



Assessment Details for Grade 4 Mathematics

Purpose of the Mathematics MCA-III

The purpose of Minnesota assessments is to measure Minnesota students' achievement toward the Minnesota Academic Standards. The Mathematics MCA-III are aligned with the 2007 *Minnesota K–12 Academic Standards in Mathematics*.

Purpose of the Test Specifications

The primary purpose of the test specifications is to help test developers build a test that is consistent over time. The [Mathematics Test Specifications for MCA-III, Grades 3–8 and 11](#) is also meant to serve as a source of information about the test design for teachers and the general public. Classroom teachers convened to help develop the Mathematics MCA-III Test Specifications.

Test specifications indicate which strands, standards and benchmarks will be assessed on the test and in what proportions. They provide the types of items to be included, number of items and distribution of cognitive levels. Test specifications also clarify, define and/or limit what can be assessed in an item. Specific *Item Specifications* are written for each benchmark in the *Test Specifications* document.

It is important to remember that these guidelines do not indicate *how* or *what* benchmarks should be taught. Grade 4 Mathematics teachers are expected to instruct and assess students on *all* academic standards outlined in the 2007 [Minnesota K–12 Academic Standards in Mathematics](#). Additionally, some concepts can only be assessed in the classroom and not on a standardized statewide assessment.

Important Testing Dates (2019-2020)

Online testing and data entry:
March 2–May 1

Estimated Test Administration Times for Math MCA (2019-2020)

Grade and Test	Typical Range*
4 Mathematics MCA	1–2.5 hours

* The Typical Range provides the length of time approximately 70% of students finished in 2019. This MDE estimated range for scheduling should be adjusted as needed based on each district's experience.

Test Design by Grade Level

The table below indicates the number of operational (OP) items appearing on an online adaptive form of the Mathematics MCA-III for grade 4, as well as the range of items within a test form aligned to each strand for grade 4. The second table gives the same information for the paper accommodated Mathematics MCA-III.

Range of OP Items per Strand for Online Adaptive Mathematics MCA-III Grade 4

Grade	Number of OP Items	Number & Operation	Algebra	Geometry & Measurement	Data Analysis
4	42	16–20	7–8	10–14	6–7

Range of OP Items per Strand for Paper Accommodated Mathematics MCA-III Grade 4

Grade	Number of OP Items	Number & Operation	Algebra	Geometry & Measurement	Data Analysis
4	50	18–22	8–10	12–15	6–8

Item Types

A variety of item (question) types will be used on the Mathematics MCA-III, including multiple-choice (MC) items and technology-enhanced (TE) items. Technology-enhanced items may consist of the following types of responses: fill in the blank, graphing, drag-and-drop and hot-spot. For more specific information about the various, item types please go to the [Item Types Tutorial](#) and [Teacher Guide](#) pages on Pearson AccessNext.

The first table indicates the type and number of items for the online adaptive Mathematics MCA. The second table indicates the type and number of items for the paper accommodated Mathematics MCA.

Type and Number of OP Items for Online Adaptive Mathematics MCA-III Grade 4

Grade	MC Items (1 point)	Technology-Enhanced Items (1 point)	Total Items/Points
4	32–40	2–10	42

Type and Number of OP Items for Paper Accommodated Mathematics MCA-III Grade 4

Grade	MC Items (1 point)	Fill-In Items (1 point)	Total Items/Points
4	50	NA	50

Cognitive Complexity

Cognitive complexity refers to the cognitive demand associated with a test item. Levels of cognitive complexity for MCA-III are based on Norman L. Webb’s Depth of Knowledge levels: Level 1 (recall), Level 2 (skill/concept), and Level 3 (strategic thinking). For more information about the Depth of Knowledge levels, visit [Testing 1, 2, 3](#).

Minimum Item Count Targets by DOK level

Grades	Level 1	Level 2	Level 3
3–8, 11	20%	30%	5%

Item Counts by Standard

The tables show the minimum and maximum numbers of operational items by standard for the online adaptive Mathematics MCA-III grade 4 and the paper accommodated Mathematics MCA-III grade 4.

Online Adaptive MCA-III Grade 4 Minimum and Maximum Item Counts by Standard

Strand	Range of Items per Strand	Standard	Number of Benchmarks per Standard	Range of Items per Standard
1 – Number & Operation	16–20	4.1.1	6	6–8
		4.1.2	7	10–12
2 – Algebra	7–8	4.2.1	1	3–4
		4.2.2	2	3–4
3 – Geometry & Measurement	10–14	4.3.1	2	3–4
		4.3.2	4	4–6
		4.3.3	4	3–4
4 – Data Analysis	6–7	4.4.1	1	6–7

Paper Accommodated MCA-III Grade 4 Minimum and Maximum Item Counts by Standard

Strand	Range of Items per Strand	Standard	Number of Benchmarks per Standard	Range of Items per Standard
1 – Number & Operation	18–22	4.1.1	6	8–10
		4.1.2	7	10–12
2 – Algebra	8–10	4.2.1	1	4–5
		4.2.2	2	4–5
3 – Geometry & Measurement	12–15	4.3.1	2	4–5
		4.3.2	4	5–7
		4.3.3	4	3–4
4 – Data Analysis	6–8	4.4.1	1	6–8