

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.

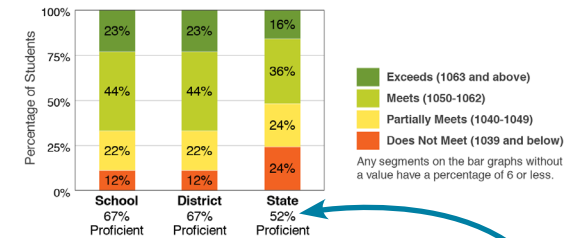
Benchmark reports for 2019 and 2021–2023 are available. No benchmark reports were produced for 2020.

Sections of the Benchmark Report

HIGH SCHOOL SCIENCE PERFORMANCE

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Number of high school students in Science with valid scores for your school: 9,999
 Graph shows the percentage of students in each achievement level for your school, district, and the state for the high school Science MCA-III. The percent proficient under each bar in the graph is the percentage of students in the "Meets" and "Exceeds" achievement levels.



1. Overall performance, including:

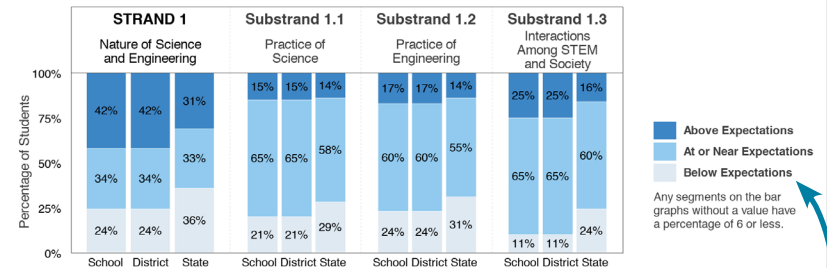
- The **number of students** with a valid, reportable score at the organization level for the grade and subject combination of the report.
- An **achievement level bar graph** at the school, district, and state level, with the percentage of students at each achievement level.
- The **percent proficient**, shown under each bar graph, is the combined percent of students at the "Meets" and "Exceeds" achievement levels.

HIGH SCHOOL SCIENCE PERFORMANCE BY STRAND AND SUBSTRAND

For the High School Science MCA-III, the strand and substrand performance levels are reported as: Below Expectations, At or Near Expectations, or Above Expectations. The strand and substrand performance levels are 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 the strand and each substrand calculated by aggregating the individual student strand and substrand performance levels at your school, at your district, and at the state level.

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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.



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).

HIGH SCHOOL 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 "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.

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. <i>Benchmarks 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.</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 Explain how bias might influence the direction of research and the interpretation of data. For example: The selection of research questions, 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.

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3. **Benchmark performance description**
4. **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.
5. **Strand and substrand** number and titles.
6. **Minnesota Academic Standards code reference and description.**

7. **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.

Frame any interpretation within the context of the school or district environment, including taking your district's standards implementation plan into consideration when communicating about and using benchmark data. The 2022 and 2023 Benchmark Reports show the specific 2009 benchmarks on the Science MCA-III, 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:

1. Are the students who completed the assessment representative of the total student population at your school or district?
2. Where and how are specific benchmarks taught in a course's scope and sequence?
3. What do you notice about the benchmark data? What surprises you?
4. How does the data compare with what you saw in the classroom?
5. What additional information do you have about student learning of the benchmarks?
6. What may be some reasons for the benchmarks that have symbols indicating performance above the "Meets" achievement levels?
7. What may be some underlying causes for benchmarks below the "Meets" achievement level?
8. Are there additional emerging themes in all the information?
9. 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](#) 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)