

Mathematical Habits of Mind: toward an operational definition

A person who is an effective mathematical thinker has a toolbox of skills and knowledge to use to reason, conjecture, prove, and solve problems. **Habits of Mind** give both understanding of and directions for using these tools. **Habits of mind** are marked by great flexibility of thinking and the strong belief that precise definitions are important. Flexibility of thinking includes the use of indirect arguments as well as making connections between knowledge the mathematical thinker possesses and the problem being considered. A person with well developed **habits of mind**, when presented with a problem to solve, will collect information, assess it, find multiple pathways to the answer, and be able to explain that answer clearly to others.

While an effective mathematical toolbox does include algorithms, a person with well developed **habits of mind** knows both why algorithms work and under what circumstances an algorithm will be most effective. Mathematical **habits of mind** are also marked by ease of calculation and estimation as well as persistence in pursuing solutions to problems. A person with well developed **habits of mind** has a disposition to analyze all situations as well as the self-efficacy to believe that he or she can make progress toward a solution. Such a person also engages in metacognition by monitoring and reflecting on the processes of reasoning, conjecturing, proving, and problem solving.