

Descriptions of Quantitative Literacy & Numeracy from Various Sources

Quantitative literacy is the ability to formulate, evaluate, and communicate conclusions and inferences from quantitative information. *Quantitative literacy* employs analytical arguments and reasoning built upon fundamental concepts and skills of mathematics, statistics, and computing. Quantitatively literate MSU students will be more empowered members of a global society through their ability to represent and critique their world. –Michigan State University

Quantitative reasoning is the application of mathematical concepts and skills to solve real-world problems. In order to perform effectively as professionals and citizens, students must become competent in reading and using quantitative data, in understanding quantitative evidence and in applying basic quantitative skills to the solution of real-life problems. –Hope College

Quantitative reasoning is correctly using numbers and symbols, studying measurement, properties, and the relationships of quantities, or formally reasoning within abstract systems of thought to make decisions, judgments, and predictions. –University of Virginia

Quantitative literacy is knowledge of and confidence with basic mathematical/analytical concepts and operations required for problem-solving, decision-making, economic productivity and real-world applications; this entails the ability to:

- Competently perform basic computational/arithmetic operations;
- Demonstrate skills at estimating and approximating results;
- Perform basic algebraic and/or logical operations that involve levels of abstraction;
- Demonstrate basic problem-solving skills; and
- Show competence in applied analytical skills. –Mount St. Mary's College

"Quantitative reasoning" or sometimes "Numeracy" is not just the ability to do mathematics although some basic skills in mathematics are a pre-requisite. However, it extends to the ability to understand quantitative arguments and reason about quantitative concepts in all areas of the curriculum, the arts and humanities, social sciences, and the natural and life sciences. --Hainline, 2001

The following definitions were aggregated by William Briggs at the University of Colorado at Denver

Quantitative literacy is "[t]he knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers embedded in printed material (for example, balancing a checkbook or completing an order form." --*National Adult Literacy Survey*, National Center for Education Statistics, 1993

Quantitative literacy is "an aggregate of skills, knowledge, beliefs, dispositions, habits of mind, communication capabilities, and problem solving skills that people need in order to engage effectively in quantitative situations arising in life and work." --*International Life Skills Survey*, Policy Research Initiative, Statistics Canada, 2000

Mathematics literacy is "an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded mathematical judgments and to engage in mathematics in ways that meet the needs of that individual's current and future life as a constructive, concerned and reflective citizen." --*Programme for International Assessment*, Organization for Economic Cooperation and Development, 2000

Quantitative literacy involves “confidence in mathematics, cultural appreciation, interpreting data, logical thinking, making decisions, mathematics in context, number sense, practical skills, prerequisite knowledge, symbol sense.” --Steen, Lynn. “The Case of Quantitative Literacy”; *Mathematics and Democracy: The Case for Quantitative Literacy*.

Quantitative literacy involves understanding the role of numbers in the world. It provides the ability to see below the surface and to demand enough information to get at the real issues. -- Ted Porter, historian

Beyond arithmetic and geometry, quantitative literacy also requires logic, data analysis, and probability.... It enables individuals to analyze evidence, to read graphs, to understand logical arguments, to detect logical fallacies, to understand evidence, and to evaluate risks. Quantitative literacy means knowing how to reason and how to think. -- Gina Kolata, journalist

Quantitative literacy can be defined as the level of mathematical knowledge and skills required of all citizens. It includes the ability to apply aspects of mathematics (including measurement, data representation, number sense, variables geometric shapes, spatial visualization, and chance) to understand, predict, and control routine events in people's lives. -- John Dossey, mathematics educator

Quantitative literacy requires one to understand the nature of mathematics and its role in scientific inquiry and technological progress; to grasp sufficient mathematics to understand important scientific and engineering concepts; and to possess quantitative skills sufficient for responding critically to scientific issues in the media and public life. -- F. James Rutherford, physics educator

The heart of quantitative literacy is real world problem solving--the use of mathematics in everyday life, on the job, and as an intelligent citizen. Problem solving must be both mathematically defensible and useful in the real world. -- Henry Pollak, applied mathematician

Numeracy is not the same as mathematics. It is an aggregation of skills, knowledge, beliefs, dispositions, habits of mind, communication capabilities, and problem solving skills that people need in order to engage effectively and autonomously in quantitative situations arising in life and work. -- Iddo Gal, cognitive scientist

Quantitative reasoning as an interpretive activity that takes place within a deductively structured framework. It involves a tapestry of meaning provided by a warp of abstract patterns and a weft of context and story line. In quantitative reasoning, context provides meaning. -- George Cobb, statistician

Important quantitative competencies are those that can be used to solve problems people would frequently encounter on the job or in their roles as citizens or parents. Quantitative competencies require identifying and solving problems not in algebra and geometry, but in the five SCANS competency domains such as planning, information, and systems analysis. -- Arnold Packer, economist

Quantitative literacy involves understanding the mathematical concepts and skills that are necessary for everyday life. It includes computation, interpretation, inquiry, and application of mathematical concepts that are critical for life in the contemporary world. -- Glenda Price, college provost