mathematics Content Areas)

Chapter Three: Mathematical Complexity of Items

Chapter Four: Item Formats

Chapter Five: Design of Test and Items
(incl. Achievement Level Descriptions)

Issues for Updating the Mathematics Framework

1. How should NAEP assess what students are learning?
2. How should NAEP assess problem-solving?
3. How should NAEP take better advantage of digitally-based assessments?
4. What guidelines will help to make NAEP as fair as possible?
5. What new research should be cited and incorporated?

Visioning Panel Guidelines

The Framework update project's Visioning Panel provided guidelines and recommendations to the Development Panel around the following areas:

A. MATHEMATICS

1. Expansion of attention to student reasoning and mathematical practices
2. Significant broadening of mathematical domains and competencies
3. Attention to the balance of cognitive demand

B. TEST DESIGN AND TECHNOLOGY

4. Test design
5. Strategic use of technology

C. OPPORTUNITIES TO LEARN AND OPPORTUNITIES TO DEMONSTRATE THAT LEARNING

6. Expansive conception of opportunities to learn
7. Accessible assessments for all students

Development Panel Activities

A. MATHEMATICS

1. Expansion of attention to student reasoning and mathematical practices

- **Action:** Added Mathematical Practices chapter to the Framework
 - Practice 1: Representing and Symbolizing
 - Practice 2: Abstracting and Generalizing
 - Practice 3: Justifying and Proving
 - Practice 4: Mathematical Modeling
 - Practice 5: Mathematical Collaboration

Development Panel Activities

A. MATHEMATICS

2. Significant broadening of mathematical domains and competencies

- **Action:** Revised Mathematics Content chapter with updated distribution of content domains (e.g. probability and statistics, geometry, algebra) and the grade bands from 4th to 8th to 12th grades
- **Action:** Integrated and highlighted aspects of mathematical literacy as a cross-cutting theme to include increasingly relevant applied mathematics important to informed citizenship, to personal financial and other decisions, and a variety of careers

Development Panel Activities

A. MATHEMATICS

2. Significant broadening of mathematical domains and competencies

- **Action:** Added Assessment Design chapter with considerations for item design that reflect research on culturally relevant, responsive, and sustaining pedagogies, ethnomathematics, and students' funds of knowledge
- **Action:** Made recommendations for providing a wider range of technological tools available for students (see also Guideline B.4 Test Design and Technology)

Development Panel Activities

A. MATHEMATICS

3. Attention to the balance of cognitive demand

- **Action:** Recommended the elimination of the concept of “mathematical complexity” as a way of producing variation
- **Action:** Replaced complexity dimension by detailing how item types should be used and by crossing mathematics content and mathematical practices to show variations in cognitive demand

Development Panel Activities

B. TEST DESIGN AND TECHNOLOGY

4. Test design

- **Action:** Added Assessment Design chapter with descriptions of interactive, multimedia scenario-based tasks that could better assess both what students know and can do (Mathematics Content and Mathematical Practices)

5. Strategic use of technology

- **Action:** Added Assessment Design chapter with descriptions of interactive, multimedia scenario-based tasks that leverage technology familiar to students to increase the assessment's authenticity and accessibility

Development Panel Activities

C. OPPORTUNITIES TO LEARN AND OPPORTUNITIES TO DEMONSTRATE THAT LEARNING

6. Expansive conception of opportunities to learn

- **Contextual Variables – Action:** Recommended updates to the math-specific questionnaire survey items
- **Enriching the Design Process – Action:** Acknowledged student voice and motivation by recommending diverse ways of demonstrating competency through expanded response types, accommodations, and accessibility

Development Panel Activities

C. OPPORTUNITIES TO LEARN AND OPPORTUNITIES TO DEMONSTRATE THAT LEARNING

7. Accessible assessments for all students

- **Action:** Recommended developing authentic assessment items with multiple access points that provide diverse populations of students with opportunities to demonstrate their mathematical knowing and reasoning in creative, authentic ways

Proposed NAEP Mathematics Framework

Chapter One: Overview

Chapter Two: Mathematics Content

Chapter Three: Mathematical Practices

Chapter Four: Overview of The Assessment Design

**Chapter Five: Reporting Results of the NAEP
Mathematics Assessment**

Appendices: Incl. Achievement Level Descriptions

Project Milestones: Next Steps

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We Need Your Feedback!

To be notified when the Framework is available for public comment, enter your contact information here:
go.wested.org/naep-framework.html

Or visit the project website:
www.naepframeworkupdate.org