

Table of Math Skills by Grade Group

Here is a table summarizing the key math skills that students may be expected to develop in each of 4 pre-college grade groupings. It is based on American national curriculum standards. For more detail, see the [Mathematics Standards and Benchmarks](#). This table is provided by the Mid-continent Regional Educational Laboratory (McREL). [From: The PUMAS Web Site <http://pumas.nasa.gov>]

	Primary (K-2)	Upper Elementary (3-5)	Middle School (6-8)	High School (9-12)
Problem-Solving	represents problems with physical objects or pictures	trial and error; process of elimination	proportional thinking	proofs; algorithms
Numbers	whole numbers	decimals, fractions, odd & even numbers, mixed numbers; place value	rational & irrational numbers; exponents; scientific notation; ratios, proportions, percents	real-number system; inequalities
Computation	adds & subtracts whole numbers	adds, subtracts, multiplies, & divides whole numbers, and decimals; uses calculator	adds, subtracts, multiplies, & divides mixed numbers & fractions; estimation techniques	adds and subtracts algebraic expressions; performs basic operations involving roots and exponents
Measurement	length, width, height, weight, time, temperature	area, mass, volume, circumference, perimeter, capacity	rate; standard & metric systems; scale drawings; indirect measurements; surface area	velocity; acceleration; precision, accuracy, & tolerance in measurements
Geometry	circles, squares, triangles	angles, similarity, symmetry, congruence	slope; 3-dimensions; parallel, perpendicular; Pythagorean theorem; motion geometry; geometric models	Pythagorean relationships; vectors; transformations of geometric shapes
Data Analysis	simple graphs	organizes simple data sets; constructs & reads simple graphs & charts	central tendency (mean, median, mode); dispersion of data	data matrices
Probability & Statistics	likelihood of events	predictions; data sampling	estimates probabilities	random variables; statistical measures; determines probabilities; normal curve
Algebra & Functions	recognizes basic patterns	constructs patterns	variables; coordinates; solves simple systems of equations	functions; algebraic modeling; systems of equations & inequalities; basic trigonometric methods