

MCA Science Benchmark Report "How To" Quick Guide

Assessments are designed to provide information about student learning, but there is no single assessment that can provide the full perspective of what a student has learned. These assessments provide one data point that should be considered in the context of additional evidence of student learning.

The MCA Benchmark Report is a guidance tool educators can use to learn about performance at the school or district level on each benchmark from the Minnesota Academic Standards. The Minnesota Academic Standards identify the knowledge and skills that all students are expected to learn in each content area by the end of a grade or grade band. These standards are divided into one or more benchmarks which provide details about what students are taught in that content area.

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.

Report Considerations

Benchmark reports are created by grade and subject for Reading, Mathematics, and Science MCA.

The Science MCA is a fixed-form assessment, so for the current year, all students are administered the same items that count for their score.

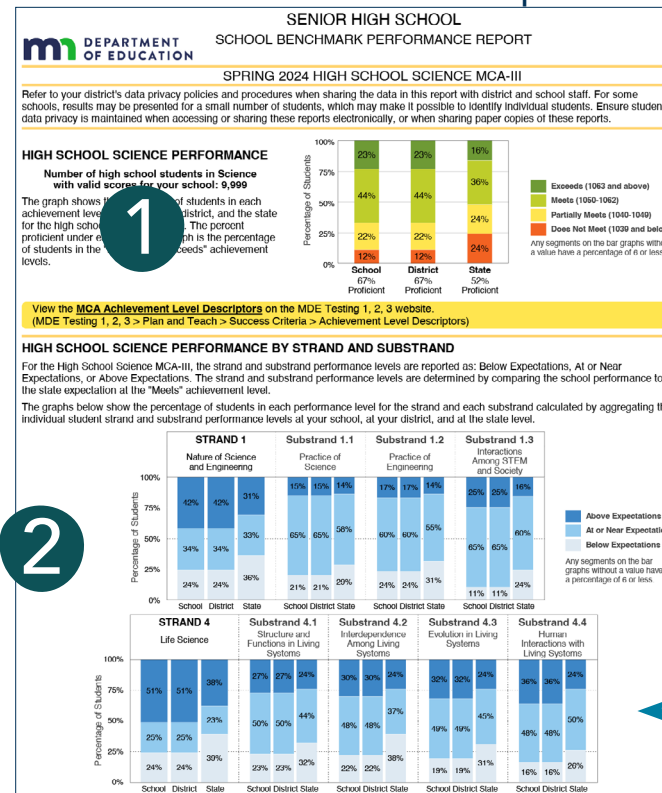
- All tests meet the "blueprints" or requirements in the test specifications, which describe how the standards are assessed on the test and in what proportions. However, not all benchmarks are assessed each year on the Science MCA.
- Benchmarks not assessed are noted on the report.

Benchmark reports for 2019 and 2021–2024 are available. No benchmark reports were produced for 2020.











For more information about benchmark reports, refer to the *MCA Benchmark Report Interpretive Guide* or *Understanding the MCA Benchmark Report Video*, available on [PearsonAccess Next](#) (PearsonAccess Next > Reporting Resources > Additional Reporting Resources).

Sections of the Benchmark Report



1. Overall performance, including:
 - The number of students with a valid, reportable score at the organization level for the grade and subject combination of the report.
 - An achievement level bar graph at the school, district, and state level, with the percentage of students at each achievement level.
 - The percent proficient, shown under each bar graph, is the combined percent of students at the "Meets" and "Exceeds" achievement levels.
2. Strand and substrand performance, including:
 - Content area strand and substrand names and performance level percentages at the school, district, and state level.
 - Performance level categories include: Below Expectations, At or Near Expectations, and Above Expectations. Expectation is defined as the school's performance on each strand/substrand compared to the "Meets" performance level cut score.

Science Benchmark Report		Spring 2024 - High School	
HIGH SCHOOL SCIENCE PERFORMANCE BY BENCHMARK			
School performance on each benchmark is compared at the "Meets" achievement level. Performance on a benchmark is calculated by comparing school performance on a benchmark to the expected performance on a benchmark. 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
STRAND 1: THE NATURE OF SCIENCE AND ENGINEERING			
SUBSTRAND 9.1.1: THE PRACTICE OF SCIENCE			
Compared to "Meets" Achievement Level	Benchmark		
	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.	Benchmark 9.1.1.1.1 and 9.1.1.1.2 were not assessed on this year's test. Benchmark 9.1.1.1.4 is not assessed on the MCA-III.	
	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 can affect the direction of research and the interpretation of data. For example: How funding of research can influence the direction of research and the interpretation of data. For example: How funding of research can influence the direction of research and the interpretation of data.		
	9.1.1.1.6 Describe how changes in scientific knowledge occur in incremental steps that include and build on earlier knowledge.		
	9.1.1.1.7 Explain how scientific and technological innovations -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.		

- Benchmark performance description
- Three performance symbols specific to the benchmark report used to represent school or district performance on each benchmark, including less than, similar to, or greater than the "Meets" achievement level. An asterisk (*) indicates there were less than 20 student responses for that benchmark and results are not available.
- Strand and substrand number and titles.
- Minnesota Academic Standards code reference and description.
- Benchmark performance, benchmark code, and description. For science, the five-digit code (such as, 9.1.1.1.5) lists, in order, the grade (9), strand (1), substrand (1), standard (1), and benchmark (5). Grades 5 and 8 benchmark reports have benchmark codes numbered for multiple grades (such as, standards for grade 5 test 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, though instruction may occur outside of grade 9 in grades 10, 11, or 12.

Caution When Interpreting the Benchmark Report

Benchmark performance symbols do not correspond to overall achievement levels for Science MCA (Does Not Meet, Partially Meets, Meets, or Exceeds the Standards), and the color/shape of each symbol does not reflect benchmark difficulty.



New Minnesota Academic Standards are being implemented for all subjects. The current Science MCA-III reports show performance on 2009 benchmarks, which may not align with certain grade-level instruction depending on the transition plan. The first administration of the revised science assessments is school year 2024–25.

Using the Benchmark Report in Your Classroom, School, or District

The MCA Benchmark Reports are an additional resource educators can use to evaluate and compare performance on benchmarks at the school, district, and state levels on the current year's test. Teachers and district staff can use benchmark report data as a starting point for discussions about strengths and gaps in curriculum.

Guiding questions when reviewing and discussing benchmark reports:

- Are the students who 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 learning 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?

Additional Benchmark Resources

View the [Minnesota Academic Standards](#) (MDE website > Districts, Schools and Educators > Teaching and Learning > Academic Standards (K-12))

View the [MCA test specifications](#) (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Test Specifications)

View the [Frameworks for the Minnesota Science & Math Standards](#) (www.scimathmn.org > Minnesota STEM Teacher Center)

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

View the [Testing 1, 2, 3](https://testing123.education.mn.gov) educator website (<https://testing123.education.mn.gov>)

View the [Minnesota Questions Tool](#) for released items from MCA test. (MDE Testing 1, 2, 3 > Assess > Minnesota Questions Tool)

View [Appendix A: Benchmark Report Calculations Resource](#) in the [Technical Manual for Minnesota's MCA and MTAS Assessments](#) (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Technical Reports > Technical Manual).

View the [Using Assessment Results During Transition to New Academic Standards: Science](#) on the District Resources web page (MDE > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > District Resources > Test Score Interpretation Resources)