

MCA BENCHMARK REPORT INTERPRETIVE GUIDE



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MCA Benchmark Report Interpretive Guide

This *Interpretive Guide* will assist you in understanding the benchmark reports for the Reading, Mathematics, and Science MCA. The guide provides an overview of benchmarks, describes the benchmark report, and suggests ways to use the benchmark report results.

The primary purpose of the MCA is to measure student learning of the Minnesota Academic Standards; therefore, the tests are designed to align with these standards. As academic standards are revised, a new series of assessments is developed to align with those standards. A series number is added to the test name to indicate the academic standards being measured. On the benchmark reports, the test name appears as MCA-III.

The chart below indicates the academic standards year the MCA-III is aligned to.

TEST	SUBJECT	ADMINISTERED IN GRADES	ACADEMIC STANDARDS ALIGNMENT
MCA-III	Reading MCA	3–8, 10	2010 Standards
	Mathematics MCA	3–8, 11	2007 Standards
	Science MCA	5, 8, High School	2009 Standards

Note: New Minnesota Academic Standards are in the process of being adopted for all subjects. These new standards will not be assessed until 3-4 years after they have been adopted by legislation.

View the [Minnesota Academic Standards](#) for the knowledge and skill expectations in a content area for a grade. (MDE website > Districts, Schools and Educators > Teaching and Learning > Academic Standards (K-12))

Since March 2020, educators and students experienced significant and profound changes in teaching and learning, as well as social and emotional well-being.

It is important to keep this in mind when interpreting assessment results, as these changes are reflected in student scores but are difficult to account for accurately.

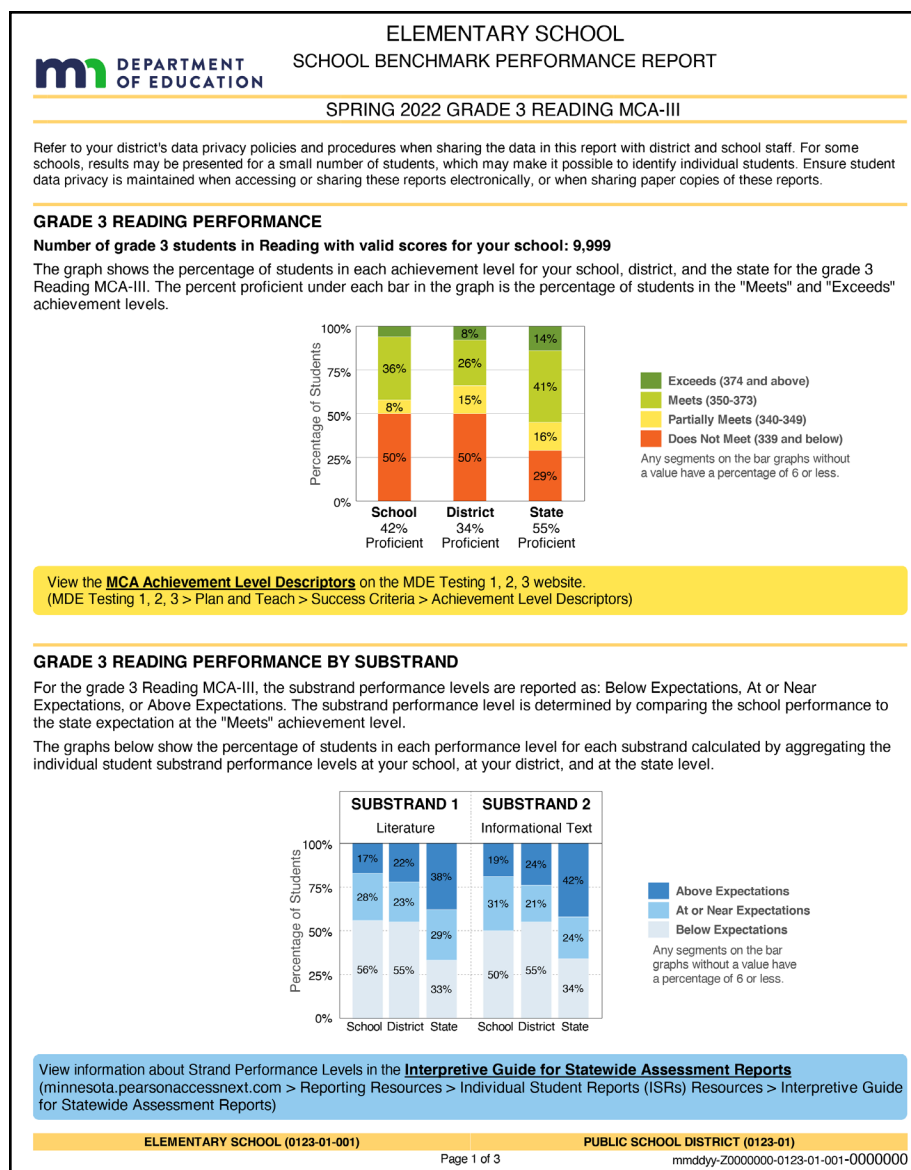
WHAT IS A BENCHMARK REPORT?

The MCA Benchmark Report is a guidance tool educators can use to learn about school- or district-level performance on each benchmark assessed from the Minnesota Academic Standards on the current year's MCA. Benchmark reports are produced by grade for the Reading, Mathematics, and Science MCA. The benchmark data is calculated by comparing **observed performance** on a benchmark to the **expected performance** on a benchmark.

WHAT ARE BENCHMARKS?

The Minnesota K–12 Academic Standards are the statewide expectations for student learning in K–12 public schools. The standards identify the knowledge and skills that all students must achieve in a content area by the end of a grade level or grade band. The Minnesota Academic Standards are divided into one or more benchmarks. The purpose of benchmarks is to provide more specific details about the academic knowledge and skills that students are taught from the Minnesota Academic Standards. Benchmarks are intended to inform and guide administrators, teachers, and other educators and stakeholders in making instruction and curriculum decisions.

The MCA measures a snapshot of a student's learning in reading, mathematics, and/or science, as described in the Minnesota K-12 Academic Standards, and the test specifications indicate how the academic standards are addressed on the test. Test specifications describe which strands, substrands, standards, and benchmarks will be assessed on the test and in what proportions, also known as the test's "blueprint." Each item on the MCA is aligned to an appropriate benchmark in the Minnesota Academic Standards. Some benchmarks are not assessed on the MCA in a given year, and some can be assessed only in the classroom and not on a standardized assessment. However, all tests meet the required "blueprints," or requirements, specified in the test specifications.



While test specifications provide information on how the academic standards are addressed on a test, they are **not** meant to be used as the basis for curriculum and instruction. Instead, test specifications can be a helpful reference for how the standards are assessed.

All Minnesota Academic Standards use a coding system for easy reference to the standards and their benchmarks; this code is used on the benchmark reports. Reading specifies information at the substrand level, mathematics at the strand level, and science at both the strand and substrand levels.

Reading: The four-digit code for reading lists, in order, the grade, substrand, standard, and benchmark.

four-digit benchmark code



Code	Grade	Substrand	Standard	Benchmark
5.2.8.8	5	2. Informational Text	8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.	8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).

four-digit benchmark code



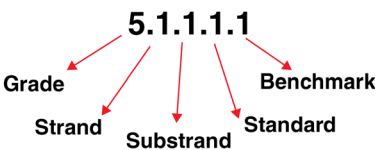
Code	Grade	Strand	Standard	Benchmark
5.1.1.2	5	1. Number & Operation	1. Divide multi-digit numbers; solve real-world and mathematical problems using arithmetic.	2. Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately.

Mathematics: The four-digit code for mathematics lists, in order, the grade, strand, standard, and benchmark.

Science: The five-digit code for science lists, in order, the grade, strand, substrand, standard, and benchmark.

Science benchmark reports for grades 5 and 8 have benchmark codes numbered for multiple grades (i.e., standards for grade 5 include benchmarks that start with 3, 4, and/or 5). High school science benchmark reports have benchmark codes that start with 9 for grade 9, although instruction may occur outside of grade 9 in grades 10, 11, or 12.

five-digit benchmark code



Code	Grade	Strand	Substrand	Standard	Benchmark
5.1.1.1.1	5	1. The Nature of Science and Engineering	1. The Practice of Science	1. Understand that science is a way of knowing about the natural world, is done by individuals and groups, and is characterized by empirical criteria, logical argument and skeptical review.	1. Explain why evidence, clear communication, accurate record keeping, replication by others, and openness to scrutiny are essential parts of doing science.

HOW IS THE BENCHMARK REPORT CALCULATED?

Benchmark performance is calculated by comparing students' observed performance on test content aligned to a benchmark to the expected performance of the "Meets" achievement level cut score for a benchmark at the school or district.

➤ **Observed performance** is calculated as the average percent of correct student responses in the school or district on test questions assessing that benchmark.

➤ **Expected performance** is calculated using the psychometric measurement model for the assessment. It can be interpreted as how those students who perform at the "Meets" achievement level cut score would likely perform on the particular benchmark test questions. The benchmark symbols **less than**, **similar to**, and **greater than** correspond to whether the **observed** average is below, within, or above the **expected** range.

A minimum of 20 student responses for test questions in a particular benchmark are required to calculate benchmark performance in order to provide reliable reported outcomes.

In 2019, the MCA Benchmark Report was redesigned using a different calculation method to measure school and district performance on benchmarks. School and district staff should not compare benchmark reports before 2019 to benchmark reports from 2019 and after.

Due to COVID-19, there was very limited testing in 2020 and no benchmark reports were produced for 2020. Benchmark reports from 2019 are available.

HOW TO INTERPRET EACH SECTION OF THE BENCHMARK REPORT

Each benchmark report begins with the overall achievement performance, followed by strand and substrand results. Providing these additional levels of performance data helps give context for evaluating benchmark performance. Links to additional resources to use when interpreting the benchmark reports are provided throughout and at the end of the report.

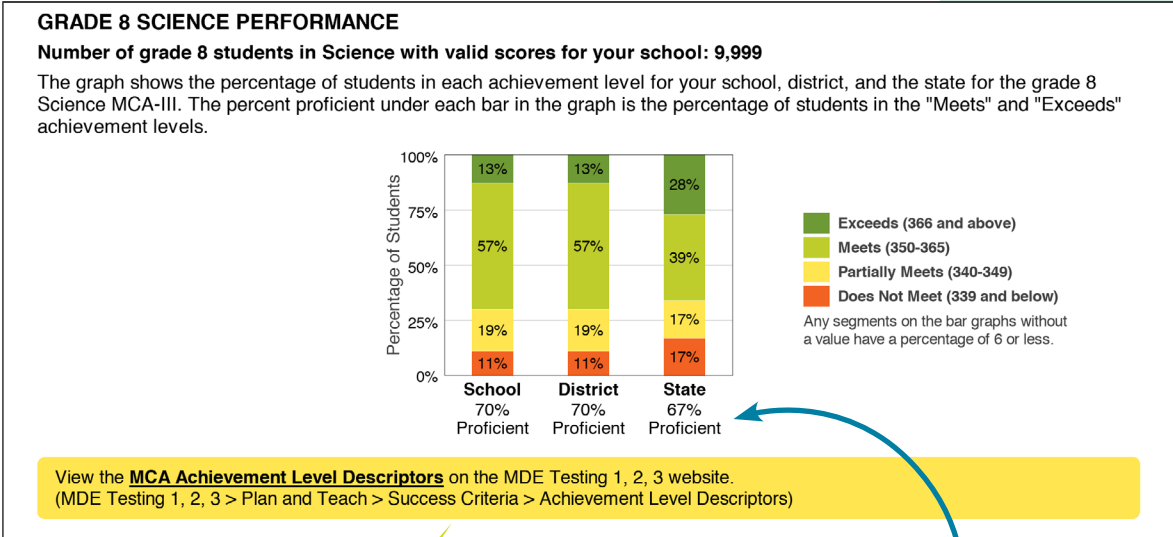
Note: The first page of each benchmark report includes overall performance and strand/substrand performance with bar graphs that match those in the Individual Student Reports (ISRs) and in Longitudinal Reports in PearsonAccess Next.

The Benchmark Reports are available to download as PDFs in Published Reports in PearsonAccess Next. Details on accessing these reports are available in the [***Published Reports Quick Guide***](#) (PearsonAccess Next > Reporting Resources > Additional Reporting Resources).

For the technical details of the benchmark report calculations, refer to Appendix A: Benchmark Report Calculations Resource in the [***Technical Manual for Minnesota's Statewide Assessment***](#) (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Technical Reports (under the Technical Manual heading))

Section 1: Overall Performance

School/District Performance: Indicates the number of students with a valid, reportable score at the organization level for the grade and subject combination of the report. Only students who received a score on the MCA are included; students who did not complete or attempt the test are not included.



View the [Achievement Level Descriptors](#) for reading, mathematics, and science on the Testing 1, 2, 3 website. (Testing 1, 2, 3 site > Plan and Teach > Success Criteria)

Achievement Level Graph:
Shows the percentage of students at each achievement level at the school, district, and state levels.

The percent proficient listed under each bar graph is the combined percent of students at the "Meets" and "Exceeds" achievement levels of the academic standards. Any segment shown without a percentage value in the graph has a percentage of 6% or less.

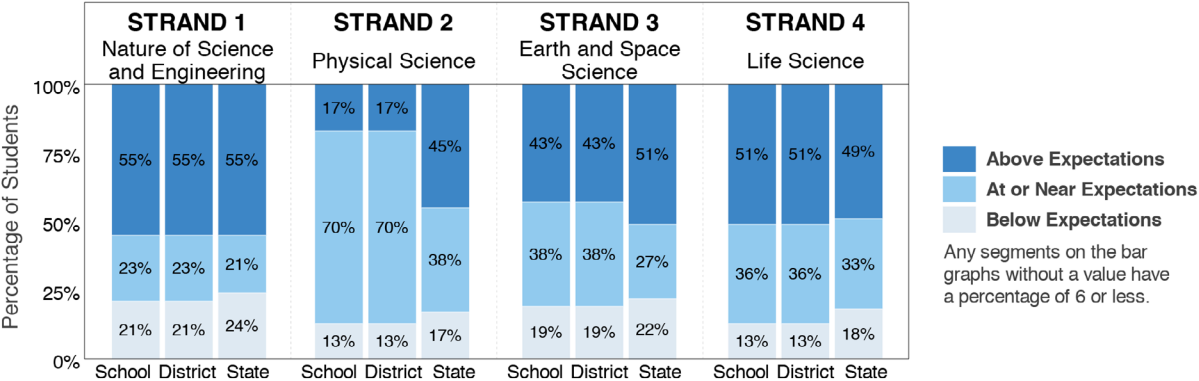
Section 2: Strand/Substrand Performance Descriptors

Strand/Substrand Performance: Content area strand and substrand names and performance level percentages are provided at the school, district, and state levels. Like the Achievement Level Graph, any segment on the graph with a value of 6% or less will not display a numerical value.

GRADE 8 SCIENCE PERFORMANCE BY STRAND

For the grade 8 Science MCA-III, the strand performance levels are reported as: Below Expectations, At or Near Expectations, or Above Expectations. The strand performance level is determined by comparing the school performance to the state expectation at the "Meets" achievement level.

The graphs below show the percentage of students in each performance level for each strand calculated by aggregating the individual student strand performance levels at your school, at your district, and at the state level.



View information about Strand Performance Levels in the [Interpretive Guide for Minnesota Assessment Reports](#) on the MDE website. (MDE > Districts, Schools and Educators > Teaching and Learning > Statewide Testing)



Refer to the [Interpretive Guide for Statewide Assessment Reports](#) for additional information about strand performance levels (PearsonAccess Next > Reporting Resources > Individual Student Reports (ISRs) Resources).

Performance level categories include *Below Expectations*, *At or Near Expectations*, or *Above Expectations*. The strand performance level is determined by comparing the school (or district) performance to the state expectation at the "Meets" achievement level.





Section 3: Benchmark Performance

Benchmark Performance Description: School or district performance on each benchmark is compared with the "Meets" achievement level cut score.

View the [Benchmark Achievement Level Descriptors](#) on the Testing 1, 2, 3 website. (Testing 1, 2, 3 site > Plan and Teach > Success Criteria)

GRADE 8 SCIENCE PERFORMANCE BY BENCHMARK

School performance on each benchmark is compared at the "Meets" achievement level cut score. Performance on each benchmark is calculated by comparing school performance on a benchmark to the expected performance on a benchmark that would be achieved at the "Meets" achievement level cut score.

	School performance on this benchmark is less than the "Meets" achievement level.		School performance on this benchmark is similar to the "Meets" achievement level.		School performance on this benchmark is greater than the "Meets" achievement level.		less than 20 student responses on a benchmark
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Performance Symbols:

Three symbols specific to the benchmark reports are used to represent performance by a school or district on each benchmark. An asterisk (*) indicates there were less than 20 student responses for that benchmark and results are not available.







Red circle with minus (–) sign: School/district performance on this benchmark is **less than** the "Meets" achievement level.



Blue circle with double tilde (≈) symbol: School/district performance on this benchmark is **similar to** the "Meets" achievement level.



Green circle with plus (+) sign: School/district performance on this benchmark is **greater than** the "Meets" achievement level.

STRAND 1: THE NATURE OF SCIENCE AND ENGINEERING		1
SUBSTRAND 1.1: THE PRACTICE OF SCIENCE		
Compared to "Meets" Achievement Level	Benchmark	
2	Standards 7.1.1.1 / 8.1.1.1	Understand that science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review. <i>Benchmark 7.1.1.1 was not assessed on this year's test.</i>
	 7.1.1.1.2	Understand that when similar investigations give different results, the challenge is to judge whether the differences are significant, and if further studies are required. For example: Use mean and range to analyze the reliability of experimental results.
3	 8.1.1.1.1	Evaluate the reasoning in arguments in which fact and opinion are intermingled or when conclusions do not follow logically from the evidence given. For example: Evaluate the use of pH in advertising products related to body care or gardening.
	Standards 7.1.1.2 / 8.1.1.2	Understand that scientific inquiry uses multiple interrelated processes to investigate questions and propose explanations about the natural world. <i>Benchmarks 7.1.1.2.1, 7.1.1.2.3, and 7.1.1.2.4 were not assessed on this year's test.</i>
	 7.1.1.2.2	Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables, ensuring that one variable is systematically manipulated, the other is measured and recorded, and any other variables are kept the same (controlled). For example: The effect of various factors on the production of carbon dioxide by plants.
	 8.1.1.2.1	Use logical reasoning and imagination to develop descriptions, explanations, predictions and models based on evidence.

Key for benchmark performance in example graphic:

1. Strand, substrand, or skill domain codes and titles.
2. Standard code and description.
3. Benchmark performance, benchmark code, and description.

Reading MCA

The Reading MCA is an adaptive assessment at the “testlet” level, meaning questions are chosen based on the student’s responses to a group of questions for a passage or passages. The reading benchmark reports show benchmarks organized under one of the three skill domains assessed on the MCA. Not all students see items for each benchmark, and other students may see more than one item for the same benchmark. The left column indicates benchmarks not assessed on the MCA or only within the classroom, or those that are not applicable to a substrand.

INTEGRATION OF KNOWLEDGE AND IDEAS		
Compared to “Meets” Achievement Level	Benchmark	
Assessed classroom only	3.1.7.7	Literature Explain how specific aspects of a text’s illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).
Not applicable to literature	3.1.8.8	Literature
Assessed classroom only	3.1.9.9	Literature Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).
Assessed classroom only	3.2.7.7	Informational Text Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
—	3.2.8.8	Informational Text Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).
Assessed classroom only	3.2.9.9	Informational Text Compare and contrast the most important points and key details presented in two texts on the same topic.

Mathematics MCA

The Mathematics MCA is an adaptive assessment at the “item” level, meaning questions are chosen based on the student’s responses to the previous items. Not all students see items for each benchmark, and other students may see more than one item for the same benchmark. The left column indicates benchmarks not assessed on the MCA or assessed within a different benchmark. Refer to the Minnesota Academic Standards for exact formatting of the mathematics benchmarks and examples, as slight adjustments were made to fit the report.

Standard 3.3.2		Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.
Not assessed on the MCA-III	3.3.2.1	Use half units when measuring distances. For example: Measure a person’s height to the nearest half inch.
+	3.3.2.2	Find the perimeter of a polygon by adding the lengths of the sides.
*	3.3.2.3	Measure distances around objects. For example: Measure the distance around a classroom, or measure a person’s wrist size.

Science MCA

The Science MCA is a fixed-form assessment, meaning that for the current year, all students are administered the same items that count for their score. Not all benchmarks are assessed each year on the Science MCA. The italicized text below the Standard description indicates benchmarks not assessed on that year’s test or not assessed on the MCA.

Standard 9.1.1.1		Understand that science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review. <i>Benchmarks 9.1.1.1.1 and 9.1.1.1.2 were not assessed on this year’s test.</i> <i>Benchmark 9.1.1.1.4 is not assessed on the MCA-III.</i>
+	9.1.1.1.3	Explain how the traditions and norms of science define the bounds of professional scientific practice and reveal instances of scientific error or misconduct. For example: The use of peer review, publications and presentations.
≈	9.1.1.1.5	Identify sources of bias and explain how bias might influence the direction of research and the interpretation of data. For example: How funding of research can influence questions studied, procedures used, analysis of data, and communication of results.
≈	9.1.1.1.6	Describe how changes in scientific knowledge generally occur in incremental steps that include and build on earlier knowledge.
≈	9.1.1.1.7	Explain how scientific and technological innovation –as well as new evidence– can challenge portions of, or entire accepted theories and models including, but not limited to: cell theory, atomic theory, theory of evolution, plate tectonic theory, germ theory of disease, and the big bang theory.

For each subject, benchmarks with fewer than 20 student responses are indicated with an asterisk (*) in the left-hand column.

Cautions when interpreting the benchmark report

The source documents for the text in the benchmark reports are the Minnesota Academic Standards for each subject. Some additional resources to use while looking at the benchmark reports include the achievement level descriptors, the benchmark user guides, and the test specifications. Links to available resources are provided at the end of this guide.

- ▶ Benchmark report data are based on student responses to test questions for a particular benchmark that was administered to students in a school or district; therefore, the data is based on a limited set of items. In addition, for reading and mathematics, the number of items for each benchmark will vary by student.
- ▶ The purpose of the data in this report is not to designate strengths and weaknesses in a school or district; rather, it is to serve as a guidance tool to identify possible gaps in instructional content that staff may find relevant and important.
- ▶ Benchmark performance symbols **do not** correspond to overall achievement (i.e., Does Not Meet, Partially Meets, Meets, or Exceeds the Standards), and the color/shape of each symbol does not reflect benchmark difficulty.



It is important to frame any interpretation within the context of the school or district environment. Consideration of external information about the curriculum, instructional practices, and data from other classroom assessments is critical to making appropriate inferences from the data in this report.

Using the benchmark report in your classroom, school, or district

The MCA Benchmark Report is meant to serve as an additional resource educators can use to identify benchmarks for which students show performance **less than**, **similar to**, and **greater than** on the current year's MCA relative to the "Meets" achievement level cut score.

Consider the following questions when reviewing and discussing the benchmark reports:

- Are the students that completed the assessment representative of the total student population at your school or district?
- Where and how are specific benchmarks taught in a course's scope and sequence?
- What do you notice about the benchmark data? What surprises you?
- How does the data compare with what you saw in the classroom?
- What additional information do you have about student mastery of the benchmarks?
- What may be some reasons for the benchmarks that have symbols indicating performance above the "Meets" achievement levels?
- What may be some underlying causes for benchmarks below the "Meets" achievement level?
- Are there additional emerging themes in all the information?
- What are your next steps after reviewing your benchmark data?

Glossary

Academic Standards—The MCA is the statewide test to help districts measure student learning of Minnesota’s academic standards. The academic standards are revised according to a schedule set forth by statute. Two or three years after standards are revised and adopted, a new series of assessments is ready for operational administration.

Achievement Levels—For MCA, there are four achievement levels: Exceeds the Standards (proficient), Meets the Standards (proficient), Partially Meets the Standards (not proficient), and Does Not Meet the Standards (not proficient). Students are assigned an achievement level based on their scale score.

Achievement Level Descriptors (ALDs)—ALDs describe the four levels of achievement on the Minnesota Academic Standards. **Note:** Achievement Level Descriptors are referred to as Performance Level Descriptors on the Individual Student Reports (ISRs).

Benchmarks—The MCA assessments are aligned by grade and subject at the benchmark level of the Minnesota Academic Standards. The purpose of benchmarks is to provide details about the academic knowledge and skills that schools teach and students learn from the Minnesota Academic Standards.

Benchmark Performance—Performance on a benchmark is calculated by comparing school or district performance for a grade and subject on a benchmark to the expected performance on that benchmark that would be achieved at the “Meets” achievement level cut score. The benchmark symbols of **less than**, **similar to**, and **greater than** are used in reporting benchmark performance.

Expected Performance—Expected performance is used in calculating benchmark performance. It can be interpreted as how those students who perform at the “Meets” achievement level cut score would likely perform on a particular benchmark. Calculated using the psychometric measurement model for the assessment.

Individual Student Report (ISR)—An Individual Student Report (ISR) is the final and official report of a student’s assessment results provided by MDE to districts to distribute to parents or guardians.

Longitudinal Reports—Longitudinal Reports include historical test results in a graphical display at the student, school, district, and/or state level for review or comparison by administration (test and year). Comparisons include overall and average scale score, achievement level, strand performance detail, and/or student group. A Dashboard view will display performance comparisons across all tests, as they apply to the administration being reported, in a summary graph for a side by side comparison. The first page of the benchmark reports displays overall results and strand performance details available in longitudinal reports on PearsonAccess Next.

MCA—The Minnesota Comprehensive Assessments (MCA) are state tests in reading, mathematics, and science that are used to meet federal and state legislative requirements. The tests are administered every year to measure student performance relative to the Minnesota Academic Standards that specify what students in a particular grade should know and be able to do.

Observed Performance—Calculated as the average percent of correct student responses in the school or district on test questions assessing that benchmark.

Strand Performance Levels—School or district performance by grade and subject on a strand compared to the “Meets” achievement level. They are reported as Below Expectations, At or Near Expectations, or Above Expectations.

Test Specifications—Specific rules and characteristics guide the development of a test’s content and format. They indicate which strands, substrands, standards, and benchmarks will be assessed on the test and in what proportions.

Benchmark Resources

View additional resources at the MDE website links below:

RESOURCE	
<u>Achievement Level Descriptors</u>	View the Achievement Level Descriptors for reading, mathematics, and science on the MDE Testing 1, 2, 3 website. (MDE Testing 1, 2, 3 site > Plan and Teach > Success Criteria)
<u>Benchmark Achievement Level Descriptors</u>	View the Benchmark Achievement Level Descriptors on the Testing 1, 2, 3 website. (MDE Testing 1, 2, 3 site > Plan and Teach > Success Criteria)
<u>Benchmark Report "How To" Quick Guides</u>	View the subject specific "How To" Quick Guides for reading, mathematics, and science for information about how you can use the reports. (PearsonAccess Next > Reporting Resources > Additional Reporting Resources)
<u>Frameworks for the Minnesota Science & Math Standards</u>	View the Frameworks for the Minnesota Science & Math Standards for resources to help translate Minnesota state standards into classroom practice and assist in student achievement of those standards. (https://stemtc.scimathmn.org/)
<u>MCA Test Specifications</u>	View how the Minnesota Academic Standards and benchmarks are addressed in the development of the MCA in the MCA test specifications. (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Test Specifications)
<u>Minnesota Academic Standards</u>	View the Minnesota Academic Standards for the knowledge and skill expectations in a content area for a grade. (MDE website > Districts, Schools and Educators > Teaching and Learning > Academic Standards (K-12))
<u>Minnesota Questions Tool</u>	View the Minnesota Questions Tool for released items from MCA test. (MDE Testing 1, 2, 3 > Assess > Released MCA Questions > Minnesota Questions Tool)
<u>MDE Testing 1, 2, 3</u>	View the MDE Testing 1, 2, 3 educator website for more information about using data in the classroom. (https://testing123.education.mn.gov)
<u>Understanding the Benchmark Reports Video</u>	View the Understanding the Benchmark Reports Video for a walk through of the sections of the report. (PearsonAccess Next > Reporting Resources > Additional Reporting Resources)

CONTACT INFORMATION

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mde.testing@state.mn.us

Pearson

Submit a **[Pearson help desk request](#)**
(PearsonAccess Next > Support)
888-817-8659

Contact your District Assessment Coordinator for information on accessing these reports. District Assessment Coordinators can contact Pearson for help accessing reports in PearsonAccess Next. Contact MDE for questions about the data presented in these reports and scoring.