

# Detailed Topic List

## Maple T.A.™ MAA Placement Test Suite

The tables below outline the topics covered in each test in the Maple T.A. MAA Placement Test Suite, along with the number of test questions in that particular topic. Note that some questions are counted more than once so the total number of questions may be more than the number of questions on the test. The time limits are those recommended by the Mathematical Association of America (MAA).

### Standard, Algorithmic, and Calculator-based Tests

There are 4 parallel versions of each of the standard and calculator-based tests. There are millions of variations of each algorithmic test, since each question contains one or more variables whose values are randomly chosen according to the constraints specified in the question template. Tests are multiple choice.

Placement Test	Topic	Standard and Algorithmic Tests # Questions	Calculator-based Tests # Questions
Arithmetic and Skills 32 questions 40 minutes	Integers and Fractions	5	6
	Decimals	4	3
	Order of Operations	2	2
	Linear Equations	1	2
	Formula Evaluation	3	2
	Exponents and Radicals	3	8
	Geometry	5	3
	Order Relations	2	2
	Word Problems	12	8
	Proportion	1	1
	Probability	1	
	Percent	3	2
	Averaging	1	
	Graph and Table Interpretation	4	4
	Approximation and Estimation	6	10
Scientific Notation		1	
Calculator Active			18
Basic Algebra 25 questions 30 minutes (35 minutes for calculator test)	Arithmetic of Rational Numbers	2	1
	Order of Operations	2	
	Operations with Algebraic Expressions	8	3
	Algebraic Fractions	3	5
	Exponents and Radicals	4	5
	Linear Equations and Inequalities	7	8
	Systems of Linear Equations	1	2
	Fractional and Quadratic Equations	2	2
	Word Problems	4	4
	Graphing	3	3
	Geometry		3
	Absolute Value		2
Estimation and Approximation		7	
Calculator Active			8
Algebra 32 questions 45 minutes	Arithmetic of Rational Numbers	3	2
	Operations with Algebraic Expressions	8	10
	Linear Equations and Inequalities	8	8
	Factoring and Algebraic Fractions	7	7
	Exponents and Radicals	6	8
	Graphing	3	5
	Fractional and Quadratic Equations and Quadratic Inequalities	4	2
	Logarithms	2	2
	Functions	2	3
	Complex Numbers	1	
	Absolute Value	2	2
	Systems of Equations	2	2
	Problem Solving		4
	Estimation and Approximation		5
	Calculator Active		

Placement Test	Topic	Standard and Algorithmic Tests # Questions	Calculator-based Tests # Questions	
Advanced Algebra 25 questions 30 minutes	Arithmetic of Rational Numbers	1		
	Operations with Algebraic Expressions	4		
	Linear Equations and Inequalities	5		
	Factoring and Algebraic Fractions	4		
	Exponents and Radicals	5		
	Graphing	4		
	Fractional and Quadratic Equations and Quadratic Inequalities	4		
	Logarithms	3		
	Functions	2		
	Complex Numbers	1		
	Absolute Value	1		
Systems of Equations	1			
Trigonometry and Elementary Functions 30 questions 45 minutes	Definition of Trigonometric Functions	2		
	Right Triangles	2		
	Cofunctions	1		
	Evaluation of Special Angles	6		
	Related Angles	1		
	Radian Measure	6		
	Graphing	1		
	Identities	3		
	Laws of Sines and Cosines	1		
	Trigonometric Equations	2		
	Inverse Trigonometric Functions	1		
	Distance	1		
	Straight Line	3		
	Conics	2		
	Functions: Notation, Composition	5		
	Graphs and Their Properties	6		
	Logarithmic and Exponential Functions	4		
Higher Degree Polynomials	1			
Absolute Value	1			
Inequalities	1			
Calculus Readiness 25 questions 30 minutes (40 minutes for calculator test)	Geometry and Measurement	5	7	
	Graphs of Functions	8	8	
	Word Problems, Modeling	5	5	
	Concept Formulation	3	3	
	Numerical Awareness	2	3	
	Exponential Functions	2	2	
	Exponents and Logarithms	2	3	
	Equations and Factoring	2	3	
	Functional Notation	2	2	
	Inequalities, Absolute Value	2	2	
	Trigonometry	5	5	
	Calculator Active			9

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### The Calculus Concepts Readiness (CCR) Test

The Calculus Concepts Readiness (CCR) Test is designed to measure a student's reasoning ability and knowledge of concepts that are central to precalculus and foundational for beginning calculus.

The test is multiple choice.

20 questions + 5 trigonometry questions

25 minutes (without trigonometry), 30 minutes (including trigonometry)

Topic	Number of Test Questions
<b>Reasoning Strands</b>	
Quantitative Reasoning involves identifying and relating measurable attributes of an object or situation in a problem context	9
Proportional Reasoning involves thinking about how two quantities change such that their ratio remains constant; attending to how one variable changes so that it is always a constant multiple of another variable	3
Covariational Reasoning involves thinking about how two quantities in a functional relationship are changing together; attending to how one variable changes while imagining successive amounts of equal changes in another variable. It involves coordinating two varying quantities that change in tandem while attending to how the quantities change in relation to each other.	14
Process View of Function involves thinking of a function as an entity that accepts a continuum of input values to produce a continuum of output values; it views a function as a generalized process that accepts input and produces output, and appropriately coordinates multiple function processes.	11
Notational Reasoning involves making sense of symbols used in mathematical expressions and giving meaning to the mathematical ideas communicated by conventional notation.	9
Graphical Reasoning involves making sense of graphs that represent functions, and interpreting the meaning of attributes of a graph that convey aspects of a function's behavior.	9
Computational Abilities refers to facility with manipulations and procedures needed to evaluate functions, solve equations, compose functions, and invert linear and exponential functions, within the context of algebraic representations.	6
<b>Content Areas</b>	
Proportions: Ratios of quantities in constant proportion	2
Algebra: Algebraic expressions, equations, inequalities	9
Functions: Concept, properties, operations	13
Representations of Functions: Symbolic, graphical, tabular, contextual (verbal)	9
Analytic Geometry: Circle, parabola, line	7
Trigonometry: Functions and applications	5
Models: Functions as models	5

### High School Prognostic Tests

The high school prognostic tests provide projected placements in college mathematics courses long before students arrive on campus. By using these tests as part of an outreach program, colleges can increase interest and ensure that more incoming students are prepared for college-level mathematics courses.

There are two or three parallel forms of each of the five different multiple choice tests.

Prognostic Test	Topic	Number of Test Questions	Prognostic Test	Topic	Number of Test Questions
Elementary High School Mathematics 32 questions 45 minutes	Arithmetic of Rational Numbers	5	Graphing-Calculator-Based Intermediate High School Mathematics 25 questions 45 minutes	Arithmetic of Rational Numbers	2
	Perimeters, Areas, and Volumes	2		Number Order Relations	1
	Perimeters, Areas, and Volumes	1		Linear Equations and Formula Evaluation	3
	Linear Equations and Formula Evaluation	4		Factoring and Algebraic Fractions	4
	Factoring and Algebraic Fractions	4		Graphing and Distance	1
	Graphing and Distance	5		Exponents and Radicals	2
	Exponents and Radicals	6		Absolute Value	1
	Absolute Value	1		Linear Inequalities	2
	Linear Inequalities	1		Systems of Equations	2
	Systems of Equations	1		Operations with Algebraic Expressions	3
	Operations with Algebraic Expressions	2		Quadratic Equations	1
	Quadratic Equations	1		Fractional Equations	2
	Fractional Equations	2			
Intermediate High School Mathematics 32 questions 45 minutes	Arithmetic of Rational Numbers	1	Graphing-Calculator-Based Advanced High School Mathematics 25 questions 45 minutes	Equations and Factoring	1
	Number Order Relations	1		Operations with Algebraic Expressions	2
	Linear Equations and Formula Evaluation	5		Inequalities and Absolute Values	1
	Factoring and Algebraic Fractions	3		Polynomial Equations and Inequalities	4
	Graphing and Distance	4		Functional Notation	2
	Exponents and Radicals	6		Graphs of Functions	4
	Absolute Value	2		Graphical Problem Solving	2
	Linear Inequalities	1		Geometry and Measurement	5
	Systems of Equations	1		Translation of Axes	1
	Operations with Algebraic Expressions	5		Word Problems and Modeling	6
Quadratic Equations	2	Concept Formulation	3		
Fractional Equations	2	Numerical Awareness	2		
Calculator-Based Elementary High School 32 questions 40 minutes	Arithmetic of Rational Numbers	2	Exponents and Logarithms	4	
	Number Order Relations	1	Exponential Functions	4	
	Operations with Algebraic Expressions	3	Trigonometry	6	
	Absolute Value	1	Scientific-Calculator Active	9	
	Exponents and Radicals	6	Graphing-Calculator Active	4	
	Linear Equations and Inequalities	4			
	Systems of Equations	1			
	Quadratic and Fractional Equations	3			
	Graphing and Distance	3			
	Word Problems	7			
	Geometry	3			
	Percent	4			
	Calculator Active	13			



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