CASAS CONTENT STANDARDS FOR MATHEMATICS

AND

COMMON CORE STATE STANDARDS FOR

==MATHEMATICS==

==FOR ADULT EDUCATION==

A COMPARATIVE ANALYSIS

June 2013
For Discussion Purposes

The National Governors Association Center for Best Practices together with the Council of Chief State School Officers developed and published a set of Common Core State Standards (CCSS) in 2010.

> "With students, parents and teachers all on the same page and working together for shared goals, we can ensure that students make progress each year and graduate from school prepared to succeed in college and in a modern workforce.....The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers."

(National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington D.C. 2010)

To date, 45 states, Washington D.C. and 4 territories have adopted these standards to inform and guide their K-12 educational systems.

At the request of the CASAS National Consortium, an alignment study between the CCSS and the CASAS Content Standards for Reading and Mathematics was completed in 2010 by an independent third party. The resulting report – *CASAS Content Standards and Common Core Standards: A Comparative Analysis* – is posted on the CASAS website.

Subsequently, the Office of Vocational and Adult Education (OVAE) commissioned a study to answer the following questions on how Common Core State Standards (CCSS) relate to Adult Education:

1. What content in the area of English language arts and literacy (ELA/literacy) is most relevant to preparing adult students for success in higher education and training programs?
2. What content in the area of mathematics is most relevant to preparing adult students for success in higher education and training programs?
3. Which standards in each content area are most important for adult students?

The resulting report is titled Promoting College and Career Ready Standards in Adult Basic Education (Pimental 2013)

Again, at the request of the CASAS National Consortium, CASAS requested a review of the original comparative analysis in light of the results of the study commissioned by OVAE. The following Table 1 clearly shows the relationship between the Common Core State Standards for Mathematics and CASAS Content Standards for Mathematics as well as the CCSS deemed priority for Adult Education..

A similar comparative analysis is underway for CCSS Standards for Reading and CASAS Content Standards for Reading.

About Table 1

Refer to the CASAS website for a correlation between NRS and CASAS levels.
Click on following link to see the CASAS to NRS Levels for ABE, ASE, and ESL Correlation Tables.

NRS – *National Reporting System*
ABE/ASE – *Adult Basic Education/ Adult Second Education*

How to read this table:
1) Locate the CASAS Math Content Standards down the 2 left hand columns.
2) Follow the row across to identify which Common Core Math CONTENT Standards (far right hand column) that most closely align with each CASAS Math Standard.
3) The grade level is the first digit of the Common Core Math Content Standard (e.g. **K**.CC.3 = Kindergarten)
4) The second part is the "domain" or concept category (e.g. K.**CC**.3 = Counting and Cardinality)
5) The last digit is the Common Core Content Standard. (e.g. K.CC.**3** = Write numbers from 0-10.)
6) CCSS standards highlighted in yellow are found in the College and Career Readiness Standards for Adult Education

Table 1: CASAS Math Content Standards to Common Core Standards for Mathematics (Content)

			NRS ABE/ASE Levels	1	2	3	4	5	6	CCSS
CASAS	Math Content Standards		CASAS Levels	A	B	B	C	D	E	K-12
M1	**Number sense**									
M1.1	Read, write, order and compare rational numbers									
M1.1.1	Associate numbers with quantities			•						K.CC.3 K.CC.4 K.CC.5 K.CC.7
M1.1.2	Count with whole numbers			•						K.CC.1 K.CC.2 1.OA.5 1.NBT.1 2.NBT.2
M1.1.3	Count by 2s, 5s, and 10s up to 100			•						K.CC.1 2.NBT.2
M1.1.4	Recognize odd and even numbers			•	•					2.OA.3

		1	2	3	4	5	6	CCSS
	NRS ABE/ASE Levels	A	B	B	C	D	E	K-12
CASAS	Math Content Standards CASAS Levels	A	B	B	C	D	E	K-12
M1.1.5	Understand the decimal place value system: read, write, order and compare whole and decimal numbers (e.g., 0.13 > 0.013 because 13/100 > 13/1000)		●	●	●			1.NBT.1 1.NBT.2 1.NBT.3 2.NBT.1 2.NBT.4 4.NBT.1 4.NBT.2 4.NF.7 5.NBT.3
M1.1.6	Round off numbers to the nearest 10, 100, 1000 and/or to the nearest whole number, tenth, hundredth or thousandth according to the demands of the context			●	●			3.NBT.1 4.NBT.3 5.NBT.4
M1.1.7	Using place value, compose and decompose numbers with up to 5 digits and/or with three decimal places (e.g. 54.8 = 5 x10 + 4 x 1 + 8 x 0.1)		●	●	●			2.NBT.3 4.NBT.2 5.NBT.1
M1.1.8	Interpret and use a fraction in context (e.g. as a portion of a whole area or set)	●	●					1.G.3 2.G.3 3.G.2 3.NF.2 3.NF.1
M1.1.9	Find equivalent fractions and simplify fractions to lowest terms			●	●			4.NF.1 3.NF.3
M1.1.10	Use common fractions to estimate the relationship between two quantities (e.g., 31/179 is close to 1/6)	●	●	●	●			3.NF.3 4.NF.2
M1.1.11	Convert between mixed numbers and improper fractions			●	●			4.NF.4
M1.1.12	Use common fractions and their decimal equivalents interchangeably			●	●			4.NF.6
M1.1.13	Read, write, order and compare positive and negative real numbers (integers, decimals, and fractions)				●			2.NBT.3 3.NF.3
M1.1.14	Interpret and use scientific notation				●	●	●	8.EE.3 8.EE.4
M1.2	Demonstrate understanding of the operations of addition and subtraction, their relation to each other, and their application in solving problems with rational numbers.							
M1.2.1	Mentally add and subtract positive whole numbers less than 20	●	●					2.OA.2
M1.2.2	Add and subtract positive multi-digit numbers, including decimal numbers	●	●					1.OA.6 1NBT.4 1NBT.5 1NBT.6 2NBT.5 2NBT.6 2.NBT.7 3.NBT.2 4.NBT.4 5.NBT.7

CASAS	Math Content Standards CASAS Levels	1 A	2 B	3 B	4 C	5 D	6 E	CCSS K-12
M1.2.3	Recognize when a problem situation requires addition or subtraction with multi-digit positive integers and decimal numbers, carry out the computation and interpret the answer in context	●	●	●	●	●	●	1.OA.1 2.OA.1 2MD.5 3.OA.8 5.NBT.7
M1.2.4	Use the inverse relationship between addition and subtraction to write problem statements and to check computation (e.g., add back to check subtraction)	●	●	●				1.OA.4 2.OA.1
M1.2.5	Use the commutative property of addition to restate problems (e.g., 34.2 + 6 = 6 + 34.2) and recognize the proper order to write subtraction problems and enter them into a calculator.		●	●	●	●	●	1.OA.3 2.NBT.9
M1.2.6	Add and subtract fractions and mixed numbers including those with unlike denominators		●	●	●			4.NF.3 5.NF.1
M1.2.7	Recognize when a problem situation requires adding and/or subtracting with fractions and mixed numbers, carry out the computation and interpret the answer in context		●	●	●	●	●	4.NF.3 5.NF.2
M1.2.8	Use estimation strategies to determine reasonable answers to addition and subtraction problems involving integers, decimal numbers and fractions		●	●	●	●	●	5.NBT.4
M1.2.9	Express the result of adding and subtracting to the level of precision indicated by the problem (e.g., as in measurements)			●	●	●	●	N-Q.3
M1.3	Demonstrate understanding of the operations of multiplication and division, their relation to each other and their application in solving problems with rational numbers.							
M1.3.1	Mentally double all integers to 20 and halve even integers to 20	●	●					3.OA.7
M1.3.2	Know multiplication facts for integers through 12 and recognize their perfect squares		●	●				3.OA.7
M1.3.3	Mentally multiply and divide numbers by 10, 100, 1000		●	●				3.NBT.3
M1.3.4	Identify integers that are multiples of 2, 3, 4, 5, or 10		●					4.OA.4
M1.3.5	Find factors of whole numbers to 100 (i.e. 36 is divisible by 1,2,3,4,6,9,12,18 and 37 is prime)		●	●	●			4.OA.4
M1.3.6	Recognize when a problem situation requires multiplying and/or dividing with multi-digit positive integers and decimal numbers, carry out the computation accurately and interpret the answer in context	●	●	●	●	●	●	3.OA.3 3.OA.8 4.NBT.5 4.OA.2 4.OA.3 5.NBT.5 5.NBT.6 5.NBT.7 6.NS.2 6.NS.3

CASAS	Math Content Standards (CASAS Levels)	1 A	2 B	3 B	4 C	5 D	6 E	CCSS K-12
M1.3.7	Use the inverse relationship of multiplication and division to write problem statements and to check a calculation (i.e. multiply back to check division)		•	•	•			3.OA.4
M1.3.8	Express the result of multiplying and dividing to the level of precision indicated by the problem		•	•	•	•	•	N-Q.3
M1.3.9	Use the context to determine whether the answer to a division problem should be rounded off or if the remainder should be expressed as a fraction. (e.g. currency contexts usually do not use fractions)		•	•	•			N-Q.3
M1.3.10	Use fractional notation to indicate division (i.e., 6 ÷ 11 = 6/11; 12 ÷ 4 = 12 x ¼)		•	•				5.NF.3
M1.3.11	Find fractional parts of whole numbers and/or decimal numbers. (e.g. ¼ of the $8.3 million budget)			•	•			4.NF.4 5.NF.4
M1.3.12	Recognize when a problem situation requires multiplying and/or dividing with fractions and mixed numbers, carry out the computation and interpret the answer in context			•	•	•	•	5.NF.3 5.NF.4 5.NF.6 5.NF.7 6.NS.1
M1.3.13	Use estimation strategies to determine reasonable answers to multiplication and division problems involving integers, decimal numbers and fractions (i.e., rounding to nearest multiple, benchmark fractions, etc.)			•	•			5.NF.5 6.RP.3
M1.3.14	Use the commutative property of multiplication to restate problems (e.g., 20 x 0.25 = ¼ x 20) and recognize the proper order to write a division problem and to enter it into a calculator		•	•	•	•	•	3.OA.5
M1.3.15	Use the distributive property of multiplication over addition (e.g., 4(136) = 4(100 + 30 + 6))			•	•			3.OA.5 6.NS.4
M1.3.16	Use exponential notation to indicate repeated multiplication as in squaring and cubing			•	•	•		5.NBT.2 6.EE.1 8.EE.1 N-RN.1 F-IF.8
M1.3.17	Read, write, and interpret the radical sign ($\sqrt{}$)for square roots and ($\sqrt[3]{}$) for cube roots				•	•		8.EE.2 N-RN.1 N-RN.2
M1.4	Understand the meaning of ratio, proportion and percent and use them to solve problems							
M1.4.1	Recognize comparisons between quantities in situations that can be expressed as a ratio (e.g., he makes 3 out of 5 free throws) and those that can't (e.g., their final score, 11, was 4 more than the opponent's score.)			•	•	•		6.RP.1 6.RP.2
M1.4.2	Write and solve proportions for situations where two ratios are equal (e.g. currency conversion)				•	•	•	6.RP.3 7.RP.2 7.RP.3
M1.4.3	Find the percent equivalents to fractions and decimals		•	•	•			6.RP.3 7.NS.2

CASAS	Math Content Standards	1 A	2 B	3 B	4 C	5 D	6 E	CCSS K-12
M1.4.4	Know the percent equivalent to common benchmark fractions (½, ¼, ¾, 1/10, 1/5, etc) and use them interchangeably for solving problems			•	•			6.RP.3
M1.4.5	Mentally find 10% and/or 1% of an integer or decimal number			•	•			6.RP.3
M1.4.6	Estimate percentages of numbers by using benchmark percents (10%, 25%, 50%) or combinations of them (e.g., 31% of 89 ≈ 3(10% of 90) = 27)			•	•			6.RP.3
M1.4.7	Calculate a missing value from a percent relationship – the percentage, the percent, or the base – using paper and pencil or a calculator		•	•	•	•	•	7.RP.2
M1.4.8	Understand and solve problems using percents greater than 100% and less than 1%				•			7.RP.2 7.RP.3
M1.4.9	Calculate percent of change (increase or decrease) in a variety of situations, including those involving money			•	•			7.RP.3
M1.5	Use strategies and tools to solve problems.							
M1.5.1	Determine when and how to split up a problem into simpler parts			•	•	•	•	N-Q all
M1.5.2	Apply strategies and results from simpler problems to more complex problems			•	•	•	•	N-Q all
M1.5.3	Use a calculator when appropriate			•	•	•	•	
M2	Algebra							
M2.1	Find structure and patterns in arithmetic number sequences and contextual situations							
M2.1.1	Recognize the identity, commutative, associative and distributive properties for addition and multiplication as they apply in arithmetic procedures	•	•	•				3.OA.5 6.EE.3 7.EE.1
M2.1.2	Use tables and algebraic expressions to generalize recurring numeric patterns (e.g .find the rule) and in contextual situations (e.g., seating at different-sized banquet tables)			•	•	•	•	2.OA.4 3.OA.9 4.OA.5 5.OA.3
M2.1.3	Find the nth term in the sequence in a functional relationship and predict how changes in one quantity will affect another			•	•			6.EE.9 8.F.4 F-BF.2
M2.1.4	Apply the correct order of operations			•	•			7.EE.1
M2.2	Use variables, simplify expressions and solve equations							
M2.2.1	Use notational conventions such as parentheses and the various ways of representing multiplication				•	•		5.OA.1
M2.2.2	Interpret symbols <, >, ≠ and use them to express number relationships			•	•	•		4.NBT.2
M2.2.3	Recognize and interpret the different meanings and uses of variables (i.e., 2x + 1 = 7; y = 2x + 1; A = l × w; a + –a = 0)				•	•		6.EE.2 6.EE.4 6.EE.6 7.EE.4
M2.2.4	Evaluate expressions that include unknowns by substituting specific values for variables.				•	•		6.EE.2 6.EE.6

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CASAS	Math Content Standards — CASAS Levels	A	B	B	C	D	E	K-12
M2.2.5	Use the distributive property and combine like terms to simplify an expression (5x + 3y − 2x = 3x + 3y) and to factor (3x + 3y = 3(x + y))				•	•		6.EE.1 6.EE.3
M2.2.6	Apply the commutative and associative properties of addition and multiplication to rewrite expressions				•	•		3.OA.5 6.EE.3 7.EE.1
M2.2.7	Add, subtract, multiply and divide-polynomial expressions				•	•	•	A-APR.1 7.EE.1
M2.2.8	Solve simple one-step equations with unknowns (e.g., n − 7 = 9; 3x = 24)	•	•	•	•	•		2.MD.5 3.OA.4 6.EE.5 6.EE.6 6.EE.7 7.EE.1 7.EE.3 8.EE.7
M2.2.9	Use inverse operations and properties of equality to justify steps used in simplifying and solving more complex linear equations.				•	•	•	7.EE.1 8.EE.1
M2.2.10	Solve problems involving life-skill-related and technical formulas (e.g., units × price = cost; d = r × t ; V = I × R)			•	•	•	•	6.EE.9 7.EE.3 7.EE.4 A-CED.4 A-REI.1
M2.2.11	Use substitution to check the solution of an equation				•	•	•	6.EE.5
M2.2.12	Solve inequalities				•	•	•	6.EE.5 6.EE.8 7.EE.3 7.EE.4 A.REI.3
M2.2.13	Solve systems of linear equations				•	•	•	8.EE.8 A-REI.6 A-REI.3 A-REI.12
M2.2.14	Apply the Pythagorean theorem				•	•	•	8.G.7 8.G.8
M2.2.15	Solve quadratic equations				•	•	•	A-REI.4 A-SSE.3
M2.3	Model mathematical relationships (particularly functional relationships) found in context using words, tables, graphs, as well as algebraic expressions and equations							
M2.3.1	Interpret and write expressions and equations for simple contextual math situations			•	•	•		7.EE.4 A-SSE.1 A-CED.1 A-CED.2 F-BF.1 F-LE.5

	NRS ABE/ASE Levels	1	2	3	4	5	6	CCSS
CASAS	Math Content Standards CASAS Levels	A	B	B	C	D	E	K-12
M2.3.2	Place positive and negative numbers on a number line, and relate them to direction and change				•			6.NS.5 6.NS.6 7.NS.1 8.NS.2
M2.3.3	Add, subtract, multiply and divide positive and negative numbers				•			7.NS.1 7.NS.2
M2.3.4	Use absolute value in contextual situations emphasizing a number's magnitude				•	•		6.NS.7
M2.3.5	Interpret and write expressions and equations representing contextual situations including those that involve fractions, decimals, percents and negative numbers				•	•	•	7.NS.3 7.EE.2 A-CED.1 A-CED.2
M2.3.6	Generate a table of values from an equation in two variables				•	•	•	6.RP.3 6.EE.9 8.SP.4
M2.3.7	Demonstrate understanding of the Cartesian coordinate system by locating and plotting points (x,y) and creating a coordinate plane by drawing the axes and establishing a scale				•	•	•	5.G.1 5.G.2 6.NS.8 N-Q.1
M2.3.8	Determine the slope of a line and relate it to the rate of change in one quantity with respect to the other				•	•	•	7.RP.2 8.EE.5 8.SP.3 S-ID.7
M2.3.9	Use a graph to answer questions about functional relationships between independent and dependent variables			•	•	•	•	8.F.4 8.F.5 F-BF.1 A.CED.2
M2.3.10	Write the equation of a line given 2 points, or a slope and a single point				•	•	•	7.RP.2 S-ID.7
M2.3.11	Plot more than one equation on the same plane and find their intersections				•	•	•	A.REI.11
M2.3.12	Graph a linear function				•	•	•	8.F.1 8.F.2 8.F.3 F-IF.7
M2.3.13	Graph non-linear functions (quadratic, rational, exponential) and compare rates of change					•	•	8.F.3 8.F.5 F-LE.1 F-IF.6
M2.3.14	Make graphs of direct and indirect proportions from contextual situations with attention to the domain and range of each					•	•	8.EE.5 F-IF.1 F-IF.2 F-IF.4 F-IF.5
M2.3.15	Interpret algebraic concepts and terminology used at the secondary level to solve computationally and conceptually challenging multistep problems					•	•	

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CASAS	Math Content Standards CASAS Levels	A	B	B	C	D	E	K-12
M3	**Geometry**							
M3.1	Recognize, identify and describe the attributes of geometric shapes and use them in solving problems							
M3.1.1	Identify lines of symmetry in two-dimensional figures		•	•	•			4.G.3
M3.1.2	Draw two-dimensional shapes with specific dimensions		•	•	•			7.G.2 G-CO.12 G-CO.13
M3.1.3	Identify and describe specific types of triangles based on their properties (e.g. : right, acute, scalene, isosceles, equilateral)			•	•	•		2.G.1 4.G.2
M3.1.4	Recognize angles of a triangle have a sum of 180 degrees and use accordingly			•	•	•	•	4.G.2
M3.1.5	Identify and describe specific types of quadrilaterals based on their properties (e.g. : rectangle, square, parallelogram, rhombus)			•	•	•		2.G.1 4.G.2 5.G.3
M3.1.6	Recognize angles of a quadrilateral have a sum of 360 degrees and use accordingly			•	•	•	•	3.G.1 5.G.3
M3.1.7	Identify polygons of various types			•	•	•		2.G.1 3.G.1 4.G.2 5.G.3
M3.1.8	Identify elements of a circle: center, radius, diameter, arc, chord, sector			•	•	•		G-C.2
M3.1.9	Identify common three dimensional shapes of various types		•	•	•			2.G.1 7.G.6
M3.1.10	Interpret concepts of similarity, and identify figures that are similar or congruent				•	•		8.G.2 8.G.4 8.G.5 G-SRT.2 G-SRT.5
M3.1.11	Use concepts and attributes of geometric shapes to find-unknown dimensions in figures and applications				•	•	•	3.G.1 6.G.4 7.G.6
M3.2	Recognize, identify, describe and reason about lines and angles in two dimensions							
M3.2.1	Identify parallel, perpendicular and intersecting lines			•	•	•		4.G.1 G-CO.1
M3.2.2	Describe characteristics of angles formed by two intersecting lines, including complementary and supplementary angles			•	•	•	•	4.MD.5 7.G.5 G-CO.1
M3.2.3	Describe characteristics of angles formed by a transversal intersecting parallel lines				•	•	•	7.G.5 8.G.5
M3.2.4	Demonstrate understanding of the 360-degree system of measuring angles and rotation			•	•	•		4.MD.5
M3.2.5	Use benchmark angles of 45, 90 and 180 degrees to estimate the size of angles			•				4.MD.7
M3.2.6	Identify rotations of 90, 180, 270 and 360 degrees as ¼, ½, ¾, full			•	•	•		4.MD.5
M3.2.7	Identify angles as right, acute, obtuse			•	•	•		4.G.1

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M3.2.8	Measure or draw an angle using a protractor			•	•	•		4.MD.6
M3.2.9	Use reason to determine the size of unknown angles in complex drawings			•	•	•		7.G.5
M3.3	Use spatial relationships to interpret two and three-dimensional drawings and figures							
M3.3.1	Use the four main (N, S, E, W) and secondary (i.e. NW) compass directions for spatial orientation.		•	•	•			
M3.3.2	Use a map with a coordinate grid (e.g., C5) see comp 2.2.5			•	•			5.G.1
M3.3.3	Enlarge or reduce similar figures, keeping them proportional				•	•		7.G.1 G-CO.2
M3.3.4	Combine, divide, rotate, reconfigure or transform shapes to alter figures and change their position on a coordinate grid		•	•	•	•	•	8.G.1 8.G.3 G-CO.3 G-CO.4 G-CO.5
M3.3.5	Locate or position items in a two-dimensional coordinate system (e.g., in a d of a building)				•	•	•	5.G.2 6.G.3
M3.3.6	Recognize or create a three-dimensional object from two-dimensional representations (e.g. follow a pattern)		•	•	•	•	•	6.G.4 G-GMD.4
M3.3.7	Recognize and draw two-dimensional views of three-dimensional objects from different perspectives				•	•	•	G-MG.1
M4	**Measurement**							
M4.1	Use tools and apply estimation in measuring							
M4.1.1	Identify and use the appropriate units, instruments and techniques for measurement tasks	•	•	•	•			1.MD.2 2.MD.1 2.MD.2 2.MD.9 4.MD.6
M4.1.2	Read and use linear scales: a ruler, tape measure, metric rule, thermometer	•	•	•	•			3.MD.4
M4.1.3	Read the temperature from a thermometer in degrees F or C		•	•	•			
M4.1.4	Read and use analog scales: clocks, meters, gauges, (e.g. read to nearest lb., Kg, ½ lb., ½ Kg etc.)	•	•	•				2.MD.7 3.MD.1
M4.1.5	Read and use digital scales: digital clocks, odometers	•						1.MD.3 2.MD.7 3.MD.1
M4.1.6	Read and use various indicators of time (e.g, place dates on time line, interpret numeric representations, compare 12- 24 hour clocks)	•	•					1.MD.3 3.MD.1
M4.1.7	Use non-standard measurement methods (e.g., using an object as a measure)	•	•					1.MD.1 1.MD.2
M4.1.8	Compare the measure of one object to another (e.g., this is about 3 times as long as that; about 6 of these will fit in there)		•	•	•			2.MD.4
M4.1.9	Use specialized measurement tools in contextual situations				•	•	•	

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M4.1.10	Make rough-estimate approximations of measurements		•	•	•			2.MD.3 3.MD.2
M4.1.11	Recognize level of accuracy required in a given measurement situation in terms of precision, rounding, etc.		•	•	•	•		N.Q.3
M4.2	Work fluently within measurement systems and use general equivalencies between them							
M4.2.1	Calculate with and convert between customary US units of linear measurement: inches, feet, yards, miles		•	•	•			4.MD.1 5.MD.1
M4.2.2	Calculate with and convert between metric units of linear measurement: meters, centimeters, millimeters, kilometers		•	•	•	•		4.MD.1 5.MD.1
M4.2.3	Estimate equivalents between customary US and metric units of linear measure				•	•		7.RP.2
M4.2.4	Compare linear measurements, including in decimal notation (e.g., tolerances)				•	•		4.NF.6
M4.2.5	Calculate with and convert between customary US units of weight; ounces, pounds, tons		•	•	•			4.MD.1 5.MD.1
M4.2.6	Calculate with and convert between metric units of weight: grams, kilograms, milligrams				•	•		3.MD.2 4.MD.1 5.MD.1
M4.2.7	Estimate equivalents between customary US and metric units of weight				•	•		6.RP.3
M4.2.8	Calculate with and convert between customary US units of capacity: fluid ounces, cups, pints, quarts, gallons		•	•	•			3.MD.2 4.MD.1 5.MD.1
M4.2.9	Calculate with and convert between metric units of capacity: liters, milliliters				•	•		3.MD.2 4.MD.1 5.MD.1
M4.2.10	Estimate equivalents between customary US and metric units of capacity				•	•		6.RP.3
M4.2.11	Calculate with and compare temperatures, including those below zero		•	•	•	•		6.NS.7
M4.2.12	Estimate equivalents between Fahrenheit and Celsius temperatures				•	•		6.RP.3
M4.2.13	Calculate with and convert between units of time: seconds, minutes, hours, days, months, years		•	•	•			4.MD.1 4.MD.2 5.MD.1
M4.2.14	Use decimal placement and metric prefixes to convert like units: for example; mm, cm, m or mg, g, kg				•	•		4.MD.1 4.MD.2 5.MD.1
M4.3	Calculate the measures of 2 and 3 dimensional figures.							
M4.3.1	Demonstrate understanding of the concept of two and three-dimensional measurements, and square and cubic units			•	•	•		5.MD.3 5.MD.4 5.MD.5 6.G.2

	NRS ABE/ASE Levels	1	2	3	4	5	6	CCSS
CASAS	Math Content Standards CASAS Levels	A	B	B	C	D	E	K-12
M4.3.2	Calculate perimeter of rectangles and other common figures			●	●	●	●	3.MD.8 4.MD.3 G-GPE.7
M4.3.3	Calculate circumference of a circle, using a given formula				●	●		7.G.4
M4.3.4	Calculate area of rectangles and other common figures, using a given formula			●	●	●	●	3.MD.5 3.MD.6 3.MD.7 4.MD.3 7.G.4 G-GPE.7
M4.3.5	Estimate area of curved shapes				●	●		7.G.1 G.MG.1
M4.3.6	Calculate volume and surface area of rectangular and other common shapes, using a given formula				●	●		5.MD.5 7.G.6 8.G.9 G-GMD.3
M4.3.7	Calculate area or volume of irregular or composite shapes by dividing the figure into parts				●	●	●	5.MD.5 6.G.1 6.G.2 7.G.6
M4.3.8	Interpret the exponential relationship of linear measure, area and volume (e.g., ft, sq ft, cu ft)					●	●	7.G.6
M4.3.9	Apply measurement in three-dimensional scale modeling					●	●	7.G.1 G-GMD.4
M4.4	Use proportional reasoning to measure indirectly (scale drawings)							
M4.4.1	Interpret scale drawings (e.g. blueprints, maps)				●	●	●	7.G.1
M4.4.2	Interpret and use proportions in solving problems involving dimensions or scale				●	●	●	7.G.1
M4.4.3	Plan linear spacing in a design (e.g., the arrangement of shelves to fit in a cabinet)				●	●	●	7.G.1
M4.4.4	Plan a layout (e.g., how many pieces of a specific shape can fit in a space)				●	●	●	7.G.1 7.G.6
M4.5	Use relationships between measures to analyze change (rates)							
M4.5.1	Interpret, calculate and apply rates involving time, such as velocity (e.g., mi/hr, ft/sec, m/sec), frequency (e.g., calls/hr), consumption (e.g., cal/day, Kw/hr), flow (e.g., gal/min), change (e.g., degrees/min, inches/year)				●	●	●	6.EE.9 6.RP.2 6.RP.3 7.RP.1 8.EE.5
M4.5.2	Interpret, calculate and apply rates (e.g., cents/min, $/sq. ft., mi/gal)				●	●	●	6.EE.9 6.RP.3 7.RP.1 7.RP.3
M4.5.3	Use averaging in calculating rates (e.g., average speed is?)				●	●	●	7.RP.1
M4.5.4	Demonstrate understanding and solve problems involving the interrelation of distance, time and speed			●	●	●	●	7.RP.1 F.LE.1
M4.5.5	Estimate time, distance and speed in travel situations				●	●	●	N-Q.1

		NRS ABE/ASE Levels	1	2	3	4	5	6	CCSS
CASAS	Math Content Standards	CASAS Levels	A	B	B	C	D	E	K-12
M4.5.6	Estimate equivalents between mph and km/h					•	•	•	6.RP.3
M5	**Statistics, Data Analysis and Probability**								
M5.1	Collect, organize and display data								
M5.1.1	Identify, count and extract relevant data in lists, tables and charts		•	•	•	•	•	•	K.MD.3 1.MD.4 3.MD.3
M5.1.2	Collect, label, sort and order numerical information for a particular purpose (e.g., to count and list stock, keep a log, construct a schedule)		•	•	•	•	•	•	K.MD.3 1.MD.4
M5.1.3	Use a tally to record numerical information		•	•	•	•	•		K.OA.1
M5.1.4	Use or construct a table to record and present numerical information			•	•	•	•	•	
M5.1.5	Use or construct a table that provides for calculation of data (e.g., units × price; totals, subtotals)				•	•	•	•	4.MD.4
M5.1.6	Construct a graph or other visual representation of data			•	•	•	•	•	2.MD.10 3.MD.3 4.MD.4 5.MD.2 6.SP.4 S-ID.1 S-ID.5
M5.1.7	Present data in different interpretations (e.g., as percentages, difference, change)				•	•	•	•	7.SP.3 8.SP.4
M5.1.8	Demonstrate how selection and presentation of data can be oriented for audience and purpose and can influence perceptions and conclusions (e.g. changing the scale on the graph can change the perceived message)					•	•	•	7.SP.3 S-ID.7 N-Q.1
M5.2	Interpret and analyze data from representations of a data set								
M5.2.1	Extract and compare information from scatterplots and pictographs, as well as bar, circle and line graphs		•	•	•	•	•	•	2.MD.10 3.MD.3 8.SP.1 8.SP.3 8.EE.5 S-ID.1 S-ID.5 S-ID.6
M5.2.2	Compare information from multiple plottings on the same graph					•	•	•	2.MD.10
M5.2.3	Find summary statistics of a data set, including the mean, median, mode and range and determine how changes in the extreme values affect each of them.				•	•	•		6.SP.3 6.SP.5 S-ID.3
M5.2.4	Demonstrate how the spread of data is a factor in determining whether mean or median should be used as a measure of central tendency				•	•	•	•	6.SP.2 S-ID.2 S-ID.3
M5.2.5	Interpret the language of distributions in statistics (e.g. percentiles, quartiles, standard dev) and use it to describe and communicate data							•	6.SP.5

	NRS ABE/ASE Levels	1	2	3	4	5	6	CCSS
CASAS	Math Content Standards CASAS Levels	A	B	B	C	D	E	K-12
M5.2.6	Make simple generalizations about a data set, including recognizing clusters and more/less contrasts and identifying trends				•	•	•	6.SP.5 8.SP.2
M5.2.7	Compare different samples or groupings (e.g., age, gender) in a data set, or compare individual pieces of data to an overall set or average				•	•	•	7.SP.2 7.SP.3 S-IC.4 S-IC.5 7.SP.4
M5.2.8	Express data relationships in terms of ratios, fractions or percent (e.g., 3 to 1 ratio; 3 out of 4; 75%)			•	•	•	•	7.SP.5
M5.2.9	Make observations, evaluate arguments, and draw conclusions based on statistical reasoning, recognizing the distinction between causation and correlation		•	•	•	•	•	7.SP.3 7.SP.4 S-ID.9
M5.2.10	Identify constraints to extending data to make predictions				•	•	•	S-IC.1 S-IC.2 S-IC.3
M5.2.11	Use computer programs to assist in compiling and analyzing data				•	•	•	
M5.2.12	Recognize when data sets can be viably compared and when they cannot				•	•	•	7.SP.1 7.SP.3
M5.2.13	Interpret the concepts and implications of sampling and randomization in surveys				•	•	•	7.SP.1 7.SP.2
M5.3	Use the laws of probability to predict the likelihood of outcomes							
M5.3.1	Find all the possible outcomes (sample space) by systematically figuring the possible combinations and/or permutations of a number of elements in practical situations			•	•	•	•	7.SP.8
M5.3.2	Determine the probability of certain simple events (e.g., in the results of tossing a coin or rolling a die) and express the likelihood of an occurrence as a ratio fraction or a percent		•	•	•			7.SP.5 7.SP.6 7.SP.7
M5.3.3	Identify possible outcomes involving compound events and determine the probability of their occurrence by considering whether the events are independent (e.g., rolling one die multiple times) or conditional (choosing 2 aces from a deck of cards) events			•	•	•	•	7.SP.8 S-CP.2 S-CP.3 S-CP.6
M5.3.4	Apply the rules of probability to real-world events (e.g., risk of injury when not wearing seat belts), recognizing the importance of assumptions of randomness and independence of attributes when reading media reports					•	•	S-CP.5