COMMON CORE STATE STANDARDS

I | **MATH**

A Crosswalk to the Michigan Grade Level Content Expectations

Introduction

In June, 2010 the Michigan State Board of Education adopted the Common Core State Standards as the state standards for Mathematics and English Language Arts. The complete CCSS standards document can be found at www.michigan.gov/k-12 .

Districts are encouraged to begin this transition to instruction of the new standards as soon as possible to prepare all students for college and career. New assessments based on the Common Core State Standards will be implemented in 2014-2015. More information about Michigan's involvement in the CCSS initiative and development of common assessments can be found at www.michigan.gov/k-12 by clicking the Common Core State Standards Initiative link

The CCSS for Mathematics are divided into two sets of standards: the Standards for Mathematical Practices and the Standards for Mathematical Content. This document is intended to show the alignment of Michigan's current mathematics Grade Level Content Expectations (GLCE) to the Standards for Mathematical Content to assist with the transition to instruction and assessment based on the CCSS.

It is anticipated that this initial work will be supported by clarification documents developed at the local and state level, including documents from national organizations and other groups. This document is intended as a conversation starter for educators within and across grades. While curriculum revisions will be guided by local curriculum experts, ultimately the alignment is implemented at the classroom level. Educators will need to unfold these standards in order to compare them to current classroom practice and identify adjustments to instruction and materials that support the depth of understanding implicit in these new standards.

The crosswalk between the Grade Level Content Expectations and the Standards for Mathematical Content is organized by Michigan Focal Points/CCSS Critical Areas. There is not an attempt to show one-to-one correspondence between expectations and standards because for the most part there is none at this level. The alignment occurs when looking across focal points/critical areas and/or across GLCE topics/CCSS domains.

MICHIGAN Department of
Education

Mathematical Practices

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These standards appear in every grade level and are listed below:
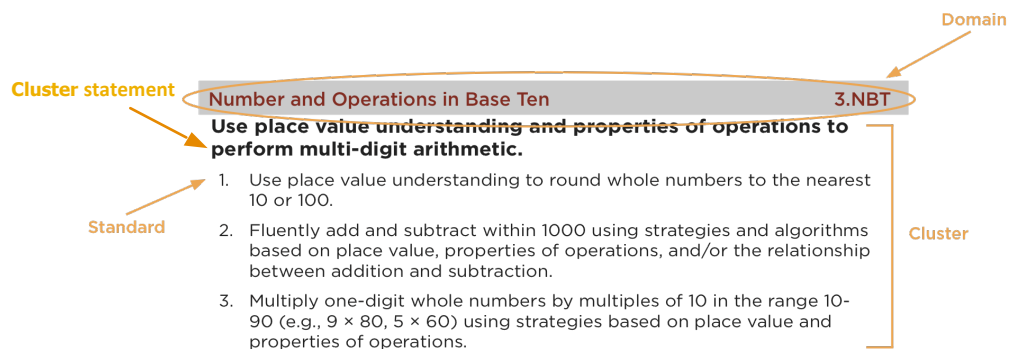
Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning.

Organization of the Common Core State Standards

Each CCSS grade level document begins with a description of the "critical areas". These Critical Areas are parallel to the Michigan Focal Points. Below is a comparison of the Michigan Focal Points to the Critical Areas for this grade.

Michigan **1st Grade Focal Points**	Common Core State Standards **1st Grade Critical Areas**
Developing understandings of addition and subtraction and strategies for basic addition facts and related subtraction facts	Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20
Developing an understanding of whole number relationships, including grouping in tens and ones	Developing understanding of whole number relationship and place value, including grouping in tens and ones
Developing an understanding of linear measurement and facility in measuring lengths	Developing understanding of linear measurement and measuring lengths as iterating length units
	Reasoning about attributes of, and composing and decomposing geometric shapes

The standards themselves are organized by *Domains* (large groups that progress across grades) and then by *Clusters* (groups of related standards, similar to the *Topics in the Grade Level Content Expectations*).

Domain

Cluster statement

Number and Operations in Base Ten   **3.NBT**

Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Cluster

The table below shows the progression of the CCSS domains and clusters across the grade before, the target grade and the following grade.

Kindergarten	1st Grade	2nd Grade
COUNTING AND CARDINALITY (CC)		
• Know number names and the count sequence. • Count to tell the number of objects. • Compare numbers		
OPERATIONS AND ALGEBRAIC THINKING (OA)		
• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	• Represent and solve problems involving addition and subtraction. • Understand and apply properties of operations and the relationship between addition and subtraction. • Add and subtract within 20. • Work with addition and subtraction equations.	• Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication.
NUMBER AND OPERATIONS IN BASE TEN (NBT)		
• Work with numbers 11–19 to gain foundations for place value.	• Extend the counting sequence. • Understand place value. • Use place value understanding and properties of operations to add and subtract.	• Understand place value. • Use place value understanding and properties of operations to add and subtract.
MEASUREMENT AND DATA (MD)		
• Describe and compare measurable attributes. • Classify objects and count the number of objects in categories.	• Measure lengths indirectly and by iterating length units. • Tell and write time. • Represent and interpret data.	• Measure and estimate lengths in standard units. • Relate addition and subtraction to length. • Work with time and money. • Represent and interpret data.
GEOMETRY (G)		
• Identify and describe shapes. • Analyze, compare, create, and compose shapes.	• Reason with shapes and their attributes.	• Reason with shapes and their attributes.

Alignment of Michigan Content Expectations to Common Core Standards by Michigan Focal Point

Michigan Content Expectations	Common Core State Standards
Focal Point Developing understandings of addition and subtraction and strategies for basic addition facts and related subtraction facts	**Critical Area** Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20

COMMON CONTENT

Mathematical Practices

1. Make sense of problems, and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments, and critique the reasoning of others.

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Add and subtract whole numbers

N.ME.01.08 List number facts (partners inside of numbers) for 2 through 10, e.g., $8 = 7 + 1 = 6 + 2 = 5 + 3 = 4 + 4$; $10 = 8 + 2 = 2 + 8$.

N.MR.01.09 Compare two or more sets in terms of the difference in number of elements.

N.MR.01.10 Model addition and subtraction for numbers through 30 for a given contextual situation using objects or pictures; explain in words; record using numbers and symbols; solve.

N.MR.01.11 Understand the inverse relationship between addition and subtraction, e.g., subtraction "undoes" addition: if $3 + 5 = 8$, we know that $8 - 3 = 5$ and $8 - 5 = 3$; recognize that some problems involving combining, "taking away," or comparing can be solved by either operation.

N.MR.01.13 Apply knowledge of fact families to solve simple open sentences for addition and subtraction, such as: $\_ + 2 = 7$ and $10 - \_ = 6$.

N.FL.01.14 Add three one-digit numbers.

N.FL.01.15 Calculate mentally sums and differences involving: a two-digit number and a one-digit number without regrouping; a two-digit number and a multiple of 10.

N.FL.01.16 Compute sums and differences through 30 using number facts and strategies, but no formal algorithm.

Solve problems

M.PS.01.08 Solve one-step word problems using addition and subtraction of length, money and time, including "how much more/less", without mixing units.

Represent and solve problems involving addition and subtraction

1. OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

1. OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties[1] of operations and the relationship between addition and subtraction

1. OA.3 Apply properties of operations as strategies to add and subtract. Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)

1. OA.4 Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.

Add and subtract within 20

1. OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

1. OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

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[1] Students need not use formal terms for these properties.

Michigan Content Expectations	Common Core State Standards
	Work with addition and subtraction equations

I. OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation truein each of the equations $8 + ? = 11$, $5 = \_ - 3$, $6 + 6 = \_$.

Use place value understanding and properties of operations to add and subtract

I. NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

I. NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Represent and interpret data

I. MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Mathematical Practices

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Michigan Content Expectations	Common Core State Standards

CONTENT THAT IS DIFFERENT

Content moving out of 1st grade

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Add and subtract whole numbers

N.FL.01.12 Know all the addition facts up to 10 + 10, and solve the related subtraction problems fluently.

Work with money

M.UN.01.04 Identify the different denominations of coins and bills.

M.UN.01.05 Match one coin or bill of one denomination to an equivalent set of coins/bills of other denominations, e.g., 1 quarter = 2 dimes and 1 nickel.

M.UN.01.06 Tell the amount of money: in cents up to $1, in dollars up to $100. Use the symbols $ and ¢

M.PS.01.07 Add and subtract money in dollars only or in cents only.

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2nd Grade
Add and subtract within 20

2. OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with time and money

2. MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ (dollars) and ¢ (cents) symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

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Content moving into 1st grade

[Not explicit in GLCE]	*Work with addition and subtraction equations*
	1. OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

Michigan Content Expectations	Common Core State Standards
Focal Point	**Critical Area**
Developing an understanding of whole number relationships, including grouping in tens and ones	Developing understanding of whole number relationship and place value, including grouping in tens and ones

COMMON CONTENT

Count, write, and order numbers[2]

N.ME.01.01 Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100's and 10's; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd.

N.ME.01.02 Read and write numbers to 110 and relate them to the quantities they represent.

N.ME.01.03 Order numbers to 110; compare using phrases such as "same as", "more than", "greater than", "fewer than"; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21, 16, 35, 8.

N.ME.01.04 Identify one more than, one less than, 10 more than, and 10 less than for any number up to 10

N.ME.01.05 Understand that a number to the right of another number on the number line is bigger and that a number to the left is smaller.

N.ME.01.06 Count backward by 1's starting from any number between 1 and 100.

Explore place value

N.ME.01.07 Compose and decompose numbers through 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.

Extend the counting sequence

1. NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value

1. NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

> a. 10 can be thought of as a bundle of ten ones — called a "ten."
>
> b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
>
> c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

1. NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations to add and subtract.

1. NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

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[2] Previously linked to the adding and subtracting focal point

Michigan Content Expectations	Common Core State Standards
Focal Point	**Critical Area**
Developing an understanding of linear measurement and facility in measuring lengths	Developing understanding of linear measurement and measuring lengths as iterating length units

COMMON CONTENT

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Estimate and measure length

M.UN.01.01 Measure the lengths of objects in non-standard units, e.g., pencil lengths, shoe lengths, to the nearest whole unit.

M.UN.01.02 Compare measured lengths using the words shorter, shortest, longer, longest, taller, tallest, etc.

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Measure lengths indirectly and by iterating length units

1. MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

1. MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

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Michigan Content Expectations	Common Core State Standards
Focal Point	**Critical Area**
	Reasoning about attributes of, and composing and decomposing geometric shapes

COMMON CONTENT

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Create and describe shapes

G.GS.01.01 Create common two-dimensional and three-dimensional shapes, and describe their physical and geometric attributes, such as color and shape.

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Reason with shapes and their attributes

1. G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); for a wide variety of shapes; build and draw shapes to possess defining attributes.

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Michigan Content Expectations	Common Core State Standards

CONTENT THAT IS DIFFERENT

Content moving out of 1st grade

Create and describe shapes

G.LO.01.02 Describe relative position of objects on a plane and in space, using words such as above, below, behind, in front of.

Kindergarten

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)

K. G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

Content moving into 1st grade

[Not explicit in GLCE]

Reason with shapes and their attributes

1. G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[3]

1. G.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

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[3] Students do not need to learn formal names such as "right rectangular prism"

Michigan Content Expectations	Common Core State Standards

CONNECTIONS

COMMON CONTENT

Tell time

M.UN.01.03 Tell time on a twelve-hour clock face to the hour and half-hour.

Tell and write time

1. MD.3 Tell and write time in hours and half-hours using analog and digital clocks.

Use pictographs

D.RE.01.01 Collect and organize data to use in pictographs.

D.RE.01.02 Read and interpret pictographs.

D.RE.01.03 Make pictographs of given data using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., :-) represents one child.

Represent and interpret data

1. MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

CONTENT THAT IS DIFFERENT

Content moving out of 1st grade

Create and describe patterns involving geometric objects

G.SR.01.03 Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.

G.SR.01.04 Distinguish between repeating and growing patterns.

G.SR.01.05 Predict the next element in a simple repeating pattern.

G.SR.01.06 Describe ways to get to the next element in simple repeating patterns.

[Not explicit in the Common Core Content Standards – see Mathematical Practices]

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