

Principles and Standards for School Mathematics

Process Standards

Problem Solving

Instructional programs from pre-kindergarten through grade twelve should enable all students to:

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems
- Monitor and reflect on the process of mathematical problem solving

Reasoning and Proof

Instructional programs from pre-kindergarten through grade twelve should enable all students to:

- Recognize reasoning and proof as fundamental aspects of mathematics
- Make and investigate mathematical conjectures
- Develop and evaluate mathematical arguments and proofs
- Select and use various types of reasoning and methods of proof

Communication

Instructional programs from pre-kindergarten through grade twelve should enable all students to:

- Organize and consolidate their mathematical thinking through communication
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
- Analyze and evaluate the mathematical thinking and strategies of others

- Use the language of mathematics to express mathematical ideas precisely

Connections

Instructional programs from pre-kindergarten through grade twelve should enable all students to:

- Recognize and use connections among mathematical ideas
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
- Recognize and apply mathematics in contexts outside of mathematics

Representation

Instructional programs from pre-kindergarten through grade twelve should enable all students to:

- Create and use representations to organize, record, and communicate mathematical ideas
- Select, apply, and translate among mathematical representations to solve problems
- Use representations to model and interpret physical, social, and mathematical phenomena

Source: National Council of Teachers of Mathematics. 2001. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics.
<http://www.nctm.org/standards/content.aspx?id=322>