National Council of Teachers of Mathematics
5 Process Standards

Problem Solving
Instructional programs from pre-kindergarten through grade 12 should enable 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 problems solving

Reasoning and Proof
Instructional programs from pre-kindergarten through grade 12 should enable 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 12 should enable 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 12 should enable 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 context outside of mathematics

Representation
Instructional programs from pre-kindergarten through grade 12 should enable students to:

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

http://standards.nctm.org/document/appendix/process.htm

Math Proficiencies
Building Blocks
Appendix 2 and 3

1. **Understanding:** (Conceptual Understanding): Comprehending mathematical concepts, operation and relations – knowing what mathematical symbols, diagrams, and procedures mean.

2. **Computing** (Procedural Fluency): Carrying out mathematical procedures, such as adding, subtracting, multiplying, and dividing numbers flexibly, accurately, efficiently and appropriately.

3. **Applying** (Strategic Competence): Being able to formulate problems mathematically and to devise strategies for solving them using concepts and procedures appropriately.

4. **Reasoning** (Adapting Reasoning): Using logic to explain and justify a solution to a problem or to extend from something known to something not yet known.

5. **Engaging:** (Productive Disposition): Seeing mathematics as sensible, useful, and doable – if you work at it and being willing to do the work