COURSE TITLE

Grade 1- Math

LENGTH

Full Year

DEPARTMENT

STEM Department

SCHOOL

Lincoln School Washington School

DATE

September 10, 2018

Initial BOE Approval Date (Born on): 6/15/2015

I. Introduction/Overview/Philosophy

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

- 1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.
- 2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.
- 3. Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.
- 4. Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

II. Objectives

Course Outline:

- 1. Numbers to 10
 - a. Identifying and understanding values to 10
 - b. Introducing Number Bonds

- 2. Facts to 10
 - a. Addition to 10
 - b. Subtraction to 10
- 3. Shapes and Fractions
 - a. Introducing plane and solid shapes
 - b. Shape Patterns
 - c. Partitioning shapes into halves and fourths
- 4. Numbers to 20
 - a. Identifying and understanding values to 20
 - b. Addition and Subtraction to 20
- 5. Numbers to 40
 - a. Identifying and understanding numbers to 40
 - b. Addition and Subtraction to 40
- 6. Measurement and Data
 - a. Length
 - b. Picture Graphs and Bar Graphs
- 7. Numbers to 120
 - a. Identifying and understanding numbers to 120
 - b. Addition and Subtraction to 100
- 8. Multiplication and Division
 - a. Repeated addition
 - b. Sharing equally
- 9. Time and Money
 - a. Identifying time to the hour and half hour
 - b. Identifying coins
 - c. Adding and Subtraction Money

Student Outcomes:

After successfully completing this course, the student will:

- Add and subtract within 20
- Extend the counting sequence
- Measure lengths indirectly by iterating length units
- Reason with shapes and their attributes
- Represent and interpret data
- Represent and solve problems involving addition and subtraction
- Tell and write time
- Understand and apply properties of operations and the relationship between addition and subtraction
- Understand place value
- Use place value understanding and properties of operations to add and subtract
- Work with addition and subtraction equations

New Jersey Student Learning Standards

CAREER READY PRACTICES

CRP1 Act as a responsible and contributing citizen and employee.

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2 Apply appropriate academic and technical skills.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation

CRP4 Communicate clearly and effectively and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP6. Demonstrate creativity and innovation.

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

Technology

Standard 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Strand B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

8.1.2.B.1- Illustrate and communicate original ideas and stories using multiple digital tools and resources. *Strand C. Communication and Collaboration:* Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

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8.1.2.C.1- Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media. *Strand E: Research and Information Fluency:* Students apply digital tools to gather, evaluate, and use information.

8.1.2.E.1- Use digital tools and online resources to explore a problem or issue.

Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Strand C. Design: The design process is a systematic approach to solving problems.

8.2.2.C.1- Brainstorm ideas on how to solve a problem or build a product.

Strand D. Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.2.D.1- Collaborate and apply a design process to solve a simple problem from everyday experiences.

Strand E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

8.2.2.E.1- List and demonstrate the steps to an everyday task.

21st Century Life and Careers

9.2 Career Awareness, Exploration, and Preparation

Strand A: Career Awareness

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards- Math

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

1.G.A.2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quartercircles) 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.

1.G.A.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

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

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

1.MD.C.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.

1.NBT.A.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. *(benchmarked)

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

1.NBT.B.2. a. 10 can be thought of as a bundle of ten ones — called a "ten."

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1.NBT.B.2. b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

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

1.NBT.C.4. Add within 100, including adding a two-digit number and a one-digit number, and adding a twodigit number and a multiple of 10, using concrete models (e.g. base ten blocks) 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. *(benchmarked) 1.NBT.C.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.C.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.

1.OA.A.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.A.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

1.OA.B.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.B.4. Understand subtraction as an unknown-addend problem.

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

1.OA.C.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). *(benchmarked)

1.OA.D.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.

1.OA.D.8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

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.

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III. Proficiency Levels

This curriculum is appropriate for all grade 1 students.

IV. Methods of Assessment

Student Assessment

The teacher will provide a variety of assessments during the course of the year. The assessment may include but is not limited to: chapter and unit tests and quizzes, teacher observations, open-ended problems, cooperative work, and homework.

Curriculum/Teacher Assessment

The teacher will provide the subject area supervisor with suggestions for changes on an ongoing basis.

V. Grouping

This curriculum is appropriate for all students in grade 1.

VI. Articulation/Scope & Sequence/Time Frame

Course length is one year.

VII. Resources

Texts/Supplemental Reading/References

Math in Focus, Marshall Cavendish, 2015

VIII. Suggested Activities

Appropriate activities are listed in the curriculum map.

IX. Methodologies

The following methods of instruction are suggested: teacher guided explorations, working in groups/working with a partner, working with manipulatives and discovery activities.

X. Interdisciplinary Connections

At this grade level, connections to many other disciplines are appropriate and natural. Reading and writing become an integral part of the mathematics process. Connections with science are frequent throughout both curricula. Technology plays an important part in learning mathematics as well.

XI. Differentiating Instruction for Students with Special Needs: Students with Disabilities, Students at Risk, English Language Learners, and Gifted & Talented Students

Differentiating instruction is a flexible process that includes the planning and design of instruction, how that instruction is delivered, and how student progress is measured. Teachers recognize that students can learn in multiple ways as they celebrate students' prior knowledge. By providing appropriately challenging learning, teachers can maximize success for all students.

Differentiating in this course includes but is not limited to:

Differentiation for Support (ELL, Special Education, Students at Risk)

- Peer mentoring on problems
- Differentiated teacher feedback on assignments
- Modeling out problems on whiteboard
- Visual aids as we project problems on whiteboard
- Study guides
- Tiered assignments
- Scaffolding of materials and assignments
- Re-teaching and review
- Guided note taking
- Exemplars of varied performance levels
- Multi-media approach to accommodating various learning styles

Differentiation for Enrichment

- Supplemental reading material for independent study
- Flexible grouping
- Tiered assignments
- Topic selection by interest
- Enhanced expectations for independent study
- Elevated questioning techniques using Webb's Depth of Knowledge matrix

XII. Professional Development

The teacher will continue to improve expertise through participation in a variety of professional development opportunities.

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XII. Curriculum Map/Pacing Guide

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
 Numbers to 10 Identifying and understanding values to 10 Introducing Number Bonds 	6 weeks	 For Support: Demonstrate one-to-one correspondence to 10 Pre-teach vocabulary: more, fewer, same, greater, less Use ten frames to build and compare numbers to 10 Utilize number bond mat and cubes to demonstrate part-part whole relationship For Enhancement: Expand numbers introduced Incorporate the use of the greater and less than sign to compare numbers to 10 Introduce number bond webs Encourage adding addition equations to match completed number bonds 	1.NBT.A.1 1.NBT.B.3 1.OA.C.5 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	 Summative: Chapter 1 Assessment Chapter 2 Assessment Formative: Match numerals to number words 1-10 Identify sets of objects that are more, fewer, or the same, not to exceed sets of 10 Identify number that is greater or less to compare Complete number bond to identify part-part whole relationship
 Facts to 10 Addition to 10 Subtraction to 10 	7 weeks	 For Support: Introduce touch points for numbers through 9 Utilize number line to solve problems Introduce addition/subtraction songs to encourage automaticity For Enhancement: Find sums and differences involving 	1.OA.A.1 1.OA.A.2 1.OA.B.3 1.OA.C.5 1.OA.C.6 1.OA.D.8 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1	 Summative: Chapter 3 Assessment Chapter 4 Assessment Formative: Fact Fluency Assessments Complete a number bond with matching addition and subtraction equation

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Page Assessments
		 teen numbers Demonstrate strategy for finding all number combinations for a given number Incorporate the use of fact families to match a completed number bond 	8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	 Solve word problem with efficient strategy and appropriate equation Complete a fact family Identify missing parts in addition/ subtraction equations
 Shapes and Fractions Introducing plane and solid shapes Shape Patterns Partitioning shapes into halves and fourths 	2 weeks	 For Support: Incorporate the use of pattern blocks, attribute shapes, and solid shapes to identify shape characteristics Introduce tangram puzzles to build composite shapes Utilize shape hunt to encourage recognition of shapes in real world For Enhancement: Identify errors in shape patterns Partition shapes into thirds Introduce additional plane and solid shapes 	1.G.A.1 1.G.A.2 1.G.A.3 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	Summative: Chapter 5 Assessment Formative: • Create and extend shape pattern • Build composite shape • Identify shapes used when given picture • Identify halves and fourths of given shape Sort shapes based on attributes
 Numbers to 20 Identifying and understanding values to 20 Addition and Subtraction to 20 	6 weeks	 For Support: Pre-teach vocabulary: tens, ones, two-digit Incorporate the use of place value charts to build/identify tens and ones Use connecting cubes to provide visual when comparing numbers within 20 Introduce making ten to solve two-digit + one-digit problems 	1.NBT.A.1 1.OA.A.1 1.OA.A.2 1.OA.B.4 1.OA.C.6 1.OA.D.7 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1	Summative: Chapter 7 Assessment Chapter 8 Assessment Formative: • Match numerals to number words 10-20 • Identify number that ismore/less than another number • Order numbers from least to

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
		 For Enhancement: Expand numbers introduced Provide opportunities to write own word problems Create true equations by adding appropriate sign (+ or -) 	9.2.4.A.4	 greatest/greatest to least Solve word problems with efficient strategy and equation Identify missing parts in addition/ subtraction equations
 Numbers to 40 Identifying and understanding numbers to 40 Addition and Subtraction to 40 	7 weeks	 For Support: Incorporate the use of place value charts to build/identify tens and ones Encourage use of place value chart when using vertical equation format Utilize base ten blocks to solve addition and subtraction problems involving two-digit numbers For Enhancement: Expand numbers used in addition and subtraction equations Encourage use of mental math strategies to solve two-digit problems Provide opportunities to write own word problems 	1.NBT.A.1 1.NBT.B.2 1.NBT.B.3 1.NBT.C.4 1.NBT.C.6 1.OA.A.1 1.OA.A.2 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	Summative: Chapter 12 Assessment Chapter 13 Assessment Formative: • Match numerals to number words 20-40 • Complete and extend number patterns • Identify number that is greater/less to compare • Solve addition and subtraction problems with and without regrouping presented with vertical format Apply two-digit addition and subtraction strategies to solve word problems
 Measurement and Data Length Picture Graphs and Bar Graphs 	3 weeks	 For Support: Utilize cubes to measure length Encourage skip-counting by 5s Incorporate use of graph paper to draw bar graphs For Enhancement: 	1.MD.A.1 1.MD.A.2 1.MD.C.4 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1,	Summative: Chapter 9 Assessment Chapter 11 Assessment Formative: • Identify length that is tallest, longest, or shortest to

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
		 Introduce standard units for measurement Encourage estimation before measuring length with non-standard units Collect own data and create picture or bar graph 	8.2.2.E.1 9.2.4.A.4	 compare two or more objects Measure length of object with non-standard units (paper clips, craft sticks) Interpret picture graph or bar graph to identify greatest, least, how many more/fewer Use tally marks to collect data from given picture
 Numbers to 120 Identifying and understanding numbers to 120 Addition and Subtraction to 100 	4 weeks	 For Support: Incorporate the use of place value charts to build/identify tens and ones Encourage use of place value chart when using vertical equation format Utilize base ten blocks to solve addition and subtraction problems involving two-digit numbers For Enhancement: Apply strategies to solve real world word problems Introduce strategies for finding missing parts in two-digit problems Expand numbers used in addition and subtraction equations 	1.NBT.A.1 1.NBT.B.2 1.NBT.B.3 1.NBT.C.4 1.NBT.C.6 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	 Summative: Chapter 16 Assessment Chapter 17 Assessment Formative: Match numerals to number words 40-120 Identify and extend number patterns Compare numbers with the greater than, less than, and equal sign Solve addition and subtraction problems with and without regrouping presented in the vertical format Apply two-digit addition and subtraction strategies to solve word problems
Multiplication and DivisionRepeated additionSharing equally	2 weeks	 For Support: Encourage skip-counting by 2s, 5s, and 10s Utilize cubes to create equal groups 	1.OA.C.5 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1	Summative: Chapter 18 Assessment Formative:

Unit Topic	Time Allocated	Differentiating Instruction for Students with Disabilities, Students at Risk, English Language Learners, & Gifted & Talented Students	Standards	Assessments
		 Incorporate use of visuals to show equal groups <i>For Enhancement:</i> Introduce signs for multiplication and division equations Apply strategies to solve word problems Provide opportunities to group given total in different ways 	8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	 Record repeated addition equations Identify equal groups when given total Solve word problems involving sharing equally
 Time and Money Identifying time to the hour and half hour Identifying coins Adding and Subtraction Money 	2 weeks	 For Support: Utilize Judy Clocks to demonstrate time Encourage skip counting by 5s Utilize coin manipulatives For Enhancement: Identify time beyond the hour and half hour Create word problems involving money amounts Use coins to make change 	1.MD.B.3 1.NBT.C.4 1.NBT.C.6 CRP1,2,4,6,7,8,11,12 8.1.2.B.1, 8.1.2.C.1, 8.1.2.E.1 8.2.2.C.1, 8.2.2.D.1, 8.2.2.E.1 9.2.4.A.4	Summative: Chapter 15 Assessment Chapter 19 Assessment Formative: Identify analog/digital time Identify coins and value Use coins to build given tota Solve word problems involving money amounts