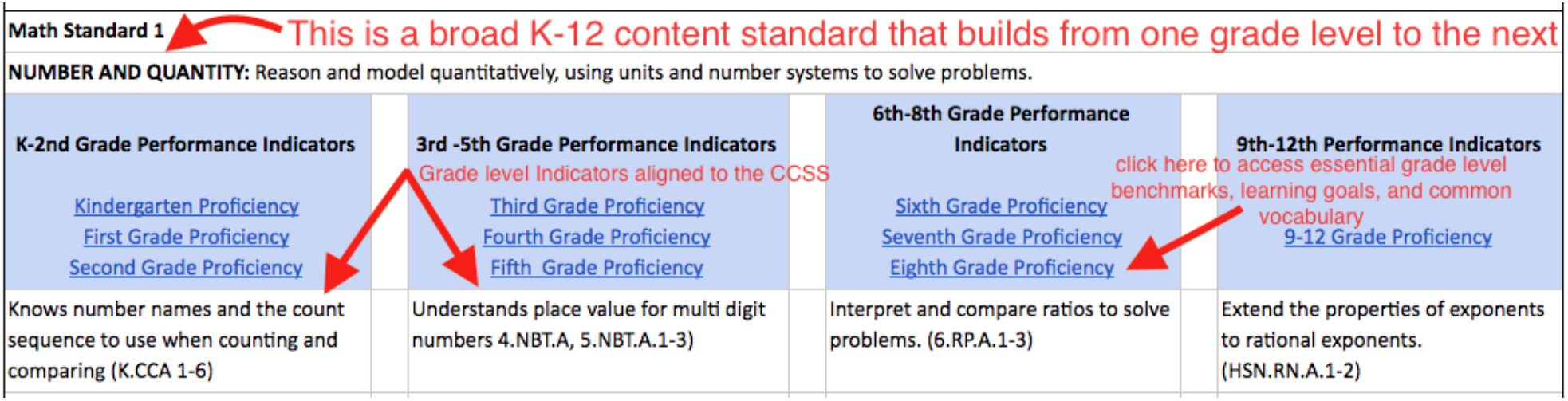
The following document strives to address vertical and horizontal alignment of the Maine Learning Results, including the Common Core State Standards (CCSS)

The CCSS math standards are grouped under 5 essential standards (number quantity, algebra, geometry, functions, and measurement and data) to represent vertically alignment with one another so they reflect the logical, consistent order for teaching the content in a subject area from one grade level to the next.

Example:




Clicking on the embedded “grade level proficiency” link will detail horizontal alignment as grade level standards that are “unpacked” to include skills, strategies, and understanding of concepts that increase with rigor and intensity to help planning for instruction and assessment that promotes demonstration of higher-order cognitive skills, such as those described in the Revised Bloom’s Taxonomy, deeper comprehension of content and the acquisition of transferable skills such as reasoning, planning, interpreting, hypothesizing, investigating, or explaining.

Staff are encouraged to refer to this document as they use their expertise, current needs of their students, and current curriculum resources to craft units, topics, lessons, and activities that offer students the opportunity to meet grade level expectations.

This is a draft document written in google docs so that it can be a live document that is refined to meet the needs of RSU 73 students, community, and staff.  Curriculum is never finished and is revised often to meet the needs of our ever growing students and global world.

DRAFT 5/1

| RSU #73 Mathematics Essential Content Standards and Performance Indicators | | | | | | | |
|---|---|---|---|---|---|---|---|
| Based on Common Core State Standards in Mathematics (CCSS, 2010). | | | | | | | |
| **Math Standard 1** | | | | | | | |
| **NUMBER AND QUANTITY:** Reason and model quantitatively, using units and number systems to solve problems. | | | | | | | |
| **K-2nd Grade Performance Indicators**<br><br>Kindergarten Proficiency<br>First Grade Proficiency<br>Second Grade Proficiency | | **3rd -5th Grade Performance Indicators**<br><br>Third Grade Proficiency<br>Fourth Grade Proficiency<br>Fifth Grade Proficiency | | **6th-8th Grade Performance Indicators**<br><br>Sixth Grade Proficiency<br>Seventh Grade Proficiency<br>Eighth Grade Proficiency | | **9th-12th Performance Indicators**<br><br>9-12 Proficiency | |
| Knows number names and the count sequence to use when counting and comparing (K.CC 1-7) | | Understands place value for multi digit numbers 4.NBT.A, 5.NBT.A.1-3) | | Interpret and compare ratios to solve problems. (6.RP.A.1-3) | | Extend the properties of exponents to rational exponents. (HSN.RN.A.1-2) | |
| Understand the place value system. (K.NBT.A.1, 1.NBT.A-B, 2.NBT.A.1-4) | | Use place value understanding and properties of operations to perform multi digit arithmetic. ( 3.NBT.A.1-3, 4.NBT.B.4-6) | | Analyze proportional relationships and use them to solve real-world and mathematical problems. ( 7.RP.A.1-3) | | Use the properties of rational and irrational numbers. (HSN.RN.3) | |
| Use place value understanding and properties of operations to add and subtract. (1.NBT.C, 2.NBT.B.5-9) | | Understand fractions as numbers and explain fraction equivalence and ordering. (3.NF.A, 4.NF.A) | | Solve problems by multiplying and dividing fractions by fractions. (6.NS.A) | | Reason quantitatively and use units to solve problems. (HSN.Q.A.1-3) | |
| | | Use equivalent fractions as a strategy to add and subtract fractions. (5.NF.A.1-2) | | Identify positive and negative numbers in multiple situations. (6.NS.C.5-6) | | Perform arithmetic operations with complex numbers. (HSN.CN.A.1-2) | |
| | | Apply and extend understandings of operations on whole numbers to build fractions from unit fractions. (CCSS 4.NF.B) | | Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. (7.NS.A.1-3) | | Use complex numbers in polynomial identities and equations. (HSN.CN.C.7) | |
| | | Apply and extend understandings of multiplication and division to multiply and divide fractions. (5.NF.B.3-7) | | | | | |
| | | Use decimal notation for fractions and compare decimal fractions. (4.NF.C) | | | | | |

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**Math Standard 2**

**ALGEBRA:** Interpret, represent, create and solve algebraic expressions.

| **K-2nd Grade Performance Indicators**<br>Kindergarten Proficiency<br>First Grade Proficiency<br>Second Grade Proficiency | | **3rd -5th Grade Performance Indicators**<br>Third Grade Proficiency<br>Fourth Grade Proficiency<br>Fifth Grade Proficiency | | **6th-8th Grade Performance Indicators**<br>Sixth Grade Proficiency<br>Seventh Grade Proficiency<br>Eighth Grade Proficiency | | **9th-12th Performance Indicators**<br>9-12 Grade Proficiency |
|---|---|---|---|---|---|---|
| Represent and solve problems involving addition, subtraction, multiplication, and division (KOA.A1-A.A5,1OA.A-C, 2.OA.A) | | Represent and solve problems involving multiplication and division.3.OA.A.1-4) | | Write, read, and evaluate expressions using variables. (6.EE.A.1-4) | | Interpret the structure of expressions. (HSA.SSE.A.1-2) |
| Represent and solve problems involving addition and subtraction. (2.OA.B-C) | | Understand and apply properties of operations and the relationship between addition, subtraction, multiplication, and division. (3.OA.B-D) | | Apply properties of operations to combine like terms and use distribution in expressions and equations. (7.EE.A.1-2) | | Write expressions in equivalent forms to solve problems. (HSA.SSE.B.3-4) |
| | | Use the four operations with whole numbers to solve problems. (4.OA.A1-A3) | | Solve real-life and mathematical problems using numerical and algebraic expressions and one step equations. (7.EE.B.3-4) | | Perform arithmetic operations on polynomials. (HSA.APR.A) |
| | | Identify factors and multiples of whole numbers. (4.OA.B) | | Analyze the relationship between the dependent and independent variables using quadrant graphs and tables to relate these to the equation. (6.EE.C) | | Understand the relationship between zeros and factors of polynomials. (HSA. APR.B.2-3) |
| | | Generate and analyze patterns and relationships. (4.OA.C; 5.OA.B) | | Evaluate the sides of a square using square root of the area. Estimate square roots of numbers using perfect squares. (8.EE.A.1-4) | | Use polynomial identities to solve problems. (HSA.APR.C.4) |
| | | Write and interpret numerical expressions. (5.OA.A.1-2) | | Analyze simultaneous equations using a graph. (8.EE.B.5-6) | | Rewrite rational expressions. (HSA. APR.D.6) |
| | | | | Solve linear equations in one variable which include distributive property and like terms. (8.EE.C.7-8) | | Create equations that describe numbers or relationships. (HSA.CED.A.1-4) |
| | | | | | | Understand solving equations as a process of reasoning and explain the reasoning. (HSA.REI.A.1-2) |
| | | | | | | Solve equations and inequalities in one variable. (HSA.REI.B.3-4) |
| | | | | | | Solve systems of equations. (HSA. REI.C.5-7) |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | Represent and solve equations and inequalities graphically. (HSA.REI.D.10-12) |

| **Math Standard 3** | | | | | | |
|---|---|---|---|---|---|---|
| FUNCTIONS: Interpret, analyze, construct, and solve linear, quadratic, and trigonometric functions. | | | | | | |
| **K-2nd Grade Performance Indicators**<br><br>Kindergarten Proficiency<br>First Grade Proficiency<br>Second Grade Proficiency | | **3rd -5th Grade Performance Indicators**<br><br>Third Grade Proficiency<br>Fourth Grade Proficiency<br>Fifth Grade Proficiency | | **6th-8th Grade Performance Indicators**<br>Sixth Grade Proficiency<br>Seventh Grade Proficiency<br>Eighth Grade Proficiency | | **9th-12th Performance Indicators**<br><br>9-12 Grade Proficiency |
| Not applicable | | Not applicable | | Define, evaluate and compare functions. (8.F.A) | | Understand the concept of a function and use function notation. (HSF.IF.A) |
| | | | | Use functions to model relationships between quantities. (8.F.B) | | Interpret functions that arise in applications in terms of the context. (HSF.IF.B) |
| | | | | | | Analyze functions using different representations. (HSF.IF.C.7A-C,E,8-9) |
| | | | | | | Build a function that models a relationship between two quantities. (HSF. BF.A.1A,A.2) |
| | | | | | | Build new functions from existing functions. (HSF.BF.B.3,4A) |
| | | | | | | Construct and compare linear, quadratic, and exponential models and solve problems. (HSF.LE.A) |
| | | | | | | Interpret expressions for functions in terms of the situation they model. (HSF.LE.B) |
| | | | | | | Extend the domain of trigonometric functions using the unit circle. (HSF.TF.A.1-2) |
| | | | | | | Model periodic phenomena with trigonometric functions. (HSF.TF.B.5) |
| | | | | | | Prove and apply trigonometric identities. HSF.TF.C8) |

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| **Math Standard 4** | | | |
|---|---|---|---|
| **GEOMETRY:** Prove, understand, and model geometric concepts, theorems, and constructions to solve problems. | | | |
| **K-2nd Grade Performance Indicators**<br><br>Kindergarten Proficiency<br>First Grade Proficiency<br>Second Grade Proficiency | **3rd -5th Grade Performance Indicators**<br><br>Third Grade Proficiency<br>Fourth Grade Proficiency<br>Fifth Grade Proficiency | **6th-8th Grade Performance Indicators**<br>Sixth Grade Proficiency<br>Seventh Grade Proficiency<br>Eighth Grade Proficiency | **9th-12th Performance Indicators**<br><br>9-12 Grade Proficiency |
| Identify and describe shapes. (K.G.A) | Reason with shapes and their attributes (3.G.A) | Solve real-world and mathematical problems involving area of 2D shapes. (6.G.A, 7.G.B) | Experiment with transformations in the plane. (HSG.CO.A) |
| Analyze, compare, create and compose shapes. (K.G.B) | Draw and identify lines and angles, and classify shapes by properties of their lines and angles. (4.G.A) | Solve real-world and mathematical problems involving area, surface area, volume, and angle measures. (8.G.C) | Understand congruence in terms of rigid motions. (HSG.CO.B) |
| Reason with shapes and their attributes. (1.G.A, 2.G.A) | Graph points on the coordinate plane to solve real-world and mathematical problems. (5.G.A) | Prove the triangle inequality theorem. (7.G.A) | Prove geometric theorems. (HSG.CO.C) |
| | Classify two-dimensional figures into categories based on their properties. (5.G.B) | Understand congruence and similarity using physical models, transparencies. (8.G.A) | Make geometric constructions. (HSG.CO.D) |
| | | Understand and apply Pythagorean Theorem. (8.G.B) | Understand similarity in terms of similarity transformations. (HSG.SRT.A) |
| | | | Prove theorems involving similarity. (HSG. SRT.B) |
| | | | Define trigonometric ratios and solve problems involving right triangles. (HSG.SRT.C) |
| | | | Understand and apply theorems about circles. (HSG.C.A.1-3) |

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| | | | | |
|---|---|---|---|---|
| | | | | Find arc lengths and areas of sectors of circles. (HSG.C.B) |
| | | | | Translate between the geometric description and the equation for a conic section. (HSG. GPE.A.1-2) |
| | | | | Use coordinates to prove simple geometric theorems algebraically. (HSG.GPE.B) |
| | | | | Explain volume formulas and use them to solve problems. (HSG.GMD.A.1,3) |
| | | | | Visualize relationships between two-dimensional and three-dimensional objects. (HSG.GMD.B) |
| | | | | Apply geometric concepts in modeling situations. (HSG.MG.A) |

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| **Math Standard 5** | | | |
|---|---|---|---|
| **Measurement and Data: STATISTICS & PROBABILITY:** Interpret, infer and apply statistics and probability to analyze data and reach and justify conclusions. | | | |
| **K-2nd Grade Performance Indicators**<br>Kindergarten Proficiency<br>First Grade Proficiency<br>Second Grade Proficiency | **3rd -5th Grade Performance Indicators**<br>Third Grade Proficiency<br>Fourth Grade Proficiency<br>Fifth Grade Proficiency | **6th-8th Gr. Performance Indicators**<br>Sixth Grade Proficiency<br>Seventh Grade Proficiency<br>Eighth Grade Proficiency | **9th-12th Performance Indicators**<br>9-12 Grade Proficiency |
| Measure, compare and estimate lengths in length units and standard units. (K.MD.A, 1.MD.A1-2, 2.MD.A-B) | Solve problems involving measurement and estimation (3.MD.B, 4.MD.B, 5.MD.B) | Interpret statistical data. (6.SP.A) | A. Summarize, represent, and interpret data on a single count or measurement variable. (HSS.ID.A) |
| Represent and interpret data. (K.MD.B, 1.MD.C, 2.MD.D, | Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. (3.MD.D | Compare, contrast, and translate data distributions. (6.SP.B) | Summarize, represent, and interpret data on two categorical and quantitative variables. (HSS.ID.B) |
| Tell and write time. (1.MD.B3-4, 2.MD.C.7) | Geometric measurement: understand concepts of area and volume and relate to multiplication and to addition. (3.MD.C, 5.MD.C.3-4) | Use random sampling to draw inferences about a population. (7.SP.B) | Interpret linear models. (HSS.ID.C) |
| Solve word problems involving money. (2.MD.C.8) | Geometric measurement: understand concepts of angle and measure angles. (4.MD.C) | Investigate chance processes and develop, use, and evaluate probability models. (7.SP.C) | Understand and evaluate random processes underlying statistical experiments. (HSS. IC.A) |
| | Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. (3.MD.A) | Investigate patterns of association and bivariate data (8.SP.A) | Make inferences and justify conclusions from sample surveys, experiments, and observational studies. (HSS.IC.B) |
| | Solve problems involving measurement and conversion of measurements within a given measurement system. (4.MD.A, 5.MD.A) | | Understand independence and conditional probability and use them to interpret data. (HSS.CP.A) |
| | | | Use the rules of probability to compute probabilities of compound events in a uniform probability model. (HSS.CP.B.6-7) |

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