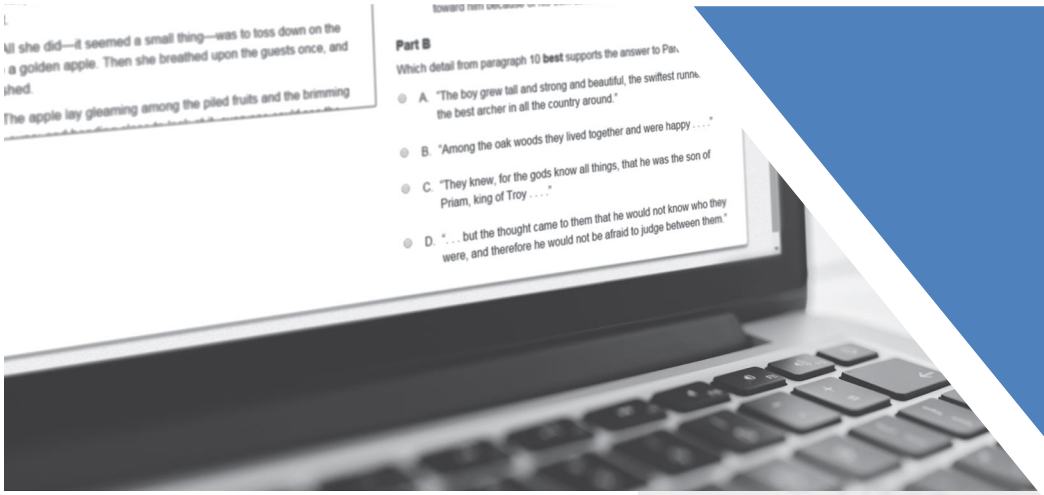
# Spring 2022

MARYLAND STATE DEPARTMENT OF EDUCATION

EQUITY AND EXCELLENCE





# MCAP Science (MISA) Score Report Interpretation Guide

## Table of Contents

# 1.0 General Information for Parents and Educators

## 1.1 Background

The Maryland Comprehensive Assessment Program (MCAP) will provide students, parents, educators and the community with better student information at a faster pace. The goal remains the same: to gather information that helps Maryland schools strengthen our instruction and improve student performance so that our graduates are ready to move into the workforce or a postsecondary institution.

## 1.2 MCAP Science (MISA) Assessments

The primary purpose of MCAP is to provide high-quality assessments to measure students' progress toward college and career readiness.

The MCAP Science (MISA) assessments were administered in either computer-based or paper-based format. The tests assessed student mastery of the three dimensions necessary to understand science: Disciplinary Core Ideas (DCI), Science and Engineering Practices (SEP), and Crosscutting Concepts (CCC). Students demonstrated their mastery by interacting with a stimulus such as a video, chart, or diagram, and then responding to several items supported by the stimulus.

## 1.3 Confidentiality of Reporting Results

Individual student performance results on the MCAP are confidential and may be released only in accordance with the Family Educational Rights and Privacy Act of 1974 (20 U.S.C. Section 1232g). Aggregated student performance data are made available to the public and do not contain the names of individual students or teachers.

## 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 MCAP 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. Individual state policies and calculations for accountability reporting may differ from the policies and calculations used for assessment 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 test administration.

# 2.0 Understanding the MCAP Individual Student Report (ISR)

## 2.1 Types of Scores on the MCAP ISR

Student performance on the MCAP Science assessment is described on the individual student report using scale scores, performance levels, and subclaim performance indicators. 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 note 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.

### 2.1.1 Scale Score

A scale score is a numerical value that summarizes student performance. Not all students respond to the same set of test items, so each student's raw score (actual points earned on test items) is adjusted for the slight differences in difficulty among the various forms and administrations of the test. The resulting scale score allows for an accurate comparison across test forms and administration years within a grade. For example, a student who earns an overall scale score of 750 on one form of the grade 5 science assessment would be expected to earn an overall score of 750 on any other form of the grade 5 science assessment. 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 the following year.

### 2.1.2 Performance Level

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 five performance levels for the MCAP:

- Level 4: Exceeded expectations
- Level 3: Met expectations
- Level 2: Approached expectations
- Level 1: Partially met expectations

Students performing at levels 3 and 4 met or exceeded expectations, have demonstrated readiness for the next grade level/course, and ultimately, are likely on track for college and careers. Additional information pertaining to the test performance levels can be found in Appendix A.

Performance Level Descriptors (PLDs) describe the knowledge, skills, and practices which students should know and be able to demonstrate at each performance level in science. PLDs are available at: https://marylandpublicschools.org/about/Pages/DAAIT/Assessment/MISA/index.aspx

### 2.1.3 Dimensions of Science Performance Indicators

Mastery of the dimensions of science is reported using graphical representations which indicate how the student performed relative to the overall performance of students who met or approached expectations for the content area.

Performance is reported using categories rather than scale scores or performance levels. The three categories are: Met or Exceeded Expectations, Approached Expectations, and Partially Met Expectations.

MCAP Maryland Comprehensive Assessment Program

## 2.1.4 Sample of Science (MISA) ISR

A **FIRSTNAME M. LASTNAME**
Date of Birth: 05/20/2012 ID: MA03040032 **Grade: 5**
SAMPLE DISTRICT NAME
SAMPLE SCHOOL ONE NAME
MARYLAND

MCAP Maryland Comprehensive Assessment Program

B **GRADE 5 SCIENCE**

# Science Assessment Report, 2021-2022

C

This report shows whether FIRSTNAME met grade band expectations in science and is on track for the next grade band. The items on the assessment measure your child's understanding of concepts and practices in science and require critical thinking to find solutions to problems. The Maryland Integrated Science Assessment is one of several ways to help families and teachers understand how well your child is acquiring science concepts and practices.

### How Can You Use This Report?

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?

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To learn more about the Maryland Science Program visit http://marylandpublicschools.org/about/Pages/DCAA/Science/index.aspx.

For Practice Tests visit Test Preparation on http://support.mdassessments.com.

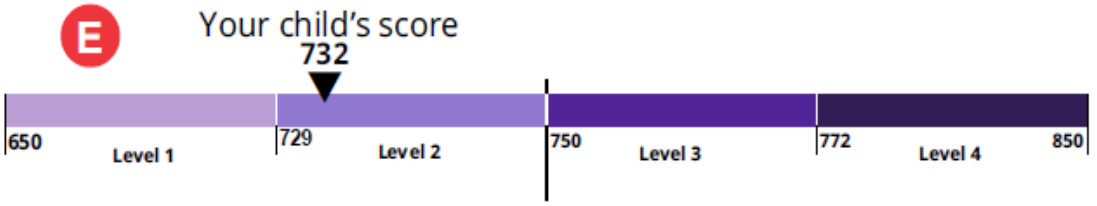
## How Did FIRSTNAME Perform Overall?

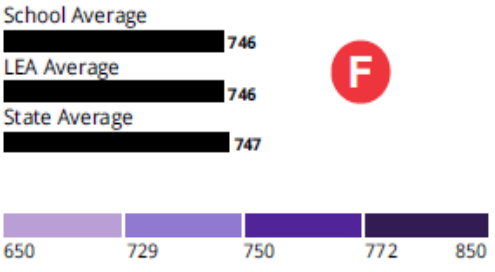
**Performance Level 2** D

A description of the Performance Levels can be found on the back of this page.

- **Level 4** Exceeded Expectations
- **Level 3** Met Expectations
- **Level 2** Approached Expectations
- **Level 1** Partially Met Expectations

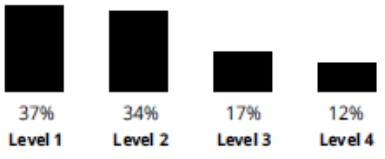
E




F

### How Students in Maryland Performed




G

Percentage of students at each performance level

### How are assessment results used?

Results from the assessment give your child's teacher, school, and school 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.

C



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**FIRSTNAME M. LASTNAME**

# How Did Your Child Perform in the Three Dimensions of Science?

## Disciplinary Core Ideas (DCI)

### Physical Sciences

Your student performed about the same as students who **partially met expectations.** Students meet expectations by demonstrating an understanding of matter and its interactions, motion and stability, forces and interaction, energy, waves and their applications in technologies for information transfer.

H

### Life Science

Your student performed about the same as students who **approached expectations.** Students meet expectations by demonstrating an understanding of how the structures and processes function from molecules to organisms, the interactions, energy, and dynamics of ecosystems, the inheritance and variation of traits in heredity, and the unity and diversity of biological evolution.

### Earth and Space Sciences

Your student performed about the same as students who **partially met expectations.** Students meet expectations by demonstrating an understanding of Earth's place in the universe, Earth's systems, and Earth and human activity.

I

**LEGEND**

Your child performed about the same as students who:

- **Partially Met Expectations**
- **Approached Expectations**
- **Met or Exceeded Expectations**

### Science and Engineering Practices (SEP)

Your student performed about the same as students who **met or exceeded expectations.** Students meet expectations by demonstrating an understanding of the practices scientists and engineers use to investigate theories about the natural world giving them opportunities to immerse themselves in these practices and explore why they are central to science and engineering.

H

### Crosscutting Concepts (CCC)

Your student performed about the same as students who **approached expectations.** Students meet expectations by demonstrating an understanding of how scientists connect and explain knowledge from various science disciplines and engineering practices into a coherent and scientifically based view of the world.

J

## Science Performance Level Descriptions

**Level 4 Exceeded Expectations:** Students who perform at this level demonstrate an effective ability to apply scientific thinking to understand the natural world and apply engineering design to find solutions to problems. Students demonstrate the ability to think critically about the effects of chemical reactions, forces, and energy on the world around them; the ways different organisms and the environment interact; the ways the geosphere, biosphere, and hydrosphere interact; and how engineering design can be a regular part of problem solving. Students apply skills such as 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 Met Expectations:** Students who perform at this level demonstrate the ability to apply scientific thinking to understand the natural world and apply engineering design to find solutions to problems. Students demonstrate the ability to explain the effects of chemical reactions, forces, and energy on the world around them; the ways different organisms and the environment interact; the ways the geosphere, biosphere, and hydrosphere interact; and how engineering design can be a regular part of problem solving. Students use skills such as asking questions that can lead to reasonable predictions, using mathematics to describe data, and applying scientific ideas to evaluate a design solution.

**Level 2 Approached Expectations:** Students who perform at this level are approaching the ability to apply scientific thinking to understand the natural world and apply engineering design to find solutions to problems. Students are beginning to demonstrate the ability to describe the effects of chemical reactions, forces, and energy on the world around them; the ways different organisms and the environment interact; the ways the geosphere, biosphere, and hydrosphere interact; and how engineering design can be a regular part of problem solving. Students are beginning to demonstrate skills such as asking questions about changes in an investigation, organizing simple data sets that reveal patterns, and identifying scientific evidence used to support a claim.

**Level 1 Partially Met Expectations:** Students who perform at this level demonstrate an emerging ability to apply scientific thinking to understand the natural world and engineering design to find solutions to problems. Students are beginning to identify the effects of chemical reactions, forces, and energy on the world around them; the ways different organisms and the environment interact; the ways the geosphere, biosphere, and hydrosphere interact; and how engineering design can be a regular part of problem solving. Students are beginning to develop skills such as asking questions about changes in an investigation, organizing simple data sets that reveal patterns, and identifying scientific evidence used to support a claim.

### 2.1.5 General Description of Individual Student Reports

**A. Identification Information**
An Individual Student Report lists the student's name, date of birth, state student ID, grade level when assessed, LEA name, school name, and state. The grade level when assessed is also shown in a box on the left side of the report.

**B. Description of Report**
The description of the report provides the grade level/course assessed, content area 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 guidance on 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 his or her education.

### 2.1.6 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 (refer to Section 2.1). 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 exceeded expectations and Level 1 indicating the student partially met expectations.

**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. The scale scores needed to reach each performance level vary slightly between grades 5 and 8. Refer to **Appendix A** for the full list of scale score ranges for each performance level.

**F. Average of School, LEA, 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 level for the same grade level.

**G. Percentage of Students at Each Performance**
This section provides a bar graph showing the percentage of students within the state who performed at each of the four performance levels.

### 2.1.7 Performance by Reporting Category

**H. Dimensions of Science Reporting Categories**

The report shows the student's performance in for the three dimensions of science: Disciplinary Core Ideas (DCI), Science and Engineering Practices (SEP), and Crosscutting Concepts (CCC). In addition, there are three subcategories in the DCI dimension: Physical Science, Life Science, and Earth and Space Sciences. Each dimension of science is indicated by a large, black header. The DCI subcategories are indicated by a small, black header.

**I. Dimensions of Science Reporting Categories**

Student performance for each dimension is marked with a dimension performance indicator.

- **An up arrow** for the specified dimension indicates the student "Met or Exceeded Expectations". Students in this category are likely academically well prepared to engage successfully in further studies in the dimension of science content area and may need instructional enrichment.
- **A bidirectional arrow** for the specified dimension indicates the student "Approached Expectations". Students in this category likely need academic support to engage successfully in further studies in the dimension of science content area.
- **A down arrow** for the specified dimension indicates the student "Partially Met Expectations". Students in this category are likely not academically well prepared to engage successfully in further students in the dimension of science content area. Such students likely need instructional interventions to increase achievement in the dimension of science content area.

**J. Science Performance Level Descriptions**

The report provides the performance level descriptions for the MCAP Science assessment.

# 3.0 Understanding the MCAP School & LEA Level Reports

## 3.1 Purpose and Use of MCAP Results

The primary purpose of MCAP is to provide high-quality assessments to measure students' progress toward college and career readiness. These results are a helpful tool in evaluating educational programs and student progress. 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)

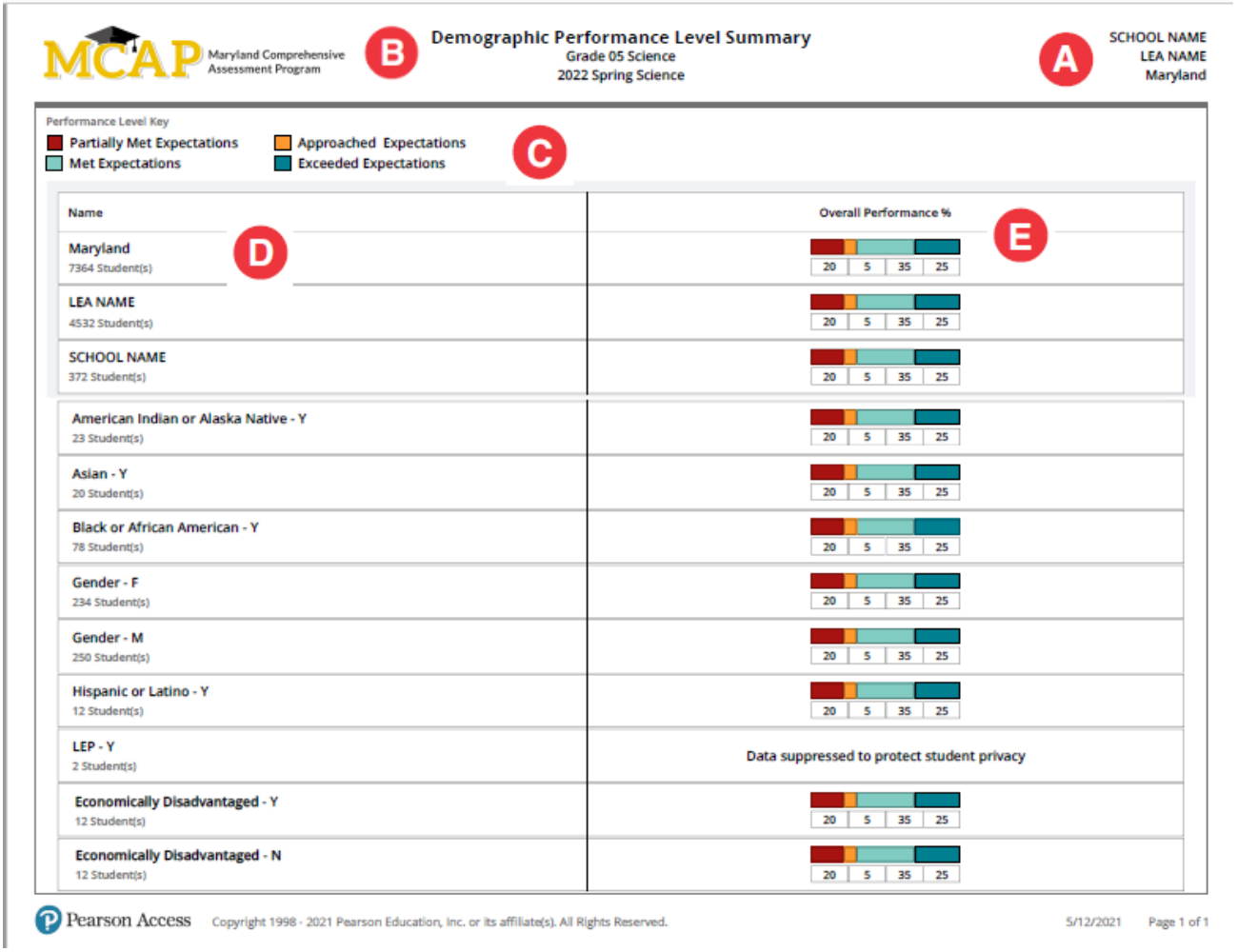
## 3.2 MCAP School and LEA Reports

In addition to Individual Student Reports, schools will receive a school level and LEA level Demographic Performance Level Summary and Evidence Statement Analysis.

### 3.2.1 Understanding the Demographic Performance Level Summary (DPLS)

The Demographic Performance Level Summary reports are provided at the School and LEA Level. This report breaks out the performance aggregations into subcategory levels. In some instances, the overall performance will show as "Data suppressed to protect student privacy" in place of 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.

### 3.2.2 Sample of the Demographic Performance Level Summary




### 3.2.3 Description of the Demographic Performance Level Summary

**A. Identification Information**

The report identifies the LEA and School name.

**B. Description of Report**

The content area of the report, the grade of the assessment, and the administration year are identified.

**C. Performance Level Key**

The report shows the performance level key.

**D. Demographic, Program Categories, and Number of Valid Scores**

The demographic and program categories with student groups are listed on the left side of the table. The number of valid scores appears below the demographic or program category. This includes students with a valid score. Students with no score or who were deleted from Pearson Access are not included.

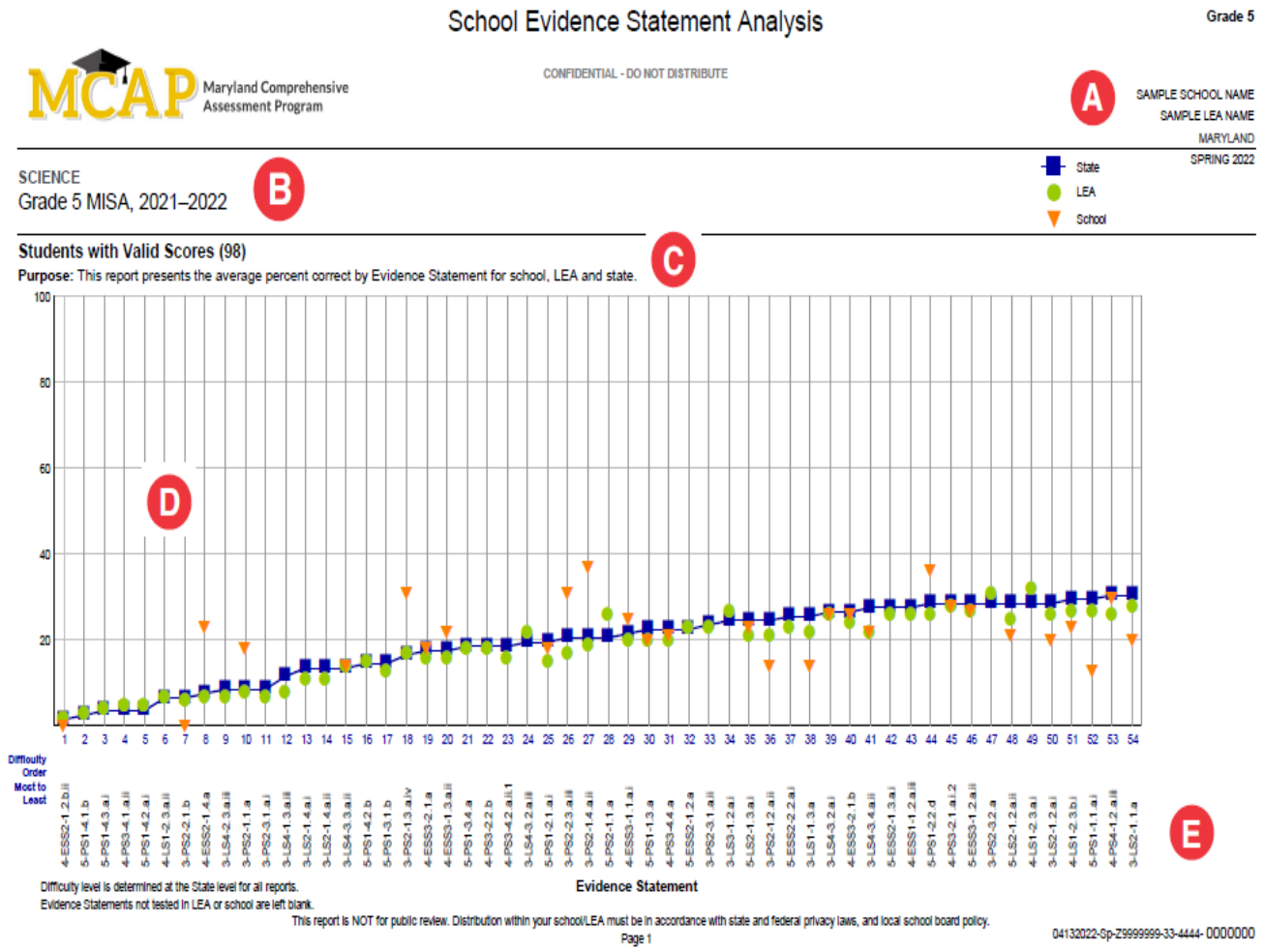
**E. Performance Level Results**

The percentage of students who performed at Exceeded Expectations, Met Expectations, Approached Expectations, and Partially Met Expectations are displayed for each demographic or program student group.

### 3.2.4 Understanding the Evidence Statement Analysis

The Evidence Statement Analysis Report is a two-page report that analyzes the performance of the Science evidence statements represented by items on the Science (MISA) assessment. Page 1 of the Evidence Statement Analysis shows the performance by evidence statement in graph form. Page 2 of the Evidence Statement Analysis links the MCAP Science evidence statements to the Next Generation Science Standards upon which they are based.

### 3.2.5 Sample of the Evidence Statement Analysis



# School Evidence Statement Analysis

Grade 5

CONFIDENTIAL - DO NOT DISTRIBUTE

SAMPLE SCHOOL NAME
SAMPLE LEA NAME
MARYLAND
SPRING 2022

This report shows the operational Evidence Statements for the given grade and subject sorted by difficulty.

## SCIENCE

## Grade 5 MISA, 2021–2022

| Difficulty Order Most to Least | NGSS Performance Expectation (G) | Evidence Statement (H) | Dimensions (I) | | School Student Count (J) |
|---|---|---|---|---|---|
| | | | Science and Engineering Practices (SEP) or Crosscutting Concepts (CCC) | Disciplinary Core Ideas (DCI) | |
| 1 | 4-ESS2, 4-ESS2-1 | 4-ESS2-1.2.b.ii | SEP | Earth and Space Science | 17 |
| 2 | 5-PS1, 5-PS1-4 | 5-PS1-4.1.b | CCC | Physical Science | 0 |
| 3 | 5-PS1, 5-PS1-4 | 5-PS1-4.3.a.i | SEP | Physical Science | 0 |
| 4 | 4-PS3, 4-PS3-4 | 4-PS3-4.1.a.ii | SEP | Physical Science | 0 |
| 5 | 5-PS1, 5-PS1-4 | 5-PS1-4.2.a.i | SEP | Physical Science | 0 |
| 6 | 4-LS1, 4-LS1-2 | 4-LS1-2.3.a.ii | CCC | Life Science | 0 |
| 7 | 3-PS2, 3-PS2-2 | 3-PS2-2.1.b | CCC | Physical Science | 16 |
| 8 | 4-ESS2, 4-ESS2-1 | 4-ESS2-1.4.a | SEP | Earth and Space Science | 17 |
| 9 | 3-LS4, 3-LS4-2 | 3-LS4-2.3.a.iii | SEP | Life Science | 0 |
| 10 | 3-PS2, 3-PS2-1 | 3-PS2-1.1.a | CCC | Physical Science | 16 |
| 11 | 3-PS2, 3-PS2-3 | 3-PS2-3.1.a.i | CCC | Physical Science | 0 |
| 12 | 3-LS4, 3-LS4-1 | 3-LS4-1.3.a.iii | SEP | Life Science | 0 |
| 13 | 3-LS2, 3-LS2-1 | 3-LS2-1.4.a.i | SEP | Life Science | 0 |
| 14 | 3-LS2, 3-LS2-1 | 3-LS2-1.4.a.ii | SEP | Life Science | 0 |
| 15 | 3-LS4, 3-LS4-3 | 3-LS4-3.3.a.ii | SEP | Life Science | 49 |
| 16 | 5-PS1, 5-PS1-4 | 5-PS1-4.2.b | SEP | Physical Science | 0 |
| 17 | 5-PS1, 5-PS1-3 | 5-PS1-3.1.b | CCC | Physical Science | 0 |
| 18 | 3-PS2, 3-PS2-1 | 3-PS2-1.3.a.iv | SEP | Physical Science | 16 |
| 19 | 4-ESS2, 4-ESS2-1, 4-ESS3, 4-ESS3-2 | 4-ESS3-2.1.a | SEP | Earth and Space Science | 98 |
| 20 | 4-ESS3, 4-ESS3-1 | 4-ESS3-1.3.a.ii | SEP | Earth and Space Science | 49 |
| 21 | 5-PS1, 5-PS1-3 | 5-PS1-3.4.a | SEP | Physical Science | 0 |
| 22 | 4-PS3, 4-PS3-2 | 4-PS3-2.2.b | SEP | Physical Science | 0 |
| 23 | 4-PS3, 4-PS3-4 | 4-PS3-4.2.a.ii.1 | SEP | Physical Science | 0 |
| 24 | 3-LS4, 3-LS4-3 | 3-LS4-3.2.a.iii | SEP | Life Science | 0 |
| 25 | 5-PS1, 5-PS1-2 | 5-PS1-2.1.a.i | CCC | Physical Science | 49 |
| 26 | 3-PS2, 3-PS2-2 | 3-PS2-2.3.a.iii | SEP | Physical Science | 16 |
| 27 | 3-PS2, 3-PS2-1 | 3-PS2-1.4.a.ii | SEP | Physical Science | 16 |
| 28 | 5-PS2, 5-PS2-1 | 5-PS2-1.1.a | SEP | Physical Science | 0 |
| 29 | 4-ESS3, 4-ESS3-1 | 4-ESS3-1.1.a.i | SEP | Earth and Space Science | 98 |
| 30 | 5-PS1, 5-PS1-1 | 5-PS1-1.3.a | CCC | Physical Science | 98 |
| 31 | 4-PS3, 4-PS3-4 | 4-PS3-4.4.a | SEP | Physical Science | 49 |
| 32 | 5-ESS2, 5-ESS2-1 | 5-ESS2-1.2.a | CCC | Earth and Space Science | 0 |
| 33 | 3-PS2, 3-PS2-3 | 3-PS2-3.1.a.ii | CCC | Physical Science | 0 |
| 34 | 3-LS3, 3-LS3-1 | 3-LS3-1.2.a.i | SEP | Life Science | 0 |
| 35 | 5-LS2, 5-LS2-1 | 5-LS2-1.3.a.i | CCC | Life Science | 98 |
| 36 | 3-PS2, 3-PS2-1 | 3-PS2-1.2.a.ii | SEP | Physical Science | 16 |
| 37 | 5-ESS2, 5-ESS2-2 | 5-ESS2-2.2.a.i | CCC | Earth and Space Science | 0 |
| 38 | 3-LS1, 3-LS1-1 | 3-LS1-1.3.a | CCC | Life Science | 49 |
| 39 | 3-LS4, 3-LS4-3 | 3-LS4-3.2.a.i | SEP | Life Science | 26 |

continued

NGSS Evidence Statements: https://nextgenscience.org/evidence-statements

Maryland Science Program: https://marylandpublicschools.org/about/Pages/DCAA/Science/index.aspx (K)

### 3.2.6 Description of the Evidence Statement Analysis

**A. Identification Information**
The report identifies the LEA and School name.

**B. Description of Report**
The content area of the report, the grade of the assessment, and the administration year are identified.

**C. Students with Valid Scores**
The number of valid scores includes students with a valid score. Students with no score or who were deleted from Pearson Access are not included.

**D. Graph**
The average percent correct by each cluster of items, combined at an evidence statement level is represented on the chart at a state level, LEA level, and school level. A legend is provided to show which lines represent each level shown. State symbols are connected with a solid line. LEA and school symbols are not connected because depending on the form assignment selection taken at the school or LEA all evidence statements may not be represented. If an evidence statement is not represented at a school or LEA level, there will not be a symbol on the chart for that evidence statement listed. If a symbol is on the chart at zero percent this indicates the evidence statement group had 0% achieved out of the maximum points possible for that school or LEA.

**E. Performance Level Results**
The Science items are written to Science Evidence Statements, which are based on the Next Generation Science Standards (NGSS). Each operational item on the assessment is combined into an evidence statement group. These items are aligned on the report in every evidence statement group that applies to that item. This means one item could be represented on the report multiple times depending on its alignment.

The evidence statements are placed in order on the graph from most to least difficult. This difficulty order is determined by the performance level of items based on the state level. Evidence statements where the state average points achieved versus the maximum points possible were lower are considered more difficult.

**F. Legend**
The legend for this graph provides a symbol for State, LEA, and School values.

**G. Next Generation Science Standards (NGSS)**
The Next Generation Science Standards linked to the MCAP Science Evidence Statement are listed in the second column. An evidence statement could be connected to multiple standards.

**H. Evidence Statement**
The Evidence Statements are listed in the same order as on the bottom of page one, from most to least difficult.

**I. Dimensions**
The NGSS dimensions of science are paired in this column with the standard and evidence statement associated with the dimension.

**J. School Student Count**
The student count represents the number of students whose form of the assessment contained an item or items written to the evidence statement listed in column B. The count may differ by row because there are different forms of the assessment and not all forms include all items or evidence statements.

**K. Additional Information**
The links to more detailed information on the MCAP Science Evidence Statements, the NGSS website, and the Maryland Science Standards are provided at the bottom of the report.

# Appendix A

# Scale Score Ranges

MCAP Maryland Comprehensive Assessment Program

| Grade 5 Science | | |
|---|---|---|
| Exceeded Expectations | Level 4 Range | 772-850 |
| Met Expectations | Level 3 Range | 750-771 |
| Approaching Expectations | Level 2 Range | 729-749 |
| Partially Met Expectations | Level 1 Range | 650-728 |

| Grade 8 Science | | |
|---|---|---|
| Exceeded Expectations | Level 4 Range | 773-850 |
| Met Expectations | Level 3 Range | 750-772 |
| Approaching Expectations | Level 2 Range | 726-749 |
| Partially Met Expectations | Level 1 Range | 650-725 |