



Testing 1, 2, 3 Overview and New Benchmark Reports

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Outcomes of today's session

By the end of this presentation, you will be able to...

- Better understand the purpose of the MCA and what it was designed to do
- Analyze the Benchmark Reports and use them as *one* piece of evidence when making decisions about curriculum and instruction at your school

New website for educators!



Testing123.education.mn.gov

1. Support school districts regarding the interpretation and use of test scores in the classroom.
2. Provide easier access to data and assessment resources from statewide testing that are specific to teachers
3. Increase teacher involvement with State Testing Division at MDE

Assessment and Data Literacy Overview

Minnesota Assessments

Standards-Based
Accountability Assessments

English Language Proficiency
Accountability Assessments

MCA

MTAS

ACCESS for ELLs

**Alternate
ACCESS for ELLs**

Minnesota Assessments: Aligned to Standards

This is the “series number”

Test Names	Standards	Year Adopted
Reading MCA-III and MTAS	Minnesota K–12 Academic Standards in English Language Arts	2010
Mathematics MCA-III and MTAS	Minnesota K–12 Academic Standards in Mathematics	2007
Science MCA-III and MTAS	Minnesota K–12 Academic Standards in Science	2009
ACCESS and Alternate ACCESS for ELLS	WIDA English Language Development Standards	2011

When are students tested?

All public school students are assessed in the following subjects:

Subject area	When are they tested?
Reading	Grades 3-8, and 10
Mathematics	Grades 3-8, and 11
Science	Grades 5, 8, and once in high school

What the MCA is designed to do

The MCA provides:

- A snapshot of student achievement toward the MN academic standards at state, district, and building levels.
- Important data for teachers, schools, and districts to help guide instruction and evaluate program effectiveness.



What the MCA is designed to do

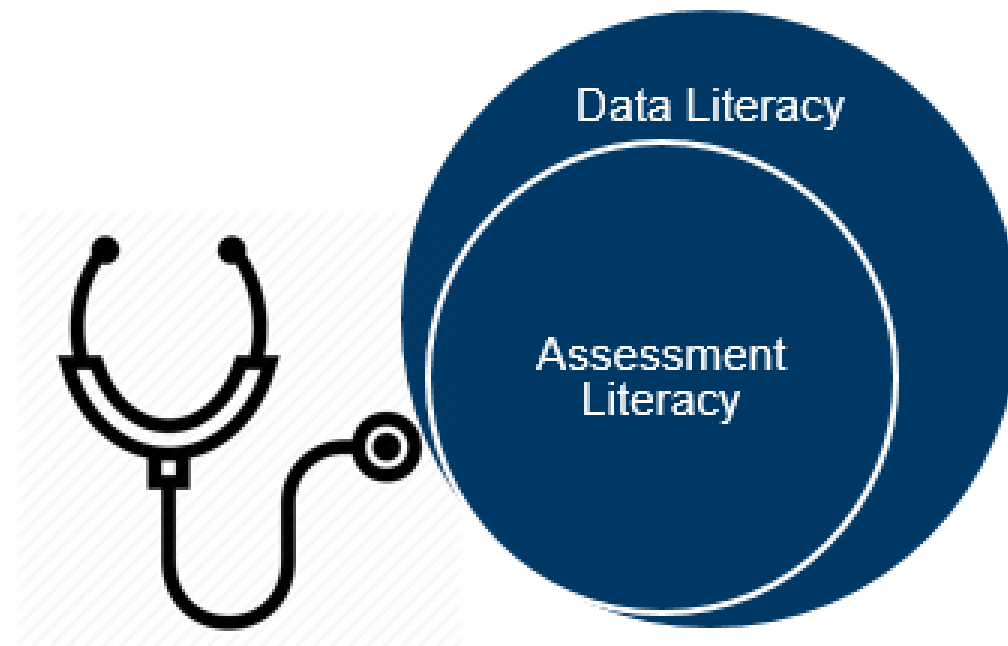
The MCA provides:

- A snapshot of student achievement toward the standards at state, district, and building levels.
- Important data for teachers, schools, and districts to help guide instruction and evaluate program effectiveness.
- The MCA is a “summative assessment,” meaning it measures what students are expected to know and do at specific grade levels and in specific content areas.

Assessment Literacy

Assessment literate educators know **how**, **when**, and **why** to assess student learning.

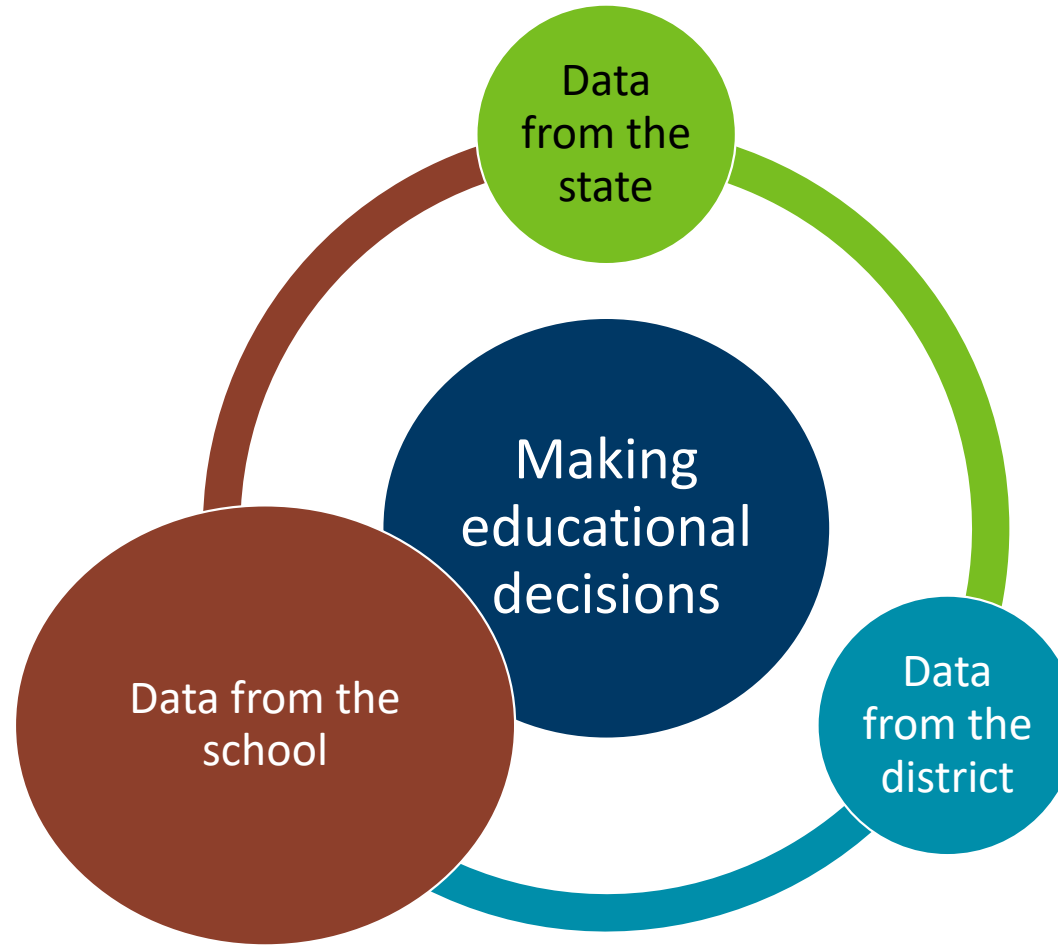
Assessment literate educators design and/or choose a variety of assessments that are able to elicit evidence of student mastery of the Minnesota Academic Standards.



A Comparison of Assessment Types

Type	Examples & Frequency	Evidence Produced	Level of Impact	Used by
Formative	<ul style="list-style-type: none">• Daily Checks for Understanding• Weekly Quizzes	<ul style="list-style-type: none">• Lesson sized learning targets• Retained learning across lessons and achievement level	Used to make immediate decisions about what students currently know, and where to go next	<ul style="list-style-type: none">• Students• Teachers in classroom
Interim	Midterm Exams that occur 2-3 times per year	Cumulative, longer-term learning retention	Evaluate curriculum effectiveness and used for macro-level planning	<ul style="list-style-type: none">• Groups of Teachers• School Leaders
Summative	<ul style="list-style-type: none">• Unit Tests or Performance Tasks• State Tests (MCA)	Proficiency of learning compared to the Minnesota Academic Standards and Achievement Level Descriptors	Used for accountability and evaluation of curriculum in regards to the standards	<ul style="list-style-type: none">• Groups of Teachers• School, District Leaders• Policy Makers

Minnesota Assessment Data: One Component



Testing 1, 2, 3 Resources

Standards based learning goals

Resources for teachers in writing daily and long term learning goals

Aligned to the Minnesota Academic Standards

TESTING123

Test data in the classroom: Assessing, analyzing and taking action

Plan and Teach ▾

1. Assess ▾

2. Analyze ▾

3. Take Action ▾

Standards Based Learning Goals

Success Criteria

MCA Test Structure

MCA Content Resources

Released MCA Questions

ce for Teachers

reliable data use it to eliminate

the classroom instruction. This

teachers with relevant

<https://testing123.education.mn.gov/test/plan/goals/>

Success Criteria

Use Achievement Level Descriptor (ALD) resources to analyze depth of curriculum

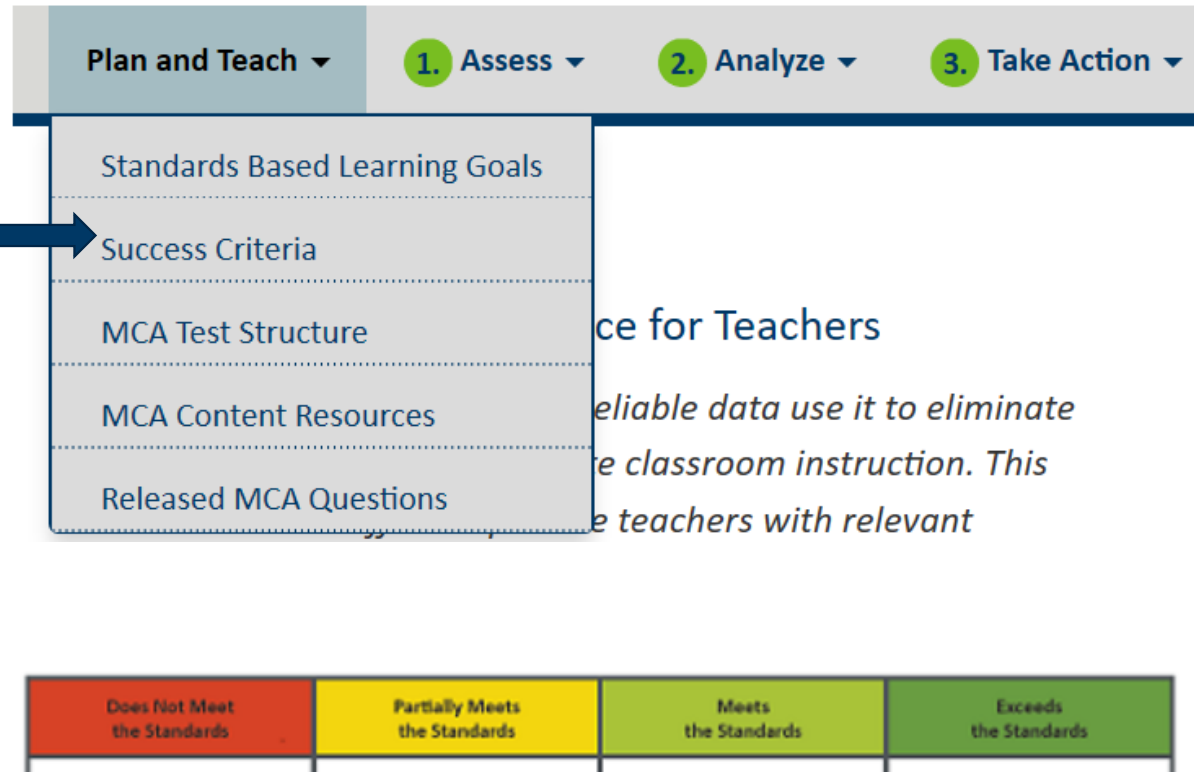
The (ALDs) describe the four levels of mastery specific to grade-level for the MCA, based on the standards.

How, according to the test specifications, are students able to show their mastery of the knowledge, skills, and abilities in the standards?

<https://testing123.education.mn.gov/test/plan/success/>

TESTING123

Test data in the classroom: Assessing, analyzing and taking action



The screenshot shows the TESTING123 website interface. At the top, there is a navigation bar with four tabs: 'Plan and Teach', '1. Assess', '2. Analyze', and '3. Take Action'. The '1. Assess' tab is selected. Below the navigation bar, there is a list of resources: 'Standards Based Learning Goals', 'Success Criteria', 'MCA Test Structure', 'MCA Content Resources', and 'Released MCA Questions'. A blue arrow points to the 'Success Criteria' link. To the right of the list, there is a partially visible text snippet: 'ce for Teachers', 'reliable data use it to eliminate', 'the classroom instruction. This', and 'e teachers with relevant'.

Does Not Meet the Standards	Partially Meets the Standards	Meets the Standards	Exceeds the Standards

Success Criteria (2)

<https://testing123.education.mn.gov/test/plan/success/> > ALDs

High School Math Example

Strand	Does Not Meet A student at this level of mathematics succeeds at few of the most fundamental mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Partially Meets A student at this level of mathematics partially meets the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Meets A student at this level of mathematics meets the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Exceeds A student at this level of mathematics exceeds the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated very consistently may include:
Algebra	<ul style="list-style-type: none"> • Uses the vertical line test to identify a function • Recognizes linear and exponential functions using tables, symbols and graphs • Factors common monomial factors from polynomials • Factors quadratic expressions with leading coefficient of 1 	<ul style="list-style-type: none"> • Identifies key features (e.g., intercepts, slopes) of linear functions using symbolic and graphical methods • Evaluates polynomial and rational expressions • Adds, subtracts, and multiplies polynomials • Uses factoring to solve quadratic equations with leading coefficient of 1 • Recognizes, represents and solves problems involving linear and exponential functions using tables, verbal descriptions, symbols and graphs • Solves systems of linear inequalities when represented graphically 	<ul style="list-style-type: none"> • Identifies key features (e.g., intercepts, translations) of functions and other relations using symbolic and graphical methods • Generates equivalent algebraic expressions involving polynomials and radicals • Uses algebraic properties to evaluate expressions • Represents and solves real-world and mathematical situations involving linear, quadratic, exponential and nth root functions using equations, inequalities, tables or graphs 	<ul style="list-style-type: none"> • Identifies key features of rational functions and other relations using symbolic and graphical methods • Represents and solves non-routine problems in real-world and mathematical situations using equations, inequalities, tables, or graphs

MCA Test Structure

Subject and grade level specific Documents
Created from Test Specs and Test Blueprint

Grade Level Assessment Details

Reading	Mathematics	Science
Grade 3	Grade 3	N/A
Grade 4	Grade 4	N/A
Grade 5	Grade 5	Grade 5
Grade 6	Grade 6	N/A
Grade 7	Grade 7	N/A
Grade 8	Grade 8	Grade 8
High School	High School	High School



Test data in the classroom: Assessing, analyzing and taking action

Plan and Teach ▾

1. Assess ▾

2. Analyze ▾

3. Take Action ▾

Standards Based Learning Goals

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Released MCA Questions

ce for Teachers

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e teachers with relevant

<https://testing123.education.mn.gov/test/plan/structure/>

MCA Test Structure- HS Math Example

Online Adaptive MCA-III Grade 11 Minimum and Maximum Item Counts by Standard

Strand	Range of Items per Strand	Standard	Number of Benchmarks per Standard	Range of Items per Standard
2 – Algebra	21-24	9.2.1	9	4-6
		9.2.2	6	5-10
		9.2.3	7	3-6
		9.2.4	8	3-7
3 – Geometry & Measurement	13-15	9.3.1	5	3-4
		9.3.2	5	0-2
		9.3.3	8	3-7
		9.3.4	7	4-6
4 – Data Analysis & Probability	8-13	9.4.1	4	3-5
		9.4.2	3	1-2
		9.4.3	9	4-7

- Information is from test specs
- Useful for planning Scope & Sequence, Pacing Calendars, curriculum alignment, etc.
- Caution: This is only *one* resource, it is not a curriculum.

<https://testing123.education.mn.gov/test/plan/structure/>

MCA Content Resources

Links to item samplers for each subject and grade

Links to teacher guides

Reading	Mathematics
Grade 3 Item Sampler Grade 3 Teacher Guide	Grade 3 Item Sampler Grade 3 Teacher Guide
Grade 4 Item Sampler Grade 4 Teacher Guide	Grade 4 Item Sampler Grade 4 Teacher Guide
Grade 5 Item Sampler Grade 5 Teacher Guide	Grade 5 Item Sampler Grade 5 Teacher Guide Grade 5 Formula Sheet



Test data in the classroom: Assessing, analyzing and taking action

Plan and Teach ▾

1. Assess ▾

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Standards Based Learning Goals

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<https://testing123.education.mn.gov/test/plan/res/index.htm>

Released MCA Questions

Explore test questions from past exams

Released items and response data for math and reading

The table shows the cost of apples.

Apple Prices	
Pounds of Apples	Price
2	\$4
4	\$8
6	\$12
?	\$18

Ben paid \$18 for apples at the grocery store.

How many pounds of apples did Ben buy?

- ☐ A. 7
- ☐ B. 8
- ☐ C. 9
- ☐ D. 12

TESTING123

Test data in the classroom: Assessing, analyzing and taking action

Plan and Teach ▼

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Standards Based Learning Goals

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e teachers with relevant

<https://testing123.education.mn.gov/test/plan/ques/index.htm>

MCA Grade 3 Sample Item

The table shows the cost of apples.

Apple Prices

Pounds of Apples	Price
2	\$4
4	\$8
6	\$12
?	\$18

Ben paid \$18 for apples at the grocery store.

How many pounds of apples did Ben buy?

☐ A. 7

☐ B. 8

☐ C. 9

☐ D. 12

<https://testing123.education.mn.gov/test/plan/ques/index.htm>

Student Data Example

RATIONALE A	The student may have thought the table was going in consecutive numeric order and chose 7 pounds since 6 was the last number of pounds in the table.
RATIONALE B	The student may have thought that the number of pounds of apples has to be a "plus 2" pattern and may not have taken the output values into consideration.
RATIONALE C	Correct - The student recognized that the input value is multiplied by 2 to get the output value and therefore recognized that 9 pounds of apples costs \$18.
RATIONALE D	The student may have thought the pattern was to add 6 to the input value based on the last row of data in the table and therefore subtracted 6 from 18 to get an input value of 12.

Answer Selected	Percent of Students Who Selected It
A	2%
B	59%
C	35%
D	5%

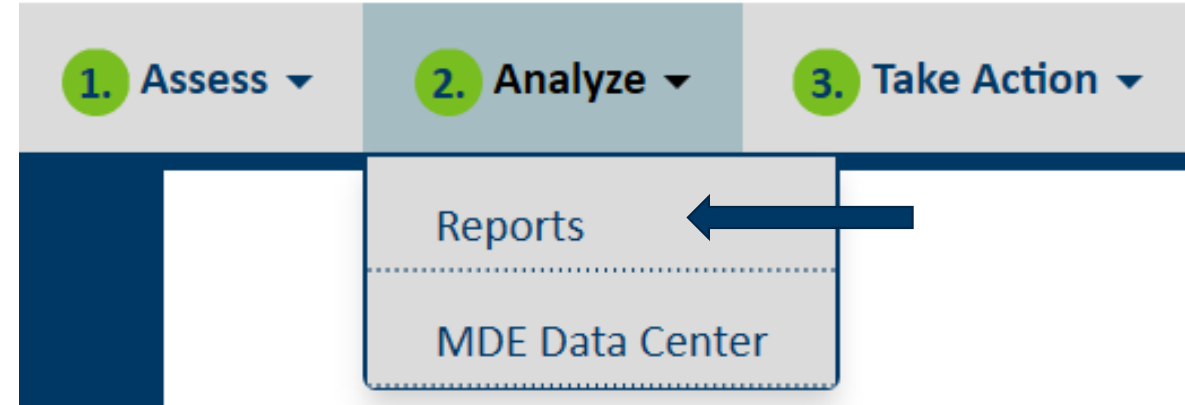
Analyze Resources: Reports

MCA Scale Score Resources

Guides for Interpreting Various Score Reports (ISR, Benchmarks, etc.)

Guide for Understanding MCA and MTAS Rosters

Data Center Overview



— Reports from Statewide Testing

Reports available in PearsonAccess Next

- Preliminary [On-Demand Reports](#) are available for the Minnesota Comprehensive Assessment (MCA) and the Minnesota Test of Academic Skills (MTAS) within an hour after testing or data entry is completed. Preliminary student results provided in PearsonAccess Next can be printed for students, families, and staff for instructional purposes; however, it is up to the district to determine how preliminary student results are used. On-Demand Reports are available until final assessment data are released.
- [Historical Student Data](#) includes historical MCA and MTAS results for students who previously tested in the district, and for students enrolled in the district regardless of where they tested.
- [Longitudinal Reports](#) include historical MCA and MTAS results for review and comparison at the student, school, district, and/or state level.
- [Published Reports](#) include the final versions of reports provided to districts by MDE (Rosters, ISRs, and Benchmark Reports).

<https://testing123.education.mn.gov/test/analyze/report/>

Scale Score Definitions

Theta (θ)

The estimate of “ability” (performance)
Theta range for Minnesota Assessments [-3 to 3]

Scale Score (SS)

The theta/ability estimate is transformed into the scale score via transformation
MCA-III scale scores are from X01-X99 (X = grade)

Achievement Level Descriptors (ALDs)

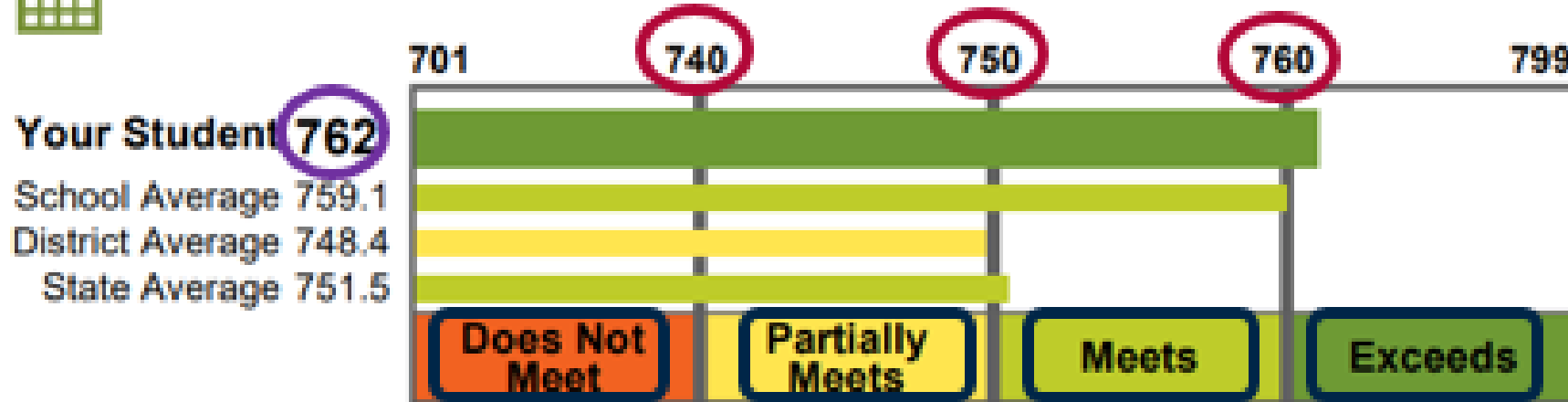
Describes the level of student achievement (Does not meet standards, Partially Meets Standards, Meets Standards, Exceeds Standards)

Scale Score (SS)
(theta transformed)

Cut Scores (based on the ALDs)



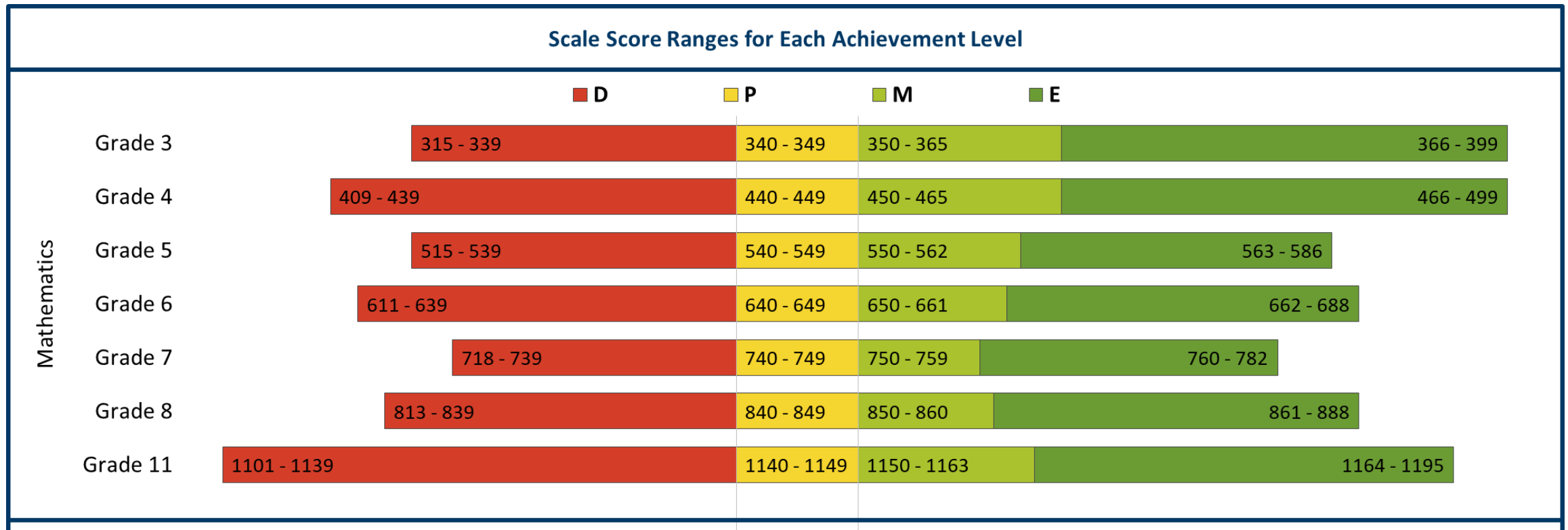
MATHEMATICS: FIRSTNAME'S OVERALL MCA-III RESULTS



Achievement Levels

Scale Scores Continued

<https://testing123.education.mn.gov/test/analyze/report/> > Resources > Understanding MCA Scale Scores



Scale Scores Continued

<https://testing123.education.mn.gov/test/analyze/report/> > Resources > Understanding MCA Scale Scores

Scale Score Ranges for Each Achievement Level				
Reading	Grade 3	301 - 339	340 - 349	350 - 373 374 - 399
	Grade 4	411 - 439	440 - 449	450 - 465 466 - 490
	Grade 5	517 - 539	540 - 549	550 - 566 567 - 591
	Grade 6	606 - 639	640 - 649	650 - 666 667 - 699
	Grade 7	703 - 739	740 - 749	750 - 766 767 - 798
	Grade 8	802 - 839	840 - 849	850 - 866 867 - 898
	Grade 10	1012 - 1039	1040 - 1049	1050 - 1063 1064 - 1094

Appropriate use of Scale Scores

- MCA scale scores are based on grade-level specific content
- In technical terms, this means the scores are not “vertically aligned”
- Scale scores should never be compared across the grades for a particular student, especially when determining if a student has no growth, remained the same, or improved.
- The achievement levels CAN be used to assess whether student growth across grades is demonstrated.

<https://testing123.education.mn.gov/test/analyze/report/> > Resources > Where do Scale Scores Come from?

New Benchmark Reports

1. Overall School/District Performance

- Number of all students tested with valid and reportable scores
- Percent of students at each achievement level
- Percent proficient is total “Meets” and “Exceeds”



ALEXANDRIA PUBLIC SCHOOL DISTRICT DISTRICT BENCHMARK PERFORMANCE REPORT

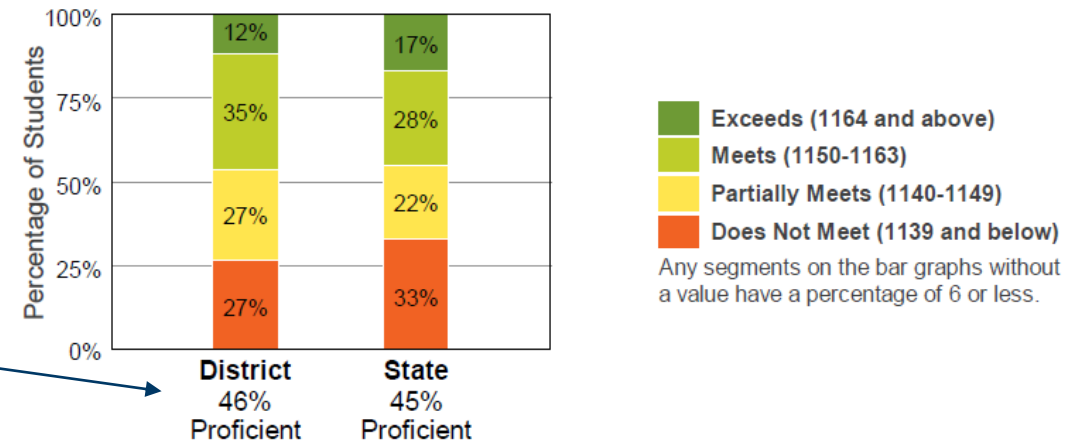
SPRING 2019 GRADE 11 MATHEMATICS MCA-III

New report design for 2019! View the [Mathematics Benchmark Report "How To" Quick Guide](#) for information about how you can use this report. (PearsonAccess Next > Reporting Resources > Additional Reporting Resources)

GRADE 11 MATHEMATICS PERFORMANCE

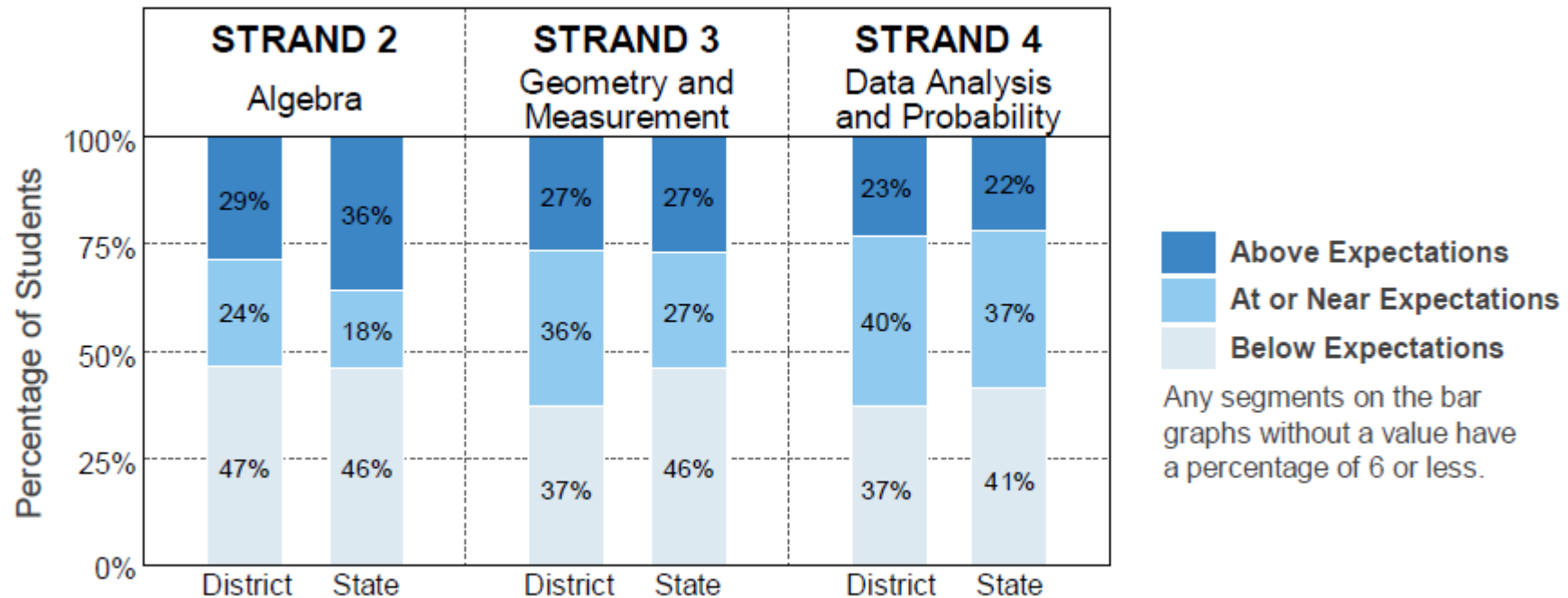
Number of grade 11 students in Mathematics with valid scores for your district: 294

The graph shows the percentage of students in each achievement level for your district and the state for the grade 11 Mathematics MCA-III. The percent proficient under each bar in the graph is the percentage of students in the "Meets" and "Exceeds" achievement levels.



2. School/District Performance

- HS Math Performance Data by Strand



- Expectation is defined as performance on each strand/substrand compared to “Meets” level cut score









3. Benchmark Performance Symbols

Performance Symbols are determined by calculating:

- *average student performance on test questions aligned to each benchmark*

Compared to:

- *the “Meets” achievement level cut score expected performance*

 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. <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.	

Read slides [35-42](#) for more detail about the performance symbol calculation method

Caveats to keep in mind

The performance symbols only compare to the Meets cut score, not a *partial* or *exceeds* cut score like the scale scores calculated at the student level.

The calculation for the overall performance (calculate individual student scores first and then aggregate to the organization level) and benchmark (only calculated at the organization level) are different, so benchmark performance indicators and overall achievement levels are not directly comparable.



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.

Cautions with interpretation

- Benchmark performance indicators and symbols **do not** correspond to overall achievement or performance levels because they are calculated differently.

Does Not Meet the Standards	Partially Meets the Standards	Meets the Standards	Exceeds the Standards
Students at this level succeed at few of the most fundamental skills for the Minnesota K-12 Academic Standards.	Students at this level partially meet the subject's skills for the Minnesota K-12 Academic Standards.	Students at this level meet the subject's skills for the Minnesota K-12 Academic Standards.	Students at this level exceed the subject's skills for the Minnesota K-12 Academic Standards.

- The color/shape of each marker does not reflect benchmark difficulty.



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.

Resources to use with Reports

1. [Achievement Level Descriptor Maps](#) (testing123.education.mn.gov > Plan and Teach > Success Criteria)
2. [DOK](#) (testing123.education.mn.gov > Plan and Teach > MCA Content Resources)
3. [MCA test specifications](#) (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Test Specifications)
4. [Released Items and Passage Sets](#)* (MDE website > Districts, Schools and Educators > Teaching and Learning > Statewide Testing > Released items and Passage Sets)

** for Reading and Mathematics only*

DOK Resources


Webb's Depth of Knowledge is only one method for understanding but the one used for the MCA-III.

Level 1	Level 2	Level 3	Level 4
Recall	Skill/Concept	Strategic Thinking	Extended Thinking
<p>A Level 1 item specifies the operation or method of solution and the student is required to carry it out. A well-defined and straight algorithmic procedure is considered to be at this level.</p> <p>Items may require a student to:</p> <ul style="list-style-type: none"> recall of information, such as a fact, definition, term or simple procedure perform a simple algorithm or applying a formula 	<p>A Level 2 item requires students to choose the operation or method of solution and then solve the problem. These questions are commonly found in textbooks.</p> <p>Item may require a student to:</p> <ul style="list-style-type: none"> engage in some mental processing beyond a habitual response make some decisions as to how to approach a problem or activity read or interpret information from a graph 	<p>A Level 3 item may be solved using routine skills but the student is not cued or prompted as to which skills to use.</p> <p>Items may require a student to:</p> <ul style="list-style-type: none"> reason, plan or use evidence to solve the problem explain their thinking 	<p>Level 4 items are best assessed in the classroom, where the constraints of standardized testing are not a factor.</p> <p>Items may require a student to:</p> <ul style="list-style-type: none"> engage in complex reasoning, planning, developing and thinking have an extended period of time to answer the item

September 2017

How to Use Report with ALDs

Example Benchmark:

	9.2.4.8	Assess the reasonableness of a solution in its given context and compare the solution to appropriate graphical or numerical estimates; interpret a solution in the original context.
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Test ALD Map:

How to interpret them are on the MDE website at [MDE / Districts, Schools and Educators / Statewide Testing / Achievement Level Descriptors](#).

Strand	Does Not Meet A student at this level of mathematics succeeds at few of the most fundamental mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Partially Meets A student at this level of mathematics partially meets the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Meets A student at this level of mathematics meets the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:	Exceeds A student at this level of mathematics exceeds the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated very consistently may include:
Algebra	<ul style="list-style-type: none"> • Uses the vertical line test to identify a function • Recognizes linear and exponential functions using tables, symbols and graphs • Factors common monomial factors from polynomials • Factors quadratic expressions with leading coefficient of 1 	<ul style="list-style-type: none"> • Identifies key features (e.g., intercepts, slopes) of linear functions using symbolic and graphical methods • Evaluates polynomial and rational expressions • Adds, subtracts, and multiplies polynomials • Uses factoring to solve quadratic equations with leading coefficient of 1 • Recognizes, represents and solves problems involving linear and exponential functions using tables, verbal descriptions, symbols and graphs • Solves systems of linear inequalities when represented graphically 	<ul style="list-style-type: none"> • Identifies key features (e.g., intercepts, translations) of functions and other relations using symbolic and graphical methods • Generates equivalent algebraic expressions involving polynomials and radicals • Uses algebraic properties to evaluate expressions • Represents and solves real-world and mathematical situations involving linear, quadratic, exponential and nth root functions using equations, inequalities, tables or graphs 	<ul style="list-style-type: none"> • Identifies key features of rational functions and other relations using symbolic and graphical methods • Represents and solves non-routine problems in real-world and mathematical situations using equations, inequalities, tables, or graphs

How to Use Report with Released Math and Reading Items

Example Benchmark:



9.2.4.8

Assess the reasonableness of a solution in its given context and compare the solution to appropriate graphical or numerical estimates; interpret a solution in the original context.

Search for benchmark in Released Items:

Home About Students and Families Licensing Districts, Schools and Educators Data Center

MDE > Districts, Schools and Educators > Statewide Testing > Released Items and Passage Sets

Released Items and Passage Sets

Released items are items that were previously used on the Minnesota Comprehensive Assessments (MCA). Educators may choose to use them to better understand how the MCA is aligned to the Minnesota K–12 Academic Standards and how the items are written to reflect the rigor and complexity of these standards. The released content, data table, and rationales can be used by educators to explore examples of questions that evaluate the knowledge and skills expected in the standards.

Because this is a small group of items, not every item type or benchmark is represented. However, they do provide a sampling of how the content standards are assessed on the MCA. To get the most out of the information presented here, please start by reading the [User Guide for Released Items with Data Tables](#).

To select items, use the drop-down menus on the left.


Search:

Sort by ID number, Strand, SSB, Key, Item Type, DOK, or Calculator Usage by selecting the heading below:

ID	Strand	SSB	Key	Item Type	DOK	Calculator Usage
45019	Algebra	9.2.1.6	D	MC	I	CL
500002	Algebra	9.2.2.2	D	MC	III	CL
44803	Algebra	9.2.3.4	D	MC	II	CL
503106	Algebra	9.2.4.2	B	MC	III	CL
506031	Algebra	9.2.4.4	A	MC	II	CL
790524	Algebra	9.2.4.7	B	MC	II	CL
45413	Algebra	9.2.4.7	D	MC	II	CL
506036	Algebra	9.2.4.8	D	MC	II	CL
790537	Geometry & Measurement	9.3.2.2	Rubric	TE	I	CL

How to Use Report with Released Math and Reading Items

Example Benchmark:

	9.2.4.8	Assess the reasonableness of a solution in its given context and compare the solution to appropriate graphical or numerical estimates; interpret a solution in the original context.
---	----------------	--


Download Item:

A rectangle is 5 feet longer than it is wide. The area of the rectangle must be less than or equal to 806 square feet. Sally determines that a possible length is 48 feet. Which statement is true about her solution?

- ☐ A. It is reasonable because 48 is less than 806.
- ☐ B. It is reasonable because 48 times 5 is less than 806.
- ☐ C. It is not reasonable because 48 does not divide evenly into 806.
- ☐ D. It is not reasonable because 48 times 43 is greater than 806.

How to Use Report with Released Math and Reading Items

Example Benchmark:

	9.2.4.8	Assess the reasonableness of a solution in its given context and compare the solution to appropriate graphical or numerical estimates; interpret a solution in the original context.
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- ☐ B. It is reasonable because 48 times 5 is less than 806.
- ☐ C. It is not reasonable because 48 does not divide evenly into 806.
- ☒ D. It is not reasonable because 48 times 43 is greater than 806.

Rationale and Response Data

RATIONALE A	Did not address the area limitations in the context.
RATIONALE B	Incorrectly used the numbers in the item.
RATIONALE C	Incorrectly addressed the area limitations in the context.
RATIONALE D	Correct.

Answer Selected	Percent of Students Who Selected It
A	7%
B	22%
C	20%
D	50%

Model How to Use Report with Test Specs

Standard 9.4.1.1

Understand that organisms use the interaction of cellular processes as well as tissues and organ systems to maintain homeostasis.



9.4.1.1.1 Explain how cell processes are influenced by internal and external factors, such as pH and temperature, and how cells and organisms respond to changes in their environment to maintain homeostasis.



9.4.1.1.2 Describe how the functions of individual organ systems are integrated to maintain homeostasis in an organism.

Test Specs:

Substrand: Structure and Function in Living Systems
(9–11 points)

Standard: Organisms use the interaction of cellular processes as well as tissues and organ systems to maintain homeostasis. (9.4.1.1)

(2–4 points)

Benchmarks

9.4.1.1.1

Explain how cell processes are influenced by internal and external factors, such as pH and temperature, and how cells and organisms respond to changes in their environment to maintain homeostasis.

Item Specifications

- Internal and external factors or stimuli include pH, temperature, light, gravity and concentration
- A cell's response to maintain homeostasis may include single-celled organisms or individual cells of organisms
- An organism's response to maintain homeostasis may include responses such as gravitropism and phototropism in plants and shivering or sweating in animals
- Items may address both voluntary and involuntary responses.
- Items will NOT address the mechanisms of specific organ systems
- Items will NOT require students to distinguish between innate and learned behaviors

Dig into Benchmark Data

Materials You Need: Benchmark report, Benchmark Analysis Handout, [Achievement Level Descriptor Maps](#), [MCA test specifications](#), [Released Items and Passage Sets](#)

Directions: (20 minutes)

1. Preview the questions on your handout
2. Individually reflect on questions with your benchmark report
3. In pairs or with table group, discuss your responses to the questions
4. Prepare to share out 1-2 takeaways from your reflections with the whole group

Then: If you finish early, take a look at more benchmarks that you would like to dig deeper on. Compare them to the Achievement Level Descriptors for that benchmark

Performance Symbol Calculations Explained

Benchmark Report Calculations: 3 Steps

Benchmark performance indicators for a school (or district) report are determined by the following:

1. The average performance for students within the school (or district) on test questions aligned to each benchmark is calculated
2. A “Meets Range” is calculated based on the performance *expected* of students on each benchmark. This is based on students who perform at the “Meets” achievement level cut score.
3. The value from step 1 is compared to the “Meets Range” values to determine if student performance at the school is less than, similar to, or greater than the “Meets” achievement level expectation.

1. Student performance calculation

School or district benchmark performance is measured by finding the observed average probability correct (p value) for all students in organization across all items measuring a particular benchmark.

https://education.mn.gov/mdeprod/idcplg?IdcService=GET_FILE&dDocName=MDE087482&RevisionSelectionMethod=latestReleased&Rendition=primary

1. Student Performance Calculation

The calculation uses the same psychometric process as calculating student scores.

- The “observed” performance is how the students did on the actual test questions that were administered for a particular benchmark.

Example: 4 students in School A each answered 2 questions aligned to the same benchmark.

A total of 8 attempts. Six of the attempts were correct. **Observed p-value = $6/8 = 0.75$**

School A	Item 1 Score	Item 2 Score	Item 3 Score
Student 1	1		1
Student 2	0	1	
Student 3		1	1
Student 4		1	0

How are the performance symbols calculated?

- The actual test questions administered to students may be limited in terms of the number of questions assessed at the benchmark level.
- Therefore, the actual student performance at a school or district level needs to be compared to an “expected” performance level
- The “expected” performance is based on the actual test questions that were administered for a particular benchmark.
- A range, called the expected “Meets” range, is calculated based on how students performing at the “Meets” achievement level would be expected to perform on the same questions that were administered to the school or district.

The [Benchmark Report Calculations Resource](#) has further details on the calculation.

2. Meets Range Calculation

- In these reports, “proficient” means at the “meets standards” or “exceeds standards” achievement level.
- The theta cut score at the “Meets” achievement level is therefore used to calculate the expected performance ranges.
- The “meets range” used to compare to the observed performance of a school is calculated by the following:
- The theta cut score at the “meets” level is transformed to the scale score
 - (e.g. the theta score cut at the “Meets” achievement level for MCA Math G3 is -0.52 and the scale cut score at the “Meets” achievement level for MCA Math G3 is 350).

2. Meets Range Calculation

- The expected “Meets” range, is based on how students performing at the “Meets” cut score would be expected to perform on the same questions that were administered to the students at the particular school/district
- The range has an upper and lower expected based on the questions the students were administered within that benchmark
- Example: Observed $6/8 = 0.75$ lower 0.471 upper 0.596

If Observed p-value < lower expected < upper expected, then Less than the "Meets" achievement level

If lower expected ≤ Observed p-value ≤ upper expected, then Similar to the "Meets" achievement level

If lower expected < upper expected < Observed p-value, then Greater than the "Meets" achievement level

Calculation interpretation examples

- The performance symbols are determined by calculating the average student performance on each benchmark at your school, and then comparing it to the performance *expected* of students who score at the “Meets” achievement level.



School performance on this benchmark is similar to the “Meets” achievement level.

- A blue “similar to meets” symbol indicates the average student performance at your school on this benchmark is within the range of where a student testing at the “meets” level is expected to perform.
- A red “below meets” symbol indicates that average student performance on this benchmark at your school is *less than* the expected range for a student who scores at the “meets” level.



School performance on this benchmark is less than the “Meets” achievement level.

Calculation difference from old reports

In other words, the “meets” level is the baseline used to compare student performance and determine these symbols, *not* the school’s unique expected performance.

The “meets” level performance expectation is therefore the *same* for every school and district across the state, it does not change based on the school or district’s average student performance.

Additional Resources

If you would like to receive updates about information relevant to teachers, please use the following QR code to enter your information.

You can also send an email request to kendra.olsen@state.mn.us



Want to help write questions for the MCA?

We need educators to review and approve new items for the MCA at all grades.

Benefits:

1. You will see questions that will appear on upcoming MCAs.
2. You will be paid (if non-teaching day).
3. Opportunity to improve test for students
4. Meals and travel accommodations provided



<http://www.education.state.mn.us/MDE/EdExc/Testing/RegAdvPanel/index.html> (or scan the QR code)

Visit the link above to submit your email to the Educator MCA Review database

Questions and feedback

Please take the remaining time to explore the website, and ask any questions.

Testing123.education.mn.gov

Thank you!

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