

Blueprint for the Indiana ISTEP+ Grade 10 Math Assessment (Beginning 2015-2016 School Year)

Blueprints serve as a foundational resource in the assessment development process. Blueprints identify the point values and relative weight of each of the Indiana Academic Standards assessed. Panels of content teachers at each grade level, representative of Indiana student populations, in partnership with the Department of Education recommended the priorities and associated point values noted within the blueprints.

In April of 2014, the Indiana State Board of Education approved the adoption of standards for Mathematics. The 2014 Indiana Academic Standards for Mathematics are the result of a process designed to identify, evaluate, synthesize, and create the most high-quality, rigorous standards for Indiana students. The standards are designed to ensure that Indiana students are prepared to enter and successfully complete postsecondary education, and that they are prepared for long-term, economically-viable career opportunities. These standards have been validated as college and career ready by the Indiana Commission for Higher Education, the Indiana Department of Education, and the Indiana Center for Education and Career Innovation.

The Indiana Academic Standards for Mathematics demonstrate what students should know and be able to do in the areas of K-8 Mathematics; Algebra I, II, and Geometry; and higher-level high school Mathematics courses. Instruction in Mathematics provides vital content and skills for lifelong learning and problem solving in our increasingly complex technological world, and engages students in the essential thinking skills and processes used across subject areas. Students who successfully master these objectives in Mathematics disciplines by the time they graduate from high school will be ready to go directly into the workplace or a postsecondary educational opportunity without the need for remediation.

Overview

The columns of the blueprint highlight key features of test design including: reporting categories, Indiana Academic Standards, standard allocations, reporting category allocations and the total operational points possible.

Reporting Category: The broad content category for the standard representing a segment or domain of content approved by educators as key for reporting. Examples across content areas may include: Number Sense in Mathematics (7.NS); Physical Science in Science (4.PS); and Writing in English/Language Arts (9-10.W).

The reporting category column also includes the overall percentage of the assessment characterized by the specific category. The overall percentage of the assessment is considered 100%.

Standard: The Indiana Academic Standard noting the reporting category code and a *brief* description. The full language of the standard can be accessed [here](#).

Standard Allocation: The allocation defines the point range possible for that standard and the percentage of that standard *based on the total points for the assessment*. A standard with a range that starts at zero may not be assessed each year.

Reporting

Category Allocation: The point range possible for all of the standards in that category combined.

Total Points Possible: The range for the total number of points possible on the assessment each year.
The total possible points may vary slightly year to year due to the nature of how test questions are developed for each standard. *Note: Field test items do not contribute to the operational points possible noted.*

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Reporting Category ¹	Standard	Standard Allocations ²		Reporting Category Allocation
		Point Range	% Range ¹	Total Point Range
Number Sense, Expressions, and Computation (11 – 21%)	AI.RNE.1 Real number systems	Assessed in the classroom		8 – 15
	AI.RNE.2 Operations with rational and irrational numbers	0-3	0-4 %	
	AI.RNE.3 Numeric expressions with positive rational	0-2	0-3 %	
	AI.RNE.4 Square roots of non-perfect square integers and algebraic monomials	0-4	0-5 %	
	AI.RNE.5 Algebraic rational expressions.	0-2	0-3 %	
	AI.RNE.6 Factoring polynomials	1-4	1-5 %	
	AI.RNE.7 Understanding polynomials	0-4	0-5 %	
	8.NS.1 Identification of rational and irrational numbers identification conversions	1-4	1-5 %	
	8.NS.2 Values of irrational numbers	0-2	0-3 %	
	8.NS.3 Properties of exponents	0-2	0-3 %	
	8.NS.4 Solutions to equations of the form $x^2 = p$	0-2	0-3 %	
	8.C.1 Real-world problems with rational numbers	0-3	0-4 %	
	8.C.2 Whole number quotients	Assessed in the classroom		
	Geometry and Measurement (4-14%)	8.GM.1 Attributes of three-dimensional geometric objects	1-4	
8.GM.2 Volume of cones, spheres, and pyramids and surface area of spheres		0-2	0-3 %	
8.GM.3 Effects of rotations, reflections, and translations		Assessed in the classroom		
8.GM.4 Congruent two-dimensional figures and transformations		0-3	0-4 %	

	8.GM.5 Similar two-dimensional figures and transformations	Assessed in the classroom		
	8.GM.6 Effects of transformations on two-dimensional figures using coordinates	0-2	0-3 %	
	8.GM.7 Inductive reasoning and the Pythagorean	Assessed in the classroom		
	8.GM.8 Pythagorean Theorem and side lengths	1-4	1-5 %	
	8.GM.9 Pythagorean Theorem and distance	0-3	0-4 %	
Data Analysis, Statistics, and Probability (9 – 19%)	AI.DS.1 Sampling methods and bias	0-2	0-3 %	7-14
	AI.DS.2 Relationships of bivariate data on a scatter plot	Assessed in the classroom		
	AI.DS.3 Linear functions modeling bivariate data	0-4	0-5 %	
	AI.DS.4 Correlation and causation	0-2	0-3 %	
	AI.DS.5 Two-way frequency tables	Assessed in the classroom		
	AI.DS.6 Analyzing statistics and data	1-4	1-5 %	
	8.DSP.1 Patterns in scatterplots	1-5	1-7 %	
	8.DSP.2 Straight lines modeling scatterplots	Assessed in the classroom		
	8.DSP.3 Predictions from equations modeling linear relationships	2-5	3-7 %	
	8.DSP.4 Probability of compound events	Assessed in the classroom		
	8.DSP.5 Sample spaces and probabilities of compound events	0-2	0-3 %	
	8.DSP.6 multiplication counting principle	0-2	0-3 %	
Linear Equations, Inequalities, and Functions (28 – 38%)	AI.L.1 Solving linear equations	0-4	0-5 %	20-28
	AI.L.2 Real-world problems and linear equations and inequalities	0-4	0-5 %	
	AI.L.3 Algebraic proportions	1-4	1-5 %	
	AI.L.4 Representing linear functions	1-6	1-8 %	
	AI.L.5 Real-world problems and linear functions	1-5	1-7 %	

	AI.L.6 Translating linear function equations	0-3	0-4 %	
	AI.L.7 Real-world problems and linear inequalities	0-5	0-7 %	
	AI.L.8 Compound linear inequalities	0-2	0-3 %	
	AI.L.9 Solving absolute value linear equations	Assessed in the classroom		
	AI.L.10 Graphing absolute value linear equations	Assessed in the classroom		
	AI.L.11 Solving for a specified variable	0-2	0-3 %	
	A1.F.1 Function domains and ranges	Assessed in the classroom		
	A1.F.2 Functional relationships in graphs	0-4	0-5 %	
	A1.F.3 Domain and range	0-2	0-3 %	
	A1.F.4 Function relationships and context	0-3	0-4 %	
	8.AF.1 Solving linear equations	Assessed in the classroom		
	8.AF.2 Number of solutions in linear equations	0-3	0-4 %	
	8.AF.3 Function ordered pairs	1-4	1-5 %	
	8.AF.4 Describing and sketching graphs	Assessed in the classroom		
	8.AF.5 Linear and nonlinear functions	1-4	1-5 %	
	8.AF.6 Modeling a linear relationship	0-4	0-5 %	
	8.AF.7 Comparing linear functions	1-4	1-5 %	
Systems of Equations and Inequalities (4 – 14%)	AI.SEI.1 Solving pairs of linear equations by graphing	0-2	0-3 %	3 – 10
	AI.SEI.2 Solving pairs of linear equations by substitution	1-5	1-7 %	
	AI.SEI.3 Representing context using systems of linear equations	1-5	1-7 %	
	AI.SEI.4 Representing context using systems of linear inequalities	0-3	0-4 %	
	8.AF.8 Graphs of systems of linear equations	0-2	0-3 %	

Quadratic & Exponential Equations and Functions (5–15%)	AI.QE.1 Comparing linear and exponential functions	1-4	1-5 %	4 – 11
	AI.QE.2 Modeling using exponential functions	Assessed in the classroom		
	AI.QE.3 Graphing exponential and quadratic functions	0-3	0-4 %	
	AI.QE.4 Solving quadratic functions	1-4	1-5 %	
	AI.QE.5 Modeling using quadratic functions	0-3	0-4 %	
	AI.QE.6 Factoring quadratic functions	1-4	1-5 %	
	AI.QE.7 Relationships of solutions of quadratic functions	0-3	0-4 %	
Mathematical Process³ (4-14%)	PS.1 Make sense of problems and persevere in solving them	3-10	4-14 %	3-10
	PS.2 Reason abstractly and quantitatively			
	PS.3 Construct viable arguments and critique the reasoning of others			
	PS.4 Model with mathematics			
	PS.5 Use appropriate tools strategically			
	PS.6 Attend to precision			
	PS.7 Look for and make use of structure			
	PS.8 Look for and express regularity in repeated reasoning			
Total Points Possible				71-73

¹Percentages are based on the total points for the test, not the points for the reporting category.

²Standards with ranges that start at zero may not be tested every year.

³Mathematical Process standards are assessed in open ended items with a content standard.