MCA SCIENCE BENCHMARK REPORT "HOW TO" QUICK GUIDE

The MCA benchmark report is a guidance tool educators can use to learn about school- or district-level performance on each benchmark from the Minnesota Academic Standards that is assessed on the current year's MCA.

The primary purpose of the MCA is to measure achievement on the Minnesota Academic Standards. The Minnesota Academic Standards identify the knowledge and skills that all students strive to achieve in a content area; these standards are divided into one or more benchmarks which provide details about what students are taught in that content area.

The benchmark report is calculated at the school- or district-level by comparing **observed performance** on a benchmark to the **expected performance** on a benchmark at the "Meets" achievement level cut score for a benchmark. Technical details on this calculation are available in the *2018-19 Benchmark Report Calculations Resource* (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Technical Reports).

Reports by Grade and Subject

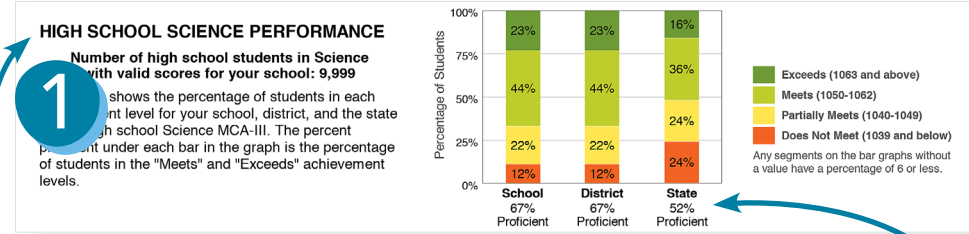
Benchmark reports are created by grade and subject for Reading, Mathematics, and Science MCA.

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. However, not all benchmarks are assessed each year on the Science MCA.
- Benchmarks not assessed are noted on the report.

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

Sections of the Benchmark Report

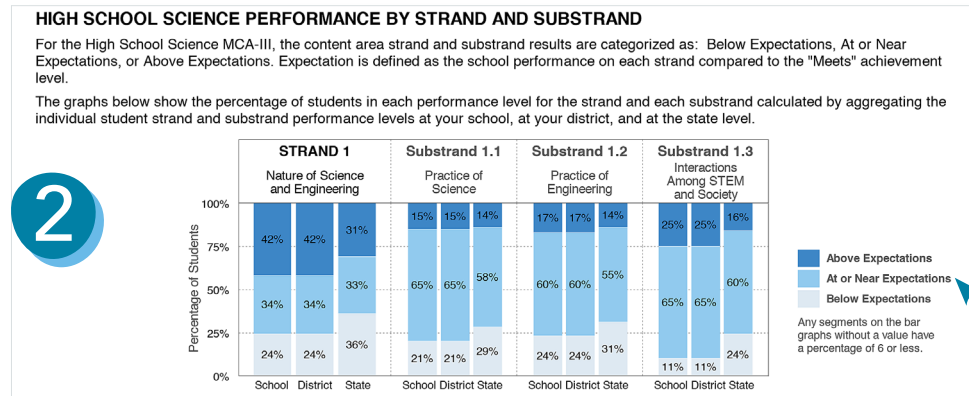


1. **Overall performance,** including:

   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.



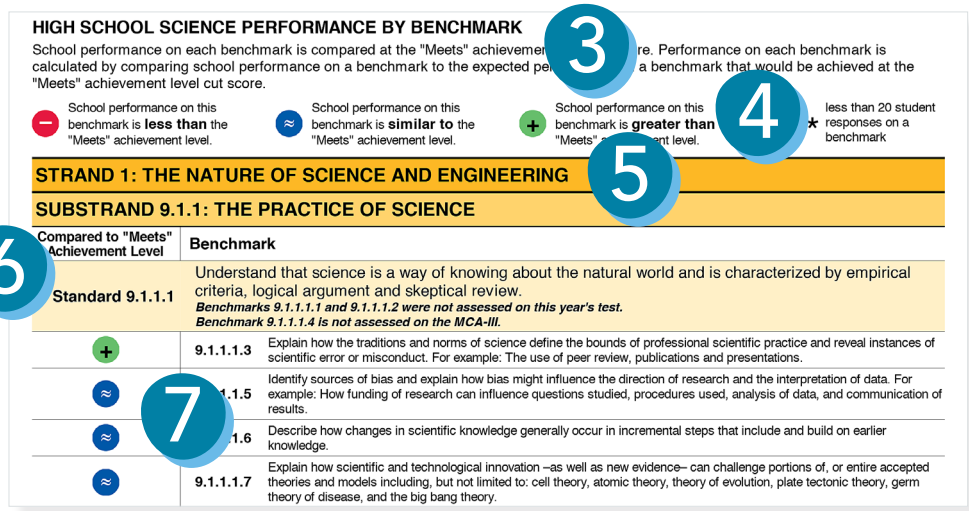
2. **Strand and substrand performance**, including:

   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.



HIGH SCHOOL SCIENCE PERFORMANCE BY BENCHMARK

School performance on each benchmark is compared at the "Meets" achievemen re. Performance on each benchmark is calculated by comparing school performance on a benchmark to the expected pe 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" nt 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. ***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.***
+	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.
≈	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.
≈	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.

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.

   A fourth symbol, an asterisk (*) indicates results were not available as there were less than 20 student responses for that benchmark.
5. **Strand and substrand** number and titles.
6. **Minnesota academic standard code reference and description.**
7. **Benchmark performance, benchmark code, and description.**

   For science, the five-digit code (i.e., 3.1.3.3) 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 (i.e., 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 indicators and symbols **do not** correspond to overall achievement levels for Science MCA (i.e., Does Not Meet, Partially Meets, Meets, or Exceeds the Standards), and the color/shape of each marker does not reflect benchmark difficulty.

Frame any interpretation within the context of the school or district environment. 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 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 to identify gaps in instructional content.

Guiding questions when reviewing benchmark reports:

- Does the data match what is happening in the classroom?
- What data catches your eye? What surprises you?
- Are there areas in the report that you feel should be celebrated? Why?
- How does this data compare with your intuitive or personal experiences at your school?
- What clarifying questions do you have? What is unclear to you?
- What concerns you the most? What is most important to you? Why?
- What may be some reasons for benchmarks above the "Meets" achievement levels?
- What may be some underlying causes for benchmarks below the "Meets" achievement level?
- Are there emerging themes in all the information?
- What needs to be addressed first? Why?

Additional Benchmark Resources

View ***Achievement Level Descriptors*** for Reading, Mathematics, and Science (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Achievement Level Descriptors)

View the ***Frameworks for the Minnesota Science & Math Standards*** (http://scimathmn.org/stemtc/)

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

View the ***MDE Testing 1,2,3*** educator website (https://testing123.education.mn.gov)

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