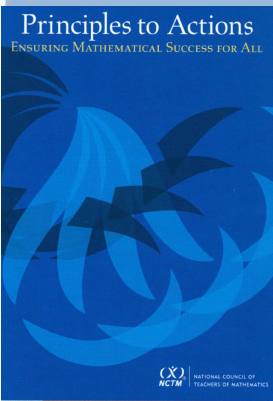


# High Quality Standards are Necessary for Effective Teaching and Learning, But Insufficient

Standards do not describe or prescribe the essential conditions required to make sure mathematics works for all students.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.

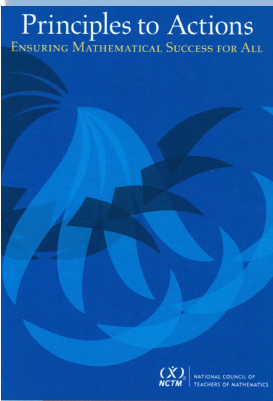
# Principles to Actions [PtA]: Ensuring Mathematical Success for All



The primary purpose of PtA is to fill the gap between the adoption of standards and the enactment of practices, policies, programs and actions required for successful implementation of those standards.

# Principles to Actions: Ensuring Mathematical Success for All

The overarching message is that effective teaching is the non-negotiable core necessary to ensure that all students learn mathematics. The six guiding principles constitute the foundation of PtA that describe high-quality mathematics education.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.

# Guiding Principles for School Mathematics

1. *Teaching and Learning*

2. *Access and Equity*

3. *Curriculum*

4. *Tools and Technology*

5. *Assessment*

6. *Professionalism*

Essential Elements  
of Effective Math  
Programs

# Teaching and Learning Principle

Teaching and Learning. An excellent mathematics program requires effective teaching that engages students in meaningful learning through individual and collaborative experiences that promote their ability to make sense of mathematical ideas and reason mathematically.



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# Eight Research-Informed Instructional Practices

- Establish mathematics goals to focus learning.
- Implement tasks that promote reasoning and problem solving.
- Use and connect mathematical representations.
- Facilitate meaningful mathematical discourse.



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# Eight Research-Informed Instructional Practices

- Pose purposeful questions.
- Build procedural fluency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.



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# Five Essential Elements of Effective Mathematics Programs

Effective teaching and learning, while the non-negotiable core of successful mathematics programs, are part of a system of essential elements of excellent mathematics programs.



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# Five Essential Elements of Effective Mathematics Programs

Access and Equity  
Curriculum  
Tools and Technology  
Assessment  
Professionalism



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# Guiding Principles for School Mathematics: Access and Equity

Access and Equity. An excellent mathematics program requires that all students have access to high-quality mathematics curriculum, effective teaching and learning, high expectations, and the support and resources needed to maximize their learning potential.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.

# Guiding Principles for School Mathematics: Curriculum

Curriculum. An excellent mathematics program includes curriculum that develops important mathematics along coherent learning progressions and develops connections among areas of mathematical study and between mathematics and the real world.



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# Guiding Principles for School Mathematics: Tools and Technology

*Tools and Technology.* An excellent mathematics program integrates the use of mathematical tools and technology as essential resources to help students learn and make sense of mathematical ideas, reason mathematically, and communicate their mathematical thinking.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.

# Guiding Principles for School Mathematics: Assessment

Assessment. An excellent mathematics program ensures that assessment is an integral part of instruction ... and informs feedback to students, instructional decisions, and program improvement.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.

# Guiding Principles for School Mathematics: Professionalism

Professionalism. In an excellent mathematics program, educators hold themselves and their colleagues accountable for the mathematical success of every student and for their personal and collective professional growth toward effective teaching and learning of mathematics.



NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All*. Reston, VA: NCTM.