

Blueprint for the Indiana Assessment

Grade 4 Science

(Beginning 2018-19 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.

The 2016 Indiana Science Standards increased the breadth and scope of the 2010 standards by adding a new component: process standards. Students are expected to identify and explain content, as well as understand how the data was collected and analyzed to reach those conclusions (scientific and engineering process). The Indiana assessment is designed to test students' understanding of science and engineering processes in conjunction with content. They are expected to integrate both into their understanding and answers.

In addition to the new content and process standards, Indiana added computer science standards to keep up with the changing technological environment our students face. These standards help prepare them to be responsible digital citizens and understand the role technology plays in modern society. Federal accountability requires that these be tested with the science content and process standards.

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
Physical Science (18-22%)	4.PS.1 Transportation systems	1-3	2-5%	10-12
	4.PS.2 Speed and energy of an object	0-2	0-4%	
	4.PS.3 Simple machines	1-3	2-5%	
	4.PS.4 Energy generation and conversion	1-3	2-5%	
	4.PS.5 Transfer of energy between locations	1-3	2-5%	
Earth & Space Science (16-20%)	4.ESS.1 Movement of the moon	0-3	0-5%	9-11
	4.ESS.2 Derivation and use of energy and fuels	1-5	2-9%	
	4.ESS.3 Geological forces	1-5	2-9%	
	4.ESS.4 Human and environmental impact	0-3	0-5%	
Life Science (16-20%)	4.LS.1 Inheritance of traits and variation in populations	1-5	2-9%	9-11
	4.LS.2 Natural selection	1-5	2-9%	
	4.LS.3 Adaptation to ecosystems	0-3	0-5%	
Engineering (11-15%)	3-5.E.1 Identifying a simple design problem	1-3	2-5%	6-8
	3-5.E.2 Comparing multiple solutions to a single problem	1-3	2-5%	
	3-5.E.3 Constructing and performing investigations	1-3	2-5%	
Science & Engineering Process Standards (15-18%)	SEPS.1 Posing questions and defining problems	0-5	0-9%	8-10
	SEPS.2 Developing and using models and tools	0-5	0-9%	
	SEPS.3 Constructing and performing investigations	0-5	0-9%	
	SEPS.4 Analyzing and interpreting data	0-5	0-9%	
	SEPS.5 Using mathematics and computational thinking	0-5	0-9%	

	SEPS.6 Constructing explanations and designing solutions	0-5	0-9%	
	SEPS.7 Engaging in argument from evidence	0-5	0-9%	
	SEPS.8 Obtaining, evaluating, and communicating information	0-5	0-9%	
Computer Science Standards (13-16%)	3-5.DI.1 Using algorithms to solve problems	1-2	2-4%	7-9
	3-5.DI.2 Developing a simple understanding of algorithms	1-2	2-4%	
	3-5.DI.3 Describing how 1's and 0's can represent information	Assessed in the classroom		
	3-5.DI.4 Simulations can be used to solve a problem	0-1	0-2%	
	3-5.DI.5 Connection between computer science and other fields	Assessed in the classroom		
	3-5.CD.1 Proficiency with input and output devices	Assessed in the classroom		
	3-5.CD.2 Understanding the pervasiveness of computers	0-1	0-2%	
	3-5.CD.3 Troubleshooting simple hardware and software problems	0-1	0-2%	
	3-5.CD.4 Computers model intelligent behavior	Assessed in the classroom		
	3-5.PA.1 Using technology to solve problems and learn	Assessed in the classroom		
	3-5.PA.2 Using digital tools	0-1	0-2%	
	3-5.PA.3 Using a block-based visual programming language	0-1	0-2%	
	3-5.NC.1 Using online resources to collaborate on solving problems	0-1	0-2%	
	3-5.NC.2 Using technology to collaborate	Assessed in the classroom		
	3-5.IC.1 Discussing how to responsibly use technology	1-2	2-4%	
	3-5.IC.2 Identifying the impact of technology on life and society	1-2	2-4%	
	3-5.IC.3 Evaluating electronic information sources	1-2	2-4%	
	3-5.IC.4 Understanding ethical issues that relate to technology	0-1	0-2%	
Total Points Possible				54-56

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.