MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

# Spring 2015 MCAS Multiple-Choice Results Interpretive Guide

June 2015

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Each year, the Department of Elementary and Secondary Education provides school and district personnel with an early look at full English Language Arts (ELA) results, multiple-choice results for the MCAS Mathematics tests, and multiple-choice results for grades 5 and 8 Science and Technology/Engineering (STE) tests. The purpose of providing these preliminary results is to give instructional staff immediate feedback on student, school, and district performance for educational and curriculum planning and review purposes before the end of the school year and over the summer months.

## What Data Are Available?

On June 30, student rosters and a student-level .csv data file were posted to school and district dropboxes in DropBox Central in the Department's Security Portal at gateway.edu.state.ma.us. The records in the data file contain full preliminary ELA results, grades 3−8 and 10 multiple-choice results in Mathematics, and grades 5 and 8 multiple-choice results in STE.

The .csv data file contains the student name, SASID, date of birth, and Mathematics and STE multiple-choice results and raw scores for each student. The file can be loaded into virtually any data analysis software package, including Excel, for analysis by users capable of manipulating data files. The *MCAS 2015 File Layout*, posted in school and district dropboxes, contains a description of all variables in the data file.

The week of July 6, twelve different reports are scheduled to be available through Edwin Analytics. These can be used to conduct curriculum and item analyses at the district, school, and student level. Item analysis reports provide the percent correct on individual items and groups of items, within content area standards, at the school, district, and state levels. Reports for curriculum framework standards analysis at the school and district levels will also be available.

The 2015 released item documents are posted on the Department's website at www.doe.mass.edu/mcas/testitems.html. As in previous years, approximately half of the test items administered in grades 3–8 have been released, while all high school test items have been released.

*Released items can be used, in conjunction with this guide, to identify trends in how students responded to individual questions and to questions in content area strands and topics. Released items can also be used to identify high-percentage distracter questions.*

## How Should These Results be Used? What is Not Allowed?

**All data released prior to the official release of school and district results in mid-September are embargoed, which means the data cannot be released to the public or discussed in public meetings.** These data are subject to change based on discrepancies identified by schools, districts, and Department staff. In addition, some data will change based on the June SIMS submission your district is providing to the Department in July. The data file does not include students who were not tested. Students not tested will be added based on the June SIMS.

Preliminary MCAS data, including the Mathematics and STE multiple-choice results, can and should be used for educational planning purposes. Whenever preliminary results are printed for planning purposes, they should be clearly dated and labeled "preliminary," with the understanding that some results may change with the official release in September.

*Results should be shared with instructional leaders, curriculum specialists, and teachers as they plan for summer programs to reflect on the past year's efforts and to prepare for September and the incoming cohort of students.*

**Using the File**

Please keep in mind the following when using the data file:

- These are preliminary data and are subject to change; users should *not* draw any firm conclusions about student performance in Mathematics and STE since only multiple-choice results are included.
- Reports can be sorted by different fields to present different views of the data.
    - Sorting by ***district score*** arranges items from most difficult (i.e., lowest percentage of correct answers) to least difficult (i.e., highest percentage of correct answers). This view helps quickly identify the lowest and highest achievement areas in the district for further analysis and inquiry.
    - Sorting by ***state score*** arranges items from most to least difficult, based on statewide results. This view provides an overall picture of MCAS ***test item difficulty. Item difficulty*** allows you to see how well your students, school, and district performed in comparison to state students and can help prioritize resources for areas of critical need. For example, instructional leaders may want to direct resources according to how well students (or groups of students) performed on the ***least difficult items*** compared to the ***most difficult items***.
    - Sorting by curriculum framework ***standard*** groups items for curriculum framework review.

Users may review the .csv data file posted on June 30, or wait until reports are available in Edwin Analytics. The data file contains one row of test information for each student, listed alphabetically for each grade. The table below shows the score codes for multiple-choice items.

| Question Type | Score Codes | |
|---|---|---|
| Multiple-choice | + | Correct answer (1 point earned) |
| | A, B, C, or D | Incorrect answer on a released question (0 points earned) |
| | – | Incorrect answer on an unreleased question (0 points earned) |
| | * | More than one answer (0 points earned) |

Blank cells indicate that the student did not respond to the question (short-answer and open-response items are also blank for the preliminary release). A blank row indicates that the student did not take the standard MCAS test in that subject (e.g., the student may have participated in the MCAS Alternate Assessment). The total raw score points columns (mrawsc and srawsc) contain the total number of points the student earned on the multiple-choice portion of the test; the multiple-choice raw score is equal to the number of "+" symbols in the row.

## Item Analysis

Reports showing the percentage of students answering each item correctly are provided for school, district, and state analysis in Edwin Analytics. The reports default to all students and provide a filter for eight student subgroups for further analysis. To access the reports, which are scheduled to be available the week of July 6, logon to Edwin Analytics in the Department's Security Portal at gateway.edu.state.ma.us.

## Analysis of Results by Standards

Edwin Analytics report CU306, **MCAS District Results by Standards**, within the district tab, allows users to identify areas of strength and weakness by question type and by content area strand/topic or domain/cluster at the district level. (Note that CU406, School Results by Standards, provides similar data at the school level.) The report provides the percent correct data for district and state students and calculates the difference in the *District/State Diff* column.

The sample report on the next page shows that the district's grade 8 STE students performed as well overall as state students (62% correct); however, in the *Life Sciences* strand, on average, 54% of district students provided the correct answer, compared to 60% of state students. Gaps at the topic level within the *Life Sciences* strand, such as the 13% gap in *Evolution and Biodiversity,* or the 21% gap in *Reproduction and Heredity,* suggest a need for further analysis and inquiry to identify potential cause(s). *Please note that the number of questions associated with a topic will determine the degree of impact a topic area has on overall results.*

*Focusing on performance gaps associated with less-difficult groups of questions can help reveal whether knowledge most students are expected to possess has been demonstrated; focusing on more difficult groups of questions can help reveal to what extent students have mastered or not yet mastered more challenging parts of the curriculum.*

In using this report to guide such inquiry, school and district staff should review student performance on easier items (those with higher percent correct) as well as on more difficult items (those with lower percent correct), and then note the size of the gap in the *District/State Diff* column to prioritize efforts and next steps. *(Please note that this sample report includes constructed-response results that will not be available for 2015 until the release of full preliminary results in August.)*

| | Possible Points | District % Correct | State % Correct | District/State Diff |
|---|---|---|---|---|
| **Science and Technology/Engineering** | | | | |
| All items | 54 | 62% | 62% | 0 |
| **Question Type** | | | | |
| Multiple Choice | 38 | 72% | 70% | 2 |
| Open Response | 16 | 41% | 44% | -3 |
| **Strand / Topic** | | | | |
| **Earth and Space Science (preK-8)** | **13** | **65%** | **61%** | **4** |
| Earth's History | 3 | 76% | 70% | 6 |
| Earth's Structure | 1 | 55% | 53% | 2 |
| Heat Transfer in the Earth System | 2 | 76% | 76% | 0 |
| Mapping the Earth | 4 | 40% | 38% | 2 |
| The Earth in the Solar System | 3 | 82% | 75% | 7 |
| **Life Science (preK-8)** | **13** | **54%** | **60%** | **-6** |
| Changes in Ecosystems Over Time | 1 | 40% | 47% | -7 |
| Classification of Organisms | 1 | 87% | 76% | 11 |
| Energy and Living Things | 2 | 68% | 68% | -1 |
| Evolution and Biodiversity | 2 | 54% | 66% | -13 |
| Living Things and Their Environment | 1 | 81% | 73% | 8 |
| Reproduction and Heredity | 4 | 22% | 43% | -21 |
| Structure and Function of Cells | 1 | 83% | 73% | 10 |
| Systems in Living Things | 1 | 79% | 67% | 12 |
| **Physical Sciences (preK-8)** | **14** | **60%** | **60%** | **1** |
| Elements, Compounds, and Mixtures | 8 | 58% | 60% | -1 |
| Forms of Energy | 1 | 77% | 66% | 11 |
| Heat Energy | 2 | 60% | 55% | 6 |
| Properties of Matter | 3 | 60% | 62% | -2 |
| **Technology/Engineering (preK-8)** | **14** | **70%** | **66%** | **4** |
| Communication Technologies | 2 | 84% | 79% | 5 |
| Construction Technologies | 1 | 50% | 52% | -2 |
| Engineering Design | 4 | 82% | 77% | 5 |
| Manufacturing Technologies | 1 | 92% | 86% | 6 |
| Materials, Tools, and Machines | 1 | 65% | 64% | 1 |
| Transportation Technologies | 5 | 56% | 52% | 4 |

**Sample District Results by Standards Report (Grade 8 STE)**

CU306 MCAS District Results by Standards

## Test Item Analysis Summary

School and district staff who want to review individual items to identify and/or confirm trends observed at the school level (and that may have been observed at the district level), or who want to review questions associated with released items, should use Edwin Analytics report IT401, **MCAS School Test Item Analysis Summary**. (Note that IT301, District Test Item Analysis Summary, provides similar data at the district level.) Columns list the item number; item type; tested standard; average item score (percent correct) for school, district, and state; and the difference between school/state percent correct. For each released item, the report also includes the percentage of responses for each answer choice. On the far left is a hyperlink to the released item (if applicable).

The Sample School Test Item Analysis Summary Report on the following page allows users to drill down to the individual item and content standard to check for high and low performance across domains and within the same domain/cluster combination. The report below, sorted by standard, shows that in the *"Solve real-world and mathematical problems involving area, surface area, and volume"* topic, students at the school scored higher than the state average on items 8 and 14, which assessed standard 6.G.A.3, and lower than the state average on items 5 and 28, which assessed standard 6.G.A.4. While the sample school's performance on this particular strand/topic combination was only two percentage points lower than the state (as seen on report CU406, School Results by Standards), the difference in performance on the individual standards in this report can be used to initiate further inquiry, for example, into the alignment between assessed standards, school and/or district curriculum, local assessment data, and the scope and/or sequence of instruction.

Instructional leaders will also note that the lowest scoring item (#5) was released, which facilitates further inquiry into the correct and the incorrect distracter answers selected by students. When high percentages of students select the same incorrect answer, further inquiry can help reveal whether students may have misread the question, misunderstood particular concepts, and/or applied concepts incorrectly. While only 36% of students selected the correct response ("C") to item 5, almost one-third (30%) selected incorrect answer "B." Assessment coordinators and others focused on improving student achievement may want to look for patterns in incorrect answers on released items and conduct an inquiry into causes.

*(Please note that this sample report includes constructed-response results that will not be available for 2015 until the release of full preliminary results in August.)*

## Sample School Test Item Analysis Summary Report (Grade 6 Mathematics)


**All Students (83)** **Standards:** MA 2011 Standards

| Item No. | Item Type | Standard | Average Item Score | | | | Percentage of Student Responses | | | | | Correct MC Answer | Strand | Topic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | School | District | State | Diff. | Blank/0 | A/1 | B/2 | C/3 | D/4 | | | |
| 1 | MC | 6.EE.A.1 | 69% | 48% | 49% | 20 | 0 | 7 | 6 | 18 | 69 | D | Expressions and Equations | Apply and extend previous understa expressions. |
| 30 | MC | 6.EE.A.1 | 95% | 90% | 92% | 3 | | | | | | | Expressions and Equations | Apply and extend previous understa expressions. |
| 33 | MC | 6.EE.A.1 | 82% | 70% | 72% | 10 | | | | | | | Expressions and Equations | Apply and extend previous understa expressions. |
| 3 | MC | 6.EE.A.2 | 71% | 62% | 74% | -3 | 0 | 5 | 19 | 5 | 71 | D | Expressions and Equations | Apply and extend previous understa expressions. |
| 19 | MC | 6.EE.A.2 | 87% | 79% | 89% | -2 | 0 | 5 | 87 | 6 | 2 | B | Expressions and Equations | Apply and extend previous understa expressions. |
| 23 | MC | 6.EE.A.2 | 64% | 60% | 76% | -12 | | | | | | | Expressions and Equations | Apply and extend previous understa expressions. |
| 39 | MC | 6.EE.B.6 | 63% | 63% | 70% | -7 | | | | | | | Expressions and Equations | Reason about and solve one-variabl |
| 25 | SA | 6.EE.B.7 | 0.73 | 0.6 | 0.73 | 0.00 | 27 | 73 | | | | | Expressions and Equations | Reason about and solve one-variabl |
| 34 | MC | 6.EE.B.7 | 71% | 71% | 78% | -7 | | | | | | | Expressions and Equations | Reason about and solve one-variabl |
| 16 | MC | 6.EE.C.9 | 87% | 84% | 91% | -4 | 0 | 1 | 10 | 87 | 2 | C | Expressions and Equations | Represent and analyze quantitative independent variables. |
| 18 | OR | 6.EE.C.9 | 3.41 | 2.88 | 3.14 | 0.27 | 0 | 7 | 2 | 33 | 58 | | Expressions and Equations | Represent and analyze quantitative independent variables. |
| 31 | MC | 6.EE.C.9 | 90% | 85% | 89% | 1 | | | | | | | Expressions and Equations | Represent and analyze quantitative independent variables. |
| 41 | MC | 6.EE.C.9 | 48% | 51% | 62% | -14 | | | | | | | Expressions and Equations | Represent and analyze quantitative independent variables. |
| 10 | MC | 6.G.A.1 | 49% | 40% | 54% | -5 | 0 | 18 | 19 | 49 | 13 | C | Geometry | Solve real-world and mathematical p and volume. |
| 17 | SA | 6.G.A.1 | 0.43 | 0.22 | 0.34 | 0.09 | 57 | 43 | | | | | Geometry | Solve real-world and mathematical p and volume. |
| 26 | OR | 6.G.A.1 | 2.61 | 2.44 | 2.81 | -0.20 | 6 | 13 | 2 | 70 | 8 | | Geometry | Solve real-world and mathematical p and volume. |
| 37 | SA | 6.G.A.2 | 0.45 | 0.35 | 0.4 | 0.05 | 55 | 45 | | | | | Geometry | Solve real-world and mathematical p and volume. |
| 8 | MC | 6.G.A.3 | 72% | 62% | 69% | 3 | 1 | 72 | 12 | 4 | 11 | A | Geometry | Solve real-world and mathematical p and volume. |
| 14 | MC | 6.G.A.3 | 63% | 48% | 55% | 8 | 0 | 5 | 17 | 16 | 63 | D | Geometry | Solve real-world and mathematical p and volume. |
| 5 | MC | 6.G.A.4 | 36% | 40% | 58% | -22 | 0 | 13 | 30 | 36 | 20 | C | Geometry | Solve real-world and mathematical p and volume. |
| 28 | MC | 6.G.A.4 | 86% | 86% | 88% | -2 | | | | | | | Geometry | Solve real-world and mathematical p and volume. |

IT401 MCAS School Test Item Analysis Summary

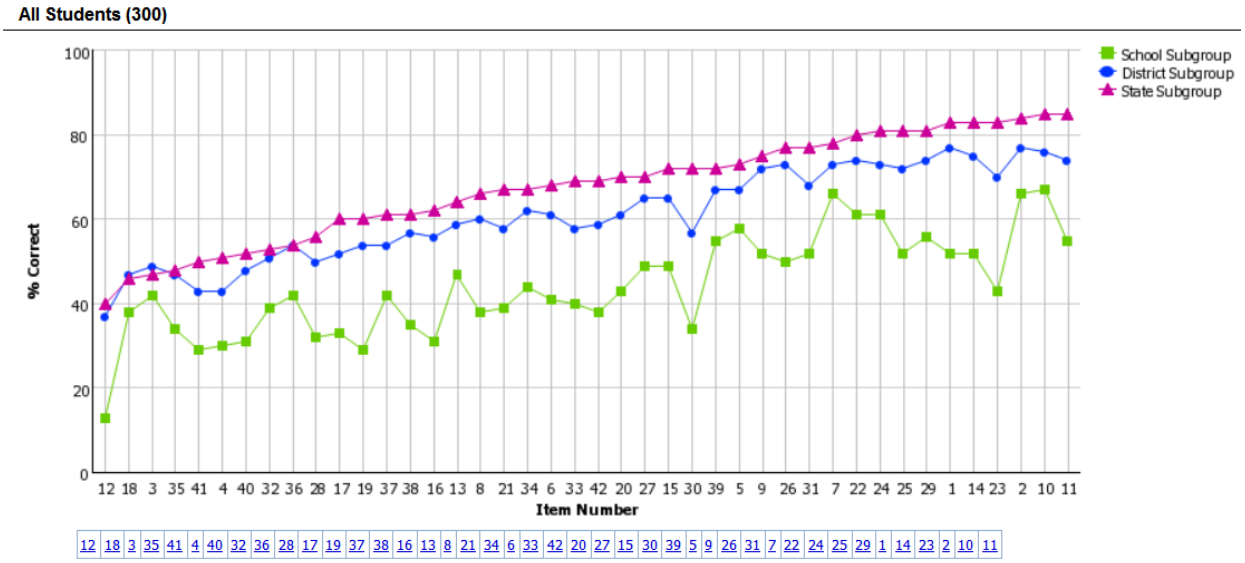
## Test Item Analysis Graph

The **School Test Item Analysis Graph** (IT402) is another useful tool for item analysis. When sorted by state score (i.e., item difficulty), the graph shows how well students at the school and district performed across the difficulty spectrum from most- to least-difficult items. (Note that IT302, District Item Analysis Graph, provides similar data at the district level.)

The graph below depicts a school in a district with multiple schools at the tested grade. The line of connected points for the school, when compared to the district's line, can help guide an inquiry into the potential cause(s) of performance gaps. For example, parts of the graph in which the school's line approximates that of the district, such as items on the far left (35, 41, 4, 40, 32, and 36), indicate potential district-wide weaknesses in curriculum, instruction, or other curriculum-related supports ***on the most difficult items***. On the other hand, parts of the graph on the far right, where the school and district lines diverge (items 9, 26, 31, 22, 25 and 1), indicate weaknesses ***on the least difficult items*** that are unique to the school. In both cases, curriculum specialists are encouraged to have discussions with teachers and instructional leaders at the appropriate level (school and/or district) to conduct further inquiry.

*Lines connecting data points on the graph can help reveal areas in which groups of items at the school or district level departed significantly from the state line, and whether low- or high-performing items were localized at the individual school level or district level.*

**Sample School Test Item Analysis Graph Report (Grade 7 Mathematics)**




IT402 MCAS Test Item Analysis Graph

## Comparing Student Groups to the State Average

The two tables that follow show the percentage of students at the state level who answered each multiple-choice item correctly. Schools and districts may wish to use this information to compare

the percentage of their students (or students in one or more subgroups) answering an item correctly with the percentage of students statewide. Experienced Excel users will be able to calculate school percent-correct values using the "countif" function. Please note that on June 30, comparative data in the tables below will be available in Edwin Analytics.

**Spring 2015 MCAS Mathematics Tests: Percentage of Students Statewide Who Answered Multiple-Choice Items Correctly, by Grade Level**

| Item number | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 | Grade 10 |
|---|---|---|---|---|---|---|---|
| Item1 | 82% | 60% | 92% | 77% | 67% | 72% | 89% |
| Item2 | 85% | 65% | 78% | 69% | 42% | 64% | 73% |
| Item3 | | | 57% | 46% | 75% | 67% | 61% |
| Item4 | 72% | | 79% | 94% | 75% | 54% | 84% |
| Item5 | 77% | 48% | 64% | | | 49% | 79% |
| Item6 | 81% | 54% | 67% | | 54% | 0% | 78% |
| Item7 | 80% | 57% | | 73% | 71% | 77% | 78% |
| Item8 | 86% | 93% | | 69% | 57% | 89% | 59% |
| Item9 | 74% | 85% | | 89% | | 85% | 74% |
| Item10 | 79% | | 76% | 91% | | | 71% |
| Item11 | | 63% | 33% | 70% | 73% | 75% | 92% |
| Item12 | | 69% | | 58% | 88% | 86% | 79% |
| Item13 | | 75% | 80% | 73% | 48% | 64% | 65% |
| Item14 | 80% | 62% | 81% | 63% | 68% | 41% | 65% |
| Item15 | | 37% | 79% | | 89% | 73% | |
| Item16 | 33% | 92% | 81% | | 44% | 69% | |
| Item17 | 78% | | 62% | | 58% | 0% | |
| Item18 | 78% | 58% | 64% | 59% | 44% | 0% | |
| Item19 | 86% | 63% | | 82% | 60% | 63% | |
| Item20 | 77% | 83% | 75% | 58% | | 52% | |
| Item21 | 77% | | 75% | 81% | | | |
| Item22 | | 95% | 94% | 90% | 91% | 86% | 87% |
| Item23 | | 97% | 82% | 85% | 66% | 87% | 80% |
| Item24 | 72% | 65% | | 77% | 77% | 70% | 95% |
| Item25 | 84% | 77% | 80% | 49% | 78% | 72% | 85% |
| Item26 | | 53% | 75% | | 78% | 57% | 75% |
| Item27 | 70% | 72% | 87% | | | 77% | 75% |
| Item28 | 81% | | 58% | 33% | 54% | 0% | 78% |
| Item29 | 74% | | 46% | 48% | 50% | 0% | 41% |
| Item30 | | 51% | 88% | 75% | 56% | 69% | 74% |
| Item31 | 88% | 78% | 94% | 86% | | | 76% |
| Item32 | 56% | 77% | 90% | 80% | 69% | 86% | 75% |
| Item33 | 90% | 93% | 52% | 88% | 74% | 70% | 69% |
| Item34 | 89% | 89% | 67% | | | 82% | 55% |
| Item35 | 83% | 72% | | 94% | 86% | 40% | 75% |
| Item36 | | 67% | | 74% | 61% | 67% | |

| Item number | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 | Grade 10 |
|---|---|---|---|---|---|---|---|
| Item37 | | | | 78% | | 47% | 78% |
| Item38 | | | 76% | 30% | 58% | 0% | 75% |
| Item39 | | | 89% | | 52% | 56% | 60% |
| Item40 | | 70% | 83% | 70% | 71% | 77% | 75% |
| Item41 | | 69% | 64% | 75% | 45% | 50% | |
| Item42 | | 85% | | | | | |
| **Number of students tested** | **23,710** | **23,523** | **24,502** | **23,650** | **24,393** | **24,232** | **68,385** |

**Spring 2015 MCAS Science and Technology/Engineering Tests: Percentage of Students Statewide Who Answered Multiple-Choice Items Correctly, by Grade Level**

| Item number | Grade 5 | Grade 8 |
|---|---|---|
| Item1 | 73% | 71% |
| Item2 | 92% | 91% |
| Item3 | 84% | 87% |
| Item4 | 86% | 83% |
| Item5 | 69% | 75% |
| Item6 | 72% | 53% |
| Item7 | | 63% |
| Item8 | | 59% |
| Item9 | 73% | 74% |
| Item10 | 89% | 90% |
| Item11 | 88% | 66% |
| Item12 | 68% | 42% |
| Item13 | 56% | 74% |
| Item14 | 85% | 65% |
| Item15 | 91% | 91% |
| Item16 | 77% | 55% |
| Item17 | 74% | 66% |
| Item18 | 73% | 38% |
| Item19 | 85% | 67% |
| Item20 | 78% | 68% |
| Item21 | 69% | |
| Item22 | 86% | |
| Item23 | 86% | 79% |
| Item24 | 70% | 40% |
| Item25 | 65% | 61% |
| Item26 | 78% | 52% |
| Item27 | 79% | 76% |
| Item28 | 85% | 68% |
| Item29 | 72% | 66% |
| Item30 | 85% | 80% |

| Item number | Grade 5 | Grade 8 |
|---|---|---|
| Item31 | 69% | 87% |
| Item32 | 83% | 61% |
| Item33 | 87% | |
| Item34 | 66% | |
| Item35 | 79% | 80% |
| Item36 | 63% | 38% |
| Item37 | 59% | 71% |
| Item38 | 74% | 91% |
| Item39 | 82% | 83% |
| Item40 | 57% | 52% |
| Item41 | | 65% |
| Item42 | | 80% |
| **Number of students tested** | **24,536** | **24,215** |

When comparing the performance of groups or subgroups of students to statewide students, you may also want to review item-level past performance data. Item-level data for previous MCAS administrations can be accessed by visiting the School and District Profiles on the Department's website. Select your school or district, click the Assessment tab, and click the link to Item by Item Results (for each Grade/Subject).

**Estimating Student Performance on the Entire Test Using Multiple-Choice Results**

The multiple-choice test items represent 65 percent of the total points available on the grade 3 Mathematics test, 59 percent on the grades 4–8 Mathematics tests, 53 percent on the grade 10 Mathematics test, and 70 percent on the grades 5 and 8 STE tests. Performance on the multiple-choice portion is strongly correlated with performance on the constructed-response portion (short-answer and/or open-response items); however, there are exceptions, including students who do not respond to constructed-response questions and students who perform their best on questions where they are expected to show their work.

The tables on the following pages can help schools and districts interpret the multiple-choice results of each student. When using the tables, be careful to consider the information in its full context. For example, the following language could be used: "Jane's multiple-choice performance on the grade 5 math test was similar to the performance of students in the upper level of the *Proficient* category whose scaled scores range from 250 to 258"; or "the multiple-choice scores of half of our grade 5 students in 2015 were similar to those of students in the state who are *Proficient* or higher." By framing the information with words like "similar" and specifying that only multiple-choice results are being evaluated, users can avoid over-interpreting the results. Precise threshold scores for each achievement level will be established in August when the constructed-response results are available.

Individual results will vary depending on the results from the short-answer and open-response sections of the tests. In all but the most extreme cases, a student's final achievement

*The following tables should be used only to approximate student achievement levels.*

level will be in the corresponding category listed below or in one of the adjacent categories. Students at the upper or lower end of the raw score range are more likely to fall into an adjacent category than those in the middle of the range.

**Spring 2015 MCAS Mathematics Tests: Multiple-Choice Score and Likely Achievement Level**

| Total Score on Multiple-Choice Items | Likely Achievement Level, Based on Multiple-Choice Items |
|---|---|
| **Grade 3** | |
| 0–12 | *Warning* (200–218) |
| 13–17 | *Needs Improvement* (220–238) |
| 18–22 | *Proficient* (240–258) |
| 23–26 | *Advanced* (260–280) |
| **Grade 4** | |
| 0–6 | Low *Warning* (200–208) |
| 7–14 | High *Warning* (210–218) |
| 15–18 | Low *Needs Improvement* (220–228) |
| 19–23 | High *Needs Improvement* (230–238) |
| 24–25 | Low *Proficient* (240–248) |
| 26-27 | High *Proficient* (250–258) |
| 28–30 | Low *Advanced* (260–268) |
| 31–32 | High *Advanced* (270–280) |
| **Grade 5** | |
| 0–7 | Low *Warning* (200–208) |
| 8–14 | High *Warning* (210–218) |
| 15–18 | Low *Needs Improvement* (220–228) |
| 19–21 | High *Needs Improvement* (230–238) |
| 22–24 | Low *Proficient* (240–248) |
| 25–27 | High *Proficient* (250–258) |
| 28–30 | Low *Advanced* (260–268) |
| 31–32 | High *Advanced* (270–280) |
| **Grade 6** | |
| 0–7 | Low *Warning* (200–208) |
| 8–14 | High *Warning* (210–218) |
| 15–18 | Low *Needs Improvement* (220–228) |
| 19–20 | High *Needs Improvement* (230–238) |
| 21–24 | Low *Proficient* (240–248) |
| 25–26 | High *Proficient* (250–258) |
| 27–30 | Low *Advanced* (260–268) |
| 31–32 | High *Advanced* (270–280) |
| **Grade 7** | |
| 0–6 | Low *Warning* (200–208) |
| 7–13 | High *Warning* (210–218) |
| 14–17 | Low *Needs Improvement* (220–228) |
| 18–20 | High *Needs Improvement* (230–238) |

| Total Score on Multiple-Choice Items | Likely Achievement Level, Based on Multiple-Choice Items |
|---|---|
| 21–23 | Low *Proficient* (240–248) |
| 24–27 | High *Proficient* (250–258) |
| 28–30 | Low *Advanced* (260–268) |
| 31–32 | High *Advanced* (270–280) |
| **Grade 8** | |
| 0–7 | Low *Warning* (200–208) |
| 8–14 | High *Warning* (210–218) |
| 15–17 | Low *Needs Improvement* (220–228) |
| 18–20 | High *Needs Improvement* (230–238) |
| 21–23 | Low *Proficient* (240–248) |
| 24–26 | High *Proficient* (250–258) |
| 27–29 | Low *Advanced* (260–268) |
| 30–32 | High *Advanced* (270–280) |
| **Grade 10** | |
| 0–5 | Low *Failing* (200–208) |
| 6–12 | High *Failing* (210–218) |
| 13–15 | Low *Needs Improvement* (220–228) |
| 16–17 | High *Needs Improvement* (230–238) |
| 18–21 | Low *Proficient* (240–248) |
| 22–24 | High *Proficient* (250–258) |
| 25–30 | Low *Advanced* (260–268) |
| 31–32 | High *Advanced* (270–280) |

**Spring 2015 MCAS Science and Technology/Engineering Tests: Multiple-Choice Score and Likely Achievement Level**

| Total Score on Multiple-Choice Items | Likely Achievement Level, Based on Multiple-Choice Items |
|---|---|
| **Grade 5** | |
| 0–9 | Low *Warning* (200–208) |
| 10–18 | High *Warning* (210–218) |
| 19–24 | Low *Needs Improvement* (220–228) |
| 25–28 | High *Needs Improvement* (230–238) |
| 29–31 | Low *Proficient* (240–248) |
| 32–33 | High *Proficient* (250–258) |
| 34–36 | Low *Advanced* (260–268) |
| 37–38 | High *Advanced* (270–280) |
| **Grade 8** | |
| 0–8 | Low *Warning* (200–208) |
| 9–17 | High *Warning* (210–218) |
| 18–23 | Low *Needs Improvement* (220–228) |
| 24–27 | High *Needs Improvement* (230–238) |
| 28–32 | Low *Proficient* (240–248) |
| 33–35 | High *Proficient* (250–258) |
| 36 | Low *Advanced* (260–268) |
| 37–38 | High *Advanced* (270–280) |