



Maryland Comprehensive Assessment Program

Educator Guide to Interpreting the Life Science Maryland Integrated Science Assessment (LS MISA) Reports

COGNIA/MSDE

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1.0 General Information for Educators

1.1 Background

The Maryland Comprehensive Assessment Program (MCAP) encompasses all state and federally mandated assessments in English Language Arts/Literacy, Mathematics, Science, Social Studies, WIDA ACCESS for ELs, and Kindergarten Readiness. It provides information to educators, parents, and the public on student progress toward proficiency on the Maryland state content standards. Maryland also provides Alternate Assessments written to the Alternate Standards for those students who require this accommodation.

1.2 LS MISA

The Life Science Maryland Integrated Science Assessment (LS MISA) is the final assessment in a series of science assessments that a student will take aligned to the Next Generation Science Standards. The LS MISA is an end of course assessment (EOC) that comprises 20 percent of the student's grade in that course. For the school year 2022–2023, students will meet their EOC requirement through participation. Starting in the 2023–2024 school year with the ninth-grade cohort, students will have the LS MISA EOC count as 20 percent of their final grade. The cohort is a group of students who are in the same grade in a given year.

	9th graders	10th graders	11th graders	12th graders
2023–2024	EOC = 20% of course grade	EOC is participation only	EOC is participation only	EOC is participation only
2024–2025	EOC = 20% of course grade	EOC = 20% of course grade	EOC is participation only	EOC is participation only
2025–2026	EOC = 20% of course grade	EOC = 20% of course grade	EOC = 20% of course grade	EOC is participation only
2026–2027	EOC = 20% of course grade	EOC = 20% of course grade	EOC = 20% of course grade	EOC = 20% of course grade

- Ninth graders in 2023–2024 will have the EOC count as 20 percent of their EOC course's final grade. In 2023–2024, tenth, eleventh, and twelfth grades are participation only.
- Ninth and tenth graders in 2024–2025 will have the EOC count as 20 percent of their EOC course's final grade. In 2024–2025, eleventh and twelfth grades are participation only.
- Ninth, tenth, and eleventh graders in 2025–2026 will have the EOC count as 20 percent of their EOC course's final grade. In 2025–2026, twelfth grade is participation only.

All students in ninth, tenth, eleventh, and twelfth grades in 2026–2027 will have the EOC count as 20 percent of their EOC course's final grade. Local districts determine their own curricular course sequence and local grading policies.

More information on the LS MISA can be found at the following link:
marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx.

1.3 Confidentiality of Reporting Results

The Family Education Rights and Privacy Act (FERPA) requires that access to individual student information be restricted to the student, their parents/guardians, and authorized school personnel. As a user of this site, you are responsible for maintaining the privacy and security of all student records. Individual accounts, usernames, and passwords should not be shared.

1.4 Purpose of this Guide

This guide provides information on the individual student reports, school reports, and Local Education Agency (LEA) reports provided for LS MISA results. Section 2.0, which outlines and explains elements of the individual student report, may be shared with parents. This section will help parents understand their child's test results. Section 3.0 outlines and explains elements of the school and LEA reports.

Sample reports included in this guide are for illustration purposes only. They are provided to show the basic layout of the reports and the information they provide. Sample reports do not include actual data from any administration.

2.0 Understanding the LS MISA Individual Student Report (ISR)

2.1 Types of Scores on the LS MISA ISR

Student performance on the LS MISA is described on the individual student report using scale scores, and performance levels. State, LEA, and school average results are included in relevant sections of the report to help parents understand how their child's performance compares to that of other students. In some instances, a dash (-) appears in place of average results for a school and/or LEA. This indicates that there are too few students to maintain student privacy and therefore results are not reported.

2.1.1 Scale Score

A scale score is a numerical value that summarizes student performance. The LS MISA scale scores range from 650 to 850. For each administration, the assessment is built with a consistent distribution of questions across each of the standard. Scores are converted from a raw score into a scale score. The conversion of a raw score to a scale score helps provide a more precise measurement of a student's achievement and also assures that tests given at different times are comparable. Questions are weighted in terms of difficulty and other psychometric criteria.

Therefore, a student who earns an overall scale score of 800 on one form of the LS MISA would be expected to earn an overall scale score of 800 on any other form of the LS MISA. Furthermore, the student's overall scale score and level of mastery of concepts and skills would be comparable to a student who took the same assessment the previous year or following year. The overall scale score for the LS MISA determines a student's performance level.

2.1.2 Performance Level


Performance Level Descriptors (PLDs) describe the knowledge and skills that students should be able to demonstrate at each performance level in each content area, and at each grade level/course. Each performance level is a broad, categorical level defined by a student's overall scale score and is used to report overall student performance by describing how well students met the expectations for their grade level/course. Each performance level is defined by a range of overall scale scores for the assessment. There are four performance levels for the LS MISA:

- Level 4: Distinguished Learner
- Level 3: Proficient Learner
- Level 2: Developing Learner
- Level 1: Beginning Learner

2.1.3 End of Course and Exam Grade Conversion Scores

The LS MISA is content specific and is required to be taken at the conclusion of the high school life science course. MSDE has developed a psychometric approach for reporting that classifies scale scores into one of four performance levels. The scale scores are also transformed into grade conversion scale (GCS) scores, which range from 0 to 100. GCS scores are classified into letter grade equivalents (i.e., A, B, C, D, or F). MSDE developed a lookup table that contains the Performance Level Labels, the scale score ranges for each performance level, and the grade conversion score and associated letter grade equivalents. For the school year 2022–2023, students will meet their EOC requirement through participation. The grade conversion score will not count in a student's grade in 2022–2023. Beginning in 2023–2024, the grade conversion score will be included as 20% of a student's final grade.

2.2 Sample LS MISA Individual Student Report



Maryland Comprehensive Assessment Program

Student Name: JOHN M. DOE
SASID: D00000100
Date of Birth: 07/12/2005
Administration: WINTER 2023

LEA Name: Demonstration District A
School Name: Demonstration School 1
Grade: 10


B Life Science Assessment Report, 2022-2023 **C How Can You Use This Report?**

This report shows whether JOHN demonstrated proficiency in their life science course and is on track to be scientifically literate. The **Maryland Integrated Science Assessment (MISA)** is just one measure of how well your child is performing in high school science.

Ask your child's teachers:

- What do you see as my child's strengths and areas for improvement in science?
- How can these assessment results be used to help my child make progress in science?

To learn more about the Maryland Science Program and the assessment please visit: <http://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx>



See side 2 of this report for specific information on your child's performance in science.

D

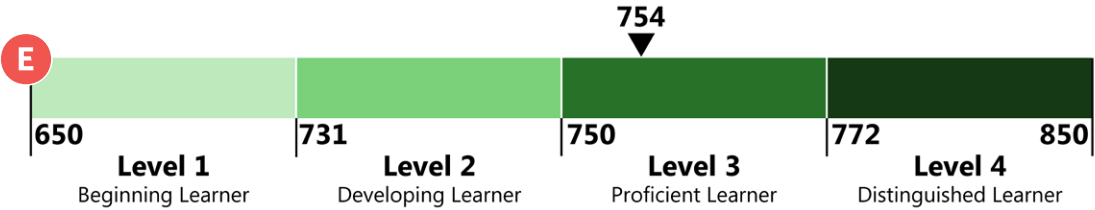
Your Child's Score
754

Level 3 Proficient Learner

How did JOHN perform overall?

OVERALL STUDENT PERFORMANCE

Your student scored **754** on a scale of **650-850**, and performed at **LEVEL 3 - PROFICIENT LEARNER**.



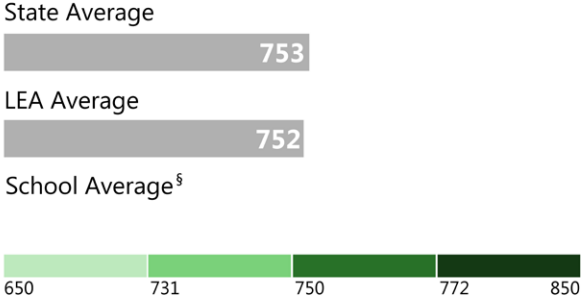
650	731	750	772	850
Level 1	Level 2	Level 3	Level 4	
Beginning Learner	Developing Learner	Proficient Learner	Distinguished Learner	

F School, LEA*, and State Comparisons

State Average: **753**

LEA Average: **752**

School Average[§]



G How Students in Maryland Performed
Percentage of students at each performance level

Level 4: **5%**

Level 3: **59%**

Level 2: **30%**

Level 1: **6%**

§ Note: Some numbers may have been left blank because fewer than ten (10) students were tested.
 * Please note that LEA stands for Local Education Agency.

How are assessment results used? Results from the assessment give your child's teacher, school, and district information about their science performance, and provide you with some insight on how your child is meeting expectations. These results never stand alone, but can be used with other assessments and class work when gauging student performance.

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H How Did Your Child Perform on the Life Science MISA?

The Life Science MISA assesses a student's ability to use the practices of scientific inquiry along with the practices of engineering design to demonstrate their understanding of life science core ideas.



Investigating Science and Engineering Practices Integrated with Life Science

Your student performed about the same as students who **do not yet demonstrate proficiency**. Students **need substantial academic support** to ask questions and conduct investigations about the natural world. Students **need substantial academic support** to think algebraically and use computational tools to analyze and model data to better understand phenomenon, natural processes and systems.



Sensemaking Science and Engineering Practices Integrated with Life Science

Your student performed about the same as students who **demonstrate proficiency**. Students **are prepared** to demonstrate the ability to construct and revise explanations about the natural world based on evidence collected from models or data. Students **are prepared** to analyze data using statistics, probability and models to better understand the relationships between systems or components of a system.



Critiquing Science and Engineering Practices Integrated with Life Science

Your student performed about the same as students who **demonstrate partial proficiency**. Students **need additional academic support** in the ability to communicate scientific information about the natural world and to critically evaluate the validity and reliability of claims in order to determine the merits of arguments.

LEGEND

Your child performed about the same as:



Beginning
Learners



Developing
Learners



Distinguished and
Proficient Learners

I

Life Science Performance Level Descriptions

Level 4: Distinguished Learner

Distinguished learners *demonstrate advanced proficiency* in applying scientific thinking to understand the natural world and engineering design to find solutions to problems. Learners at this level think critically about how systems of cells function together to support the life processes; interactions among organisms and how those interactions influence the dynamics of ecosystems; the role of energy in the cycling of matter in organisms and ecosystems; the role of DNA in the unity of life on Earth; factors causing natural selection and the process of evolution of species over time; and how to optimize design solutions. Distinguished learners are well prepared in asking questions that lead to explanations supported by evidence, using mathematics to analyze data, and applying scientific ideas to develop, test, compare, and improve design solutions.

Level 3: Proficient Learner

Proficient learners *demonstrate proficiency* in applying scientific thinking to understand the natural world and engineering design to find solutions to problems. Learners at this level explain how systems of cells function together to support the life processes; interactions among organisms and how those interactions influence the dynamics of ecosystems; the role of energy in the cycling of matter in organisms and ecosystems; the role of DNA in the unity of life on Earth; factors causing natural selection and the process of evolution of species over time; and how to optimize design solutions. Proficient learners are prepared in asking questions that can lead to reasonable predictions, using mathematics to describe data, and applying scientific ideas to evaluate a design solution.

Level 2: Developing Learner

Developing learners *demonstrate partial proficiency* in applying scientific thinking to understand the natural world and engineering design to find solutions to problems. Learners at this level describe how systems of cells function together to support the life processes; interactions among organisms and how those interactions influence the dynamics of ecosystems; the role of energy in the cycling of matter in organisms and ecosystems; the role of DNA in the unity of life on Earth; factors causing natural selection and the process of evolution of species over time; and how to optimize design solutions. Developing learners need additional academic support in asking questions about changes in an investigation, organizing simple data sets to reveal patterns, and identifying scientific evidence used to support a claim.

Level 1: Beginning Learner

Beginning learners *do not yet demonstrate proficiency* in applying scientific thinking to understand the natural world and engineering design to find solutions to problems. Learners at this level identify how systems of cells function together to support the life processes; interactions among organisms and how those interactions influence the dynamics of ecosystems; the role of energy in the cycling of matter in organisms and ecosystems; the role of DNA in the unity of life on Earth; factors causing natural selection and the process of evolution of species over time; and how to optimize design solutions. Beginning learners need substantial academic support in asking questions about changes in an investigation, organizing simple data sets to reveal patterns, and identifying scientific evidence used to support a claim.

2.3 Description of Individual Student Reports

2.3.1 General Information

A Identification Information

An Individual Student Report lists the student's name, date of birth, state student ID, grade level when assessed, Local Education Agency (LEA) name, school name, and state.

B Description of Report

The description of the report provides the content area (Life Science) assessed and assessment year. It also provides a general overview of the assessment and score report.

C How to Use the Report

This section provides direction for how parents can use the report to start a discussion with their child's teacher(s). It is important for parents and educators to have regular check-ins to ensure students are learning the necessary skills to stay on track. Parents can use the information in the report to understand their child's strengths and needs and to work with educators to identify resources to support their education.

2.3.2 Overall Assessment Scores

D Overall Scale Score and Performance Level

This section of the report provides the student's overall scale score and performance level. Students receive an overall scale score and, based on that score, are placed in one of four performance levels, with Level 4 indicating the student is a distinguished learner, Level 3 indicating the student is a proficient learner, Level 2 indicating the student is a developing learner, and Level 1 indicating the student is a beginning learner.

E Graphical Representation of Overall Performance: Overall Scale Score and Performance Level

This graphic provides an illustration of the four performance levels and where the student's overall scale score is positioned along the performance scale. The student's score is indicated by the black triangle positioned along the range of overall scale scores that define each performance level. The ranges of overall scale scores are indicated underneath the graphic.

F Average of School, LEA, State, and Cross-State




The average overall scale scores of the school, LEA, and state are shown below the overall scale score and performance level graphic. This allows for comparing a student's overall scale score to the average overall scale score of students at the school, LEA, and state levels for the same grade level/course and content area.

G Percentage of Students at Each Performance Level

This section provides a bar graph showing the percentage of students within the state that performed at each of the four performance levels.

H Performance by Practice Group

This section provides the student's performance on each of the life science practices. Each category has a circle that indicates the performance level of the specific group of science practices: investigating science and engineering practices, sensemaking science and engineering practices, and critiquing science and engineering practices. The four main performance levels are used for the reporting of each group of practices. Levels 3 (Proficient) and 4 (Distinguished) have been combined for reporting purposes.

Performance Level Label	Circle Indicator
Distinguished Learners and Proficient Learners	
Developing Learners	
Beginning Learners	

I Performance Level Descriptions

Performance Level Descriptors (PLDs) describe the knowledge and skills that students should be able to demonstrate at each performance level in each content area, and at each grade level/course.

3.0 Understanding the School and LEA Reports

3.1 Purpose and Use of LS MISA Results

These reports:

- Summarize student achievement
- Describe student performance relative to meeting standards
- Support improvement planning (e.g., prioritize professional learning and resource decisions, advise program alignment with academic standards, reflect on the effectiveness of school initiatives)

3.2 School and LEA Reports

In addition to Individual Student Reports, schools will receive a Student Roster Report, and LEAs will receive an LEA Summary of Schools Report. Performance Level Summary Reports are available at the school, LEA, and state level. These reports summarize how students in the school or LEA performed and are described later in this section.

3.2.1 Types of Scores on the School and LEA Reports

Performance on the LS MISA is described on the school and LEA reports using scale scores and performance levels. Information about state, LEA, and school average results is included in relevant sections of the report to help schools and LEAs understand how student and school performance compares to other students and schools. In some instances, a dash (-) will appear in place of average results for a school and/or LEA. This indicates that there are too few students to maintain student privacy and therefore results are not reported.

Refer to sections [2.1.1](#) and [2.1.2](#) for explanations of scale scores and performance levels.

3.4 Description of Student Roster Reports

3.4.1 General Information

A Identification Information

Student Roster Reports list the Local Education Agency (LEA) name and school name.

B Assessment Information

The report heading provides the content area (Life Science) assessed, the assessment year, and administration.

C Roster of Students

The first column of the Student Roster Report lists all the students in the school who took the assessment for the specified content area. The first three rows include the state, LEA, and school averages.

3.4.2 Overall Assessment Scores

D Overall Scale Score and Performance Level

This column of the report provides the student's overall scale score and color-coded performance level. Students receive a numerical score and, based on that score, are placed in one of four performance levels. Performance levels are indicated by the color highlighting behind the number. Refer to E for the color key.

Note: The first three rows contain state, LEA, and school averages.

E Description of Performance Level Graphics

This graphic provides a colored illustration of the four performance levels and helps to quickly show the performance level for each student's scale score.

3.4.3 Performance by Subscore Category

F Subscore Performance Indicators

This graphic provides colored circles that quickly show the performance level for each student's subscore on a scientific practice. Levels 3 and 4 are combined. Refer to G for the key.

Note: The first three rows show the state, LEA, and school percentages.

G Description of Subscore Performance Indicator Graphics

Student performance for each subscore is illustrated with an explanatory icon.

3.5 Sample LEA Summary of Schools Report



LEA SUMMARY OF SCHOOLS

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A DEMONSTRATION DISTRICT A
MARYLAND

ADMIN 2023

B LIFE SCIENCE ASSESSMENT, 2022-2023

PERFORMANCE DISTRIBUTION BY %	NUMBER OF VALID SCORES	AVERAGE SCALE SCORE	SCIENCE and ENGINEERING PRACTICES			LIFE SCIENCE TOPICS				
			Investigating Practices*	Sensemaking Practices*	Critiquing Practices*	Structure and Function*	Matter and Energy in Organisms and Ecosystems*	Interdependent Relationships in Ecosystems*	Inheritance and Variation of Traits*	Natural Selection and Evolution*
E STATE 	1,176	406								
LEA 	103	403								
DEMONSTRATION SCHOOL 1 	76	401								
DEMONSTRATION SCHOOL 2 	27	407								

F **1** Beginning Learner (650-xxx) **2** Developing Learner (xxx-749) **3** Proficient Learner (750-xxx) **4** Distinguished Learner (xxx-850) Beginning Learner Developing Learner Distinguished and Proficient Learners **H**

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* Numbers are percentages

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3.6 Description of LEA Summary of Schools Reports

3.6.1 General Information

A Identification Information

LEA Summary of Schools Reports list the Local Education Agency (LEA) name.

B Assessment Information

The report heading provides the content area (Life Science) assessed, the assessment year, and administration.

C Number of Students

The first two rows contain the number of students included in reporting at the state and LEA levels. Subsequent rows contain the number of students included in reporting at each school within the LEA.

3.6.2 Overall Assessment Scores

D Average Scale Score

This column of the report provides the average scale score (refer to Section 2.1.1) for all students assessed at the school for the specified assessment on the report.

Note: The first two rows contain state and district averages.

E Percentage of Students at Each Performance Level

The first column of the report shows the distribution of students achieving each performance level— indicated both graphically and numerically. Each colored section of the graph represents a performance level, beginning with Level 1 on the left through Level 4 on the right. The numerical values appearing below the graph indicate the percentage of students in Performance Levels 1 through 4, left to right respectively. Due to rounding, percentages may not total 100%.

The name of the school is listed in each row above the graph.

Note: In most cases, numbers will NOT appear centered under each color.

F Description of Performance Level Graphics

This graphic provides a colored illustration of the four performance levels and helps to quickly show the percentage of students in each performance level.

Note: The first two rows contain state and LEA averages.

3.6.3 Performance by Subscore Category

G Subscore Performance Indicators

This graphic provides an illustration of the percentage of students in each of the three categories (Levels 3 and 4 are combined). The colors correspond to the colors of the circles that represent the performance level for each student's science practice subscore.

H Description of Subscore Performance Indicator Graphics

Student performance for each subscore is illustrated with an explanatory icon. For LEA Summary of Schools Reports, only the colors of the icons are used in the graphical representation under each subscore.

3.7 Sample School Performance Level Summary Report



SCHOOL PERFORMANCE LEVEL SUMMARY REPORT

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A Demonstration School 1
 Demonstration District A
 MARYLAND

B LIFE SCIENCE ASSESSMENT, 2022-2023

ADMIN 2023

Purpose: This report describes group achievement in terms of average scale scores and performance levels.	Number of Valid Scores D	Average Scale Score E	Performance Levels F								≥ Level 3 Distinguished and Proficient Learners G	
			Level 1 Beginning Learner		Level 2 Developing Learner		Level 3 Proficient Learner		Level 4 Distinguished Learner		#	%
			#	%	#	%	#	%	#	%		
State	1,012	752	47	5	352	35	591	58	22	2	613	61
LEA	52	748	5	10	18	35	28	54	1	2	29	56
School	52	748	5	10	18	35	28	54	1	2	29	56
Gender												
Female	22	750	1	5	5	23	16	73	0	0	16	73
Male	28	748	3	11	12	43	12	43	1	4	13	46
Non-Binary	2	723	1	50	1	50	0	0	0	0	0	0
Ethnicity/Race												
Hispanic or Latino	5	743	0	0	4	80	1	20	0	0	1	20
American Indian or Alaska Native	0	0	0	0	0	0	0	0	0	0	0	0
Asian	3	758	0	0	1	33	2	67	0	0	2	67
Black or African-American	8	731	4	50	4	50	0	0	0	0	0	0
Native Hawaiian or Other Pacific Islander	1	757	0	0	0	0	1	100	0	0	1	100
White	33	752	1	3	8	24	23	70	1	3	24	73
Two or more races	2	749	0	0	1	50	1	50	0	0	1	50
Not Indicated	0	0	0	0	0	0	0	0	0	0	0	0
Economic Disadvantage												
No	37	752	2	5	10	27	24	65	1	3	25	68
Yes	15	738	3	20	8	53	4	27	0	0	4	27
Students with Disabilities												
IEP - Yes	3	722	2	67	1	33	0	0	0	0	0	0
IEP - No	49	750	3	6	17	35	28	57	1	2	29	59
504	3	747	0	0	2	67	1	33	0	0	1	33
EL												
No	50	749	5	10	16	32	28	56	1	2	29	58
Yes	2	738	0	0	2	100	0	0	0	0	0	0

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3.8 Description of School Performance Level Summary Report

3.8.1 General Information

A Identification Information

Performance Level Summary Reports list the Local Education Agency (LEA) name.

B Assessment Information

The report heading provides the content area (Life Science) assessed, the assessment year, and administration.

C Student Demographic Data

Performance Level Summary Reports are available at the School, LEA, and State levels. The reports provide a breakdown of student demographic data including gender, ethnicity/race, economic disadvantaged status, students with disabilities, and English learner status.

D Number of Valid Scores

The first row contains the total number of tested students included in reporting at the state level. On the School Performance Level Summary Report, the first three rows contain the total number of tested students included in reporting at the state, LEA, and school levels. Subsequent rows contain the number of tested students included in reporting within each demographic category.

E Average Scale Score

This column of the report provides the average scale score (refer to [Section 2.1.1](#)) for all students assessed for the specified assessment on the report. Average scale scores are displayed for each demographic category.

F Performance Levels

The four green-shaded headings represent the performance levels; Level 1: Beginning Learner (lightest shading of green on the left), Level 2: Developing Learner, Level 3: Proficient Learner, and Level 4: Distinguished Learner (darkest shading of green on the right). Below each performance level heading the total number of students are shown for each demographic category.

G Proficient and Distinguished Learners

This column of the report combines the total number of students whose scores fall under Level 3: Proficient Learner and Level 4: Distinguished Learner.

Note: The first three rows contain state, LEA, and school averages on the School Performance Level Summary Report.



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