

Fall 2005 MEAP Mathematics Assessment Design Grades 3 -8

Introduction

The State Board of Education approved the blueprint of the Michigan Curriculum Framework (MCF) in 1995 for multiple content areas, including mathematics. The mathematics portion of the MCF was partitioned into strands and standards within grade level clusters: K-4, 5-8, and high school. Each grade level cluster corresponded to a MEAP assessment administered in the winter of the 4th and 8th grades and spring of the 11th grade.

No Child Left Behind (NCLB) requires that grade level assessments be administered in mathematics in grades three through eight by 2005-06, and that these assessments reflect state content standards.

In November 2003 the State Board of Education approved Grade Level Content Expectations (GLCEs) for both mathematics and English language arts. These GLCEs identify grade specific outcomes that are expected of students in grades K-8. Some of the content in the mathematics GLCEs is new or has been transferred from a higher grade to a lower grade. Because of these changes, "core" material was identified by several ISDs throughout the state and verified by the Assessable Content Committee (a group of veteran Michigan mathematics educators). Core content is the content that is most commonly taught at grade level. Because teachers and students need several years to teach and learn new content, the projected date for "future core" (expectations previously taught at a higher grade level) to become "core" is 2009-10.

Connecting the MCF to the GLCEs

Items developed previously and coded to the MCF were recoded to the new GLCEs during the spring and summer of 2004. The Office of School Improvement developed an Alignment document that connects the previous K-4 and 5-8 grade span benchmarks to the new GLCEs (see <http://www.michigan.gov/mde/0,1607,7-140--87065--,00.html>). The primary purpose of the GLCEs is assessment, not curriculum; the MCF should still be used in K-12 to develop a complete, robust, and coherent curriculum.

Assessable Content

Although the GLCEs are primarily oriented toward assessment, this does not mean that every GLCE is assessable. The Assessable Content Committee met on May 10th and 11th, 2004. The committee reviewed the grades 2-7 GLCEs, the expectations assessed in a fall administration. For example, some GLCEs require the use of manipulatives such as building blocks or paper for folding. One GLCE requires the use of a compass to bisect an angle. Another GLCE is completely dependent on the use of a calculator. These GLCEs should be assessed at the classroom or district level, not at the state level.

The Assessable Content Committee established reasonable parameters for the GLCEs. For example, GLCE *N.ME.02.18* (Number, Fractions, 2nd grade) states:

Recognize, name, and represent commonly used unit fractions with denominators 12 or less.

The phrase “commonly used” likely has different meaning for different readers. Both item writers and teachers need to have unambiguous definitions of terms. In this case the committee determined that denominators 2, 3, 4, 6, and 10 were assessable for students who had completed the second grade.

Types of Items/Student Scores

The majority of the items are based on core expectations. The extended core items also are commonly taught at grade level but are a narrow in scope and/or are supportive to the core. Moreover, all of the grade level assessments except third grade will contain several linking items. Linking items are from the previous grade level and are needed to help measure student growth. For example, the 5th grade assessment forms will be comprised primarily of 4th grade expectations but will also have seven items from the 3rd grade assessment. Each assessment will also contain several embedded field test items that will be used to develop future MEAP assessments.

Future core items and field test items will not count for a student’s score, a school’s score, or a district’s score. Core, extended core, and linking items will count for a student’s score, a school’s score, and a district’s score.

Assessment Structure

The breakdown of the assessment items by type is shown in the table below.

Fall 2005 Mathematics Assessments Grades 3-8

Grade	Core	Extended Core	Future Core	Linking Items	Field Test Items	Total # of Items	Constructed Response items
3	60	2	1	0	8	71	0
4	58	4	1	7	9	79	2
5	57	3	2	7	10	79	2
6	56	2	4	7	9	78	3
7	60	2	2	7	8	79	0
8	54	0	1	13	7	75	1

The assessment administered at each grade level is based on the content expectations from the previous grade level. Each grade level assessment consists of four sections (parts). Each section must be administered in one session without interruption. Multiple sections may be administered in one

day. (The assessments can be administered in any order, so as to accommodate students who miss one or more class sessions during testing.)

The first section of each assessment will be calculator-free. Calculators are permitted on the remaining three parts of the assessment. GLCEs that require fluency, or that involve simple calculations, can only be assessed meaningfully by not permitting calculator use. This can be understood better by a review of the following 29 expectations, which will be assessed in the calculator-free sections at the grades indicated (where *e* = extended core and *f* = future core):

<u>Grade 3</u>	<u>Grade 4</u>	<u>Grade 5</u>	<u>Grade 6</u>	<u>Grade 7</u>
N.FL.02.06 <i>e</i>	N.ME.03.01	N.ME.04.05	N.FL.05.04	N.FL.06.04
N.MR.02.07	N.ME.03.02	N.MR.04.07	N.FL.05.06	N.FL.06.09 <i>f</i>
N.MR.02.08 <i>e</i>	N.FL.03.06	N.ME.04.09 <i>f</i>	N.FL.05.12 <i>f</i>	N.FL.06.10
N.FL.02.10	N.FL.03.07	N.FL.04.11	N.FL.05.13 <i>f</i>	
N.FL.02.11	N.MR.03.09	N.MR.04.19 <i>e</i>	N.FL.05.14 <i>f</i>	
N.FL.04.12	N.FL.03.11	N.MR.04.29		
M.PS.02.02		N.MR.04.37		
M.PS.02.10				

Since there are no calculator-free 7th grade GLCEs, the first section of the 8th grade assessment will be comprised of calculator-free linking items from the 7th grade assessment.

Calculator Policy

Calculators, including graphing calculators, are permitted, though not required, on all but the first part of each MEAP mathematics assessment. Calculators with a QWERTY style keyboard are not permitted. Calculators with Computer Algebraic Systems (e.g., TI-89) are not permitted. Calculators built into cellular phones or other wireless communication devices or that can communicate wirelessly with other calculators are not permitted. Students may not share calculators.

Calculators that can make noise must have the sound feature turned off. Calculators that have paper tape must have the tape removed. Calculators with power cords must have the cord removed.

Overlays and Reference Sheets

Acetate overlay sheets will be provided at each grade level. It is permitted, but not required, that the tools from the acetate sheet be cut out and used individually. Copies of the overlay sheets are available on-line in the MEAP section of the Michigan Department of Education website under "mathematics."

Eighth grade (and high school) students will be provided with a reference sheet. The reference sheet will be a perforated page in the front of the assessment booklet. If a formula or conversion is needed for items in grades

3 – 7, then it will be provided in the stem of the item. The Content advisory committees determined on an item-by-item basis whether or not to include a formula or conversion.

Forms

The mathematics assessment will include 16 forms, to enable MEAP to field-test enough new items to construct the assessments for fall 2006. All items based on core expectations will be the same on each form but linking items, field test items and items based on extended and future core expectations will vary from form to form. Each school will receive only one form of the assessment. Districts with more than one school will receive multiple forms, but no school will have to deal with more than one form.

Differences in the 3rd Grade Assessment

The 3rd grade mathematics MEAP assessment will be comprised of multiple choice items with 3 options, not 4. Moreover, 3rd graders will write their responses in a scannable assessment booklet. All of the other grades will continue to have 4 multiple choice selections and separate answer folders.