

SEC K-12 Mathematics Taxonomy

100	Nbr. sense /Properties/ Relationships
200	Operations
300	Measurement
400	Consumer Applications
500	Basic Algebra
600	Advanced Algebra
700	Geometric Concepts
800	Advanced Geometry

900	Data Displays
1000	Statistics
1100	Probability
1200	Analysis
1300	Trigonometry
1400	Special Topics
1500	Functions
1600	Instructional Technology

Other Coding Conventions

Topics:

0	All
999	Out of Subject Area

Cognitive Demands:

B	Memorize
C	Perform Procedures
D	Demonstrate Understanding
E	Conjecture/Analyze
F	Solve Non-Routine Problems
Z	Non-Specific Cognitive Demand

K-12 Mathematics Taxonomy

100	Nbr. sense /Properties/ Relationships	300	Measurement
101	Place value	301	Use of measuring instruments
102	Whole numbers and Integers	302	Theory (arbitrary, standard units and unit size)
103	Operations	303	Conversions
104	Fractions	304	Metric (SI) system
105	Decimals	305	Length and perimeter
106	Percents	306	<i>Area</i>
107	Ratio and proportion	307	Surface Area
108	Patterns	308	Direction, Location, Navigation
109	Real and/or Rational numbers	309	Angles
110	Exponents and scientific notation	310	Circles (e.g., pi, radius, area)
111	Factors, multiples, and divisibility	311	Mass (weight)
112	Odd/even/prime/composite/square numbers	312	Time and temperature
113	Estimation	313	Money
114	Number Comparisons (order, magnitude, relative size, inverse, opposites, equivalent forms, scale or number line)	314	Derived measures (e.g., rate and speed)
115	Order of operations	315	Calendar
116	Computational Algorithms	316	Accuracy and Precision
117	Relationships between operations	317	<i>Volume</i>
118	Number Theory (e.g. base-ten and non-base-ten systems)	318	<i>Distance</i>
119	Mathematical properties (e.g., distributive property)	390	Other
190	Other	400	Consumer Applications
200	Operations	401	Simple interest
201	Add/subtract whole numbers and integers	402	Compound interest
202	Multiply whole numbers and integers	403	Rates (e.g., discount and commission)
203	Divide whole numbers and integers	404	Spreadsheets
204	Combinations of operations on whole numbers or integers	490	Other
205	Equivalent and non-equivalent fractions	500	Basic Algebra
206	Add/subtract fractions	501	Absolute value
207	Multiply fractions	502	Use of variables
208	Divide fractions	503	Evaluation of formulas, expressions, and equations
209	Combinations of operations on fractions	504	One-step equations
210	Ratio and proportion	505	<i>Coordinate Plane Plots</i>
211	Representations of fractions	506	Patterns
212	Equivalence of decimals, fractions, and percents	507	Multi-step equations
213	Add/ subtract decimals	508	Inequalities
214	Multiply decimals	509	Linear and non-linear relations
215	Divide decimals	510	Rate of change/slope/line
216	Combinations of operations on decimals	511	Operations on polynomials
217	Computing with percents	512	Factoring
218	Computing with exponents and radicals	513	Square roots and radicals
290	Other	514	Operations on radicals
		515	Rational expressions
		516	Multiple representations
		517	<i>Coordinate Plane Graphs</i>
		590	Other

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600	Advanced Algebra	900	Data Displays
601	Quadratic equations	901	<u>Summarize/Interpret</u> data in a table or graph
602	Systems of equations	902	Bar graph and histograms
603	Systems of inequalities	903	Pie charts and circle graphs
604	Compound Inequalities	904	Pictographs
605	Matrices and determinants	905	Line graphs
606	Conic sections	906	Stem and Leaf plots
607	Rational, negative exponents/radicals	907	Scatter plots
608	Rules for exponents	908	Box plots
609	Complex numbers	909	Line plots
610	Binomial theorem	910	Classification and Venn diagrams
611	Factor/remainder theorem	911	Tree diagrams
612	Field properties of real number system	912	<u>Tally Charts</u>
613	Multiple representations	990	Other
690	Other	1000	Statistics
700	Geometric Concepts	1001	Mean, median, and mode
701	Basic terminology	1002	Variability, standard deviation, and range
702	Points, lines, rays, segments, and vectors	1003	Line of best fit
703	Patterns	1004	Quartiles and percentiles
704	Congruence	1005	Bivariate distribution
705	Similarity	1006	Confidence intervals
706	Parallels	1007	Correlation
707	Triangles	1008	Hypothesis testing
708	Quadrilaterals	1009	Chi Square
709	Circles	1010	Data Transformation
710	Angles	1011	Central Limit Theorem
711	Polygons	1012	<u>Sample Size</u>
712	Polyhedra	1090	Other
713	Models	1100	Probability
714	3-D relationships	1101	Simple probability
715	Symmetry	1102	Compound probability
716	Transformations (e.g., flips, turns, dilations)	1103	Conditional probability
717	Pythagorean Theorem	1104	Empirical probability
790	Other	1105	Sampling and Sample spaces
800	Advanced Geometry	1106	Independent vs. dependent events
801	Logic, reasoning, and proofs	1107	Expected value
802	Loci	1108	Binomial distribution
803	Spheres, cones, and cylinders	1109	Normal curve
804	Coordinate Geometry	1110	<u>Randomness</u>
805	Vectors	1200	Analysis
806	Analytic Geometry	1201	Sequences and series
807	Non-Euclidean Geometry	1202	Limits
808	Topology	1203	Continuity
809	<u>Geometric Properties</u>	1204	Rates of change
890	Other	1205	Maxima, Minima, and Range
		1206	Differentiation
		1207	Integration
		1208	<u>Kinematics</u>
		1290	Other

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1300	Trigonometry
1301	Basic ratios
1302	Radian measure
1303	Right triangle trigonometry
1304	Law of Sines and Cosines
1305	Identities
1306	Trigonometric equations
1307	Polar coordinates
1308	Periodicity
1309	Amplitude
1390	Other
1400	Special Topics
1401	Sets
1402	Logic
1403	Mathematical induction
1404	Linear programming
1405	Networks
1406	Iteration and recursion
1407	Permutations & combinations
1408	Simulations
1409	Fractals
1410	<i>Problem-solving Strategies</i>
1490	Other
1500	Functions
1501	Notation
1502	Relations
1503	Linear
1504	Quadratic
1505	Polynomial
1506	Rational
1507	Logarithmic
1508	Exponential
1509	Trigonometric and circular
1510	Inverse
1511	Composition
1512	Definition
1590	Other
1600	Instructional Technology
1601	Use of calculators
1602	Use of graphing calculators
1603	Use of computers and internet
1604	Computer programming
1605	Use of Spreadsheets
1606	<i>Algebraic computer systems</i>
1690	Other

Cognitive Demand Categories for Mathematics

B	C	D	E	F
Memorize Facts, Definitions, Formulas	Perform Procedures	Demonstrate Understanding of Mathematical Ideas	Conjecture, Analyze, Generalize, Prove	Solve Non-Routine Problems / Make Connections
<u>Recite basic mathematical facts</u>	<u>Use numbers to count, order, denote</u>	<u>Communicate mathematical ideas</u>	<u>Determine the truth of a mathematical pattern or proposition</u>	<u>Apply and adapt a variety of appropriate strategies to solve non-routine problems</u>
<u>Recall mathematics terms and definitions</u>	<u>Do computational procedures or algorithms</u>	<u>Use representations to model mathematical ideas</u>	<u>Write formal or informal proofs</u>	<u>Apply mathematics in contexts outside of mathematics</u>
<u>Recall formulas and computational procedures</u>	<u>Follow procedures / instructions</u>	<u>Explain findings and results from data analysis strategies</u>	<u>Recognize, generate or create patterns</u>	<u>Apply to real world situations</u>
_____	<u>Solve equations/formulas/routine word problems</u>	<u>Develop/explain relationships between concepts</u>	<u>Find a mathematical rule to generate a pattern or number sequence</u>	<u>Synthesize content and ideas from several sources</u>
_____	<u>Organize or display data</u>	<u>Show or explain relationships between models, diagrams, and/or other representations</u>	<u>Make and investigate mathematical conjectures</u>	_____
_____	<u>Read or produce graphs and tables</u>	_____	<u>Identify faulty arguments or misrepresentations of data</u>	_____
_____	<u>Execute geometric constructions</u>	_____	<u>Reason inductively or deductively</u>	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____