**MOBILE COUNTY PUBLIC SCHOOLS**
**DIVISION OF CURRICULUM & INSTRUCTION**
**FOURTH GRADE MATHEMATICS INSTRUCTIONAL PLANNING GUIDE**
**2017-2018: QTR1**

**Qtr. 1: Weeks 1-3**
**August 8 – August 25 (14 Days)**
**Grade 4, Unit 1: Place Value Concepts**

**UNIT OVERVIEW: APPLYING PLACE VALUE CONCEPTS IN WHOLE NUMBER ADDITION AND SUBTRACTION**
The focus of this unit is to provide students time to develop and practice efficient addition and subtraction of multi-digit whole numbers while developing place value concepts.

| **Essential Questions** | **Key Vocabulary** |
|---|---|
| How does understanding base-10 number system help us add and subtract?<br>How do digit values change as they are moved around in large numbers?<br>What happens to a digit when multiplied and divided by 10?<br>When is estimation useful? | digit, place value, less than (‹), greater than (›), equal to (=), compare, greatest, least, order, round, standard form, word form, expanded form, inequality, expression, add, addend, sum, subtract, difference, equation |

***Basic Fact Assessment: Multiplication factors 0-9***

**Standards/Objectives**

| **Mastery Standards** | **Standards Clarification** |
|---|---|
| **[4-NBT.1]** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.<br>• This standard calls for students to extend their understanding of place value related to multiplying and dividing by multiples of 10. Students should reason about the magnitude of digits in a number. Students should be given opportunities to reason and analyze the relationships of numbers that they are working with. | **[4-NBT.1]** Digit one place right is 10x. |
| **[4-NBT.2]** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.<br>• This standard refers to various ways to write numbers. Students should have flexibility with the different number forms. Traditional expanded form is 285 = 200 + 80 + 5. Written form or number name is two hundred eighty-five. However, students should have opportunities to explore the idea that 285 could also be 28 tens plus 5 ones or 1 hundred, 18 tens, and 5 ones. | **[4-NBT.2]** Read/write w/numerals, names, expanded form (distributive property), compare multi-digit numbers. |

| | |
|---|---|
| **[4-NBT.3]** Use place value understanding to round multi-digit whole numbers to any place.<br>• This standard refers to place value understanding, which extends beyond an algorithm or procedure for rounding. The expectation is that students have a deep understanding of place value and number sense and can explain and reason about the answers they get when they round. | **[4-NBT.3]** Use place value understanding to round to any place, examine purpose of commas. |
| **[4-NBT.4]** Fluently add and subtract multi-digit whole numbers using the standard algorithm.<br>• This standard refers to fluency, which means accuracy, efficiency (using a reasonable amount of steps and time), and flexibility (using a variety of strategies such as the distributive property). | **[4-NBT.4]** Add/subtract multi-digit numbers using algorithm; revisit strategies like benchmarks, compensation, by place-value. |

| **Resources Qtr. 1 Unit 1** | | | |
|---|---|---|---|
| **Engage New York Module 1 Topics A, B, C, D, E - (NBT1, NBT2, NBT3, NBT4)**<br>**https://www.engageny.org/resource/grade-4-mathematics-module-1** | **Georgia Standards Unit 1 - (NBT1, NBT2, NBT3, NBT4)**<br>**https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-1.pdf** | **North Carolina**<br>**NBT1: Tasks 1-2, NBT 2: Tasks 1, NBT3: Tasks 1-2**<br>**http://3-5cctask.ncdpi.wikispaces.net/4.NBT.1-4.NBT.3**<br>**NBT4: Tasks 1**<br>**http://35cctask.ncdpi.wikispaces.net/4.NBT.4-4.NBT.6** | **Math in Focus**<br>**Chapter 1 - (NBT1, NBT2, NBT3)** |
| **Xtra Math http://xtramath.org/#/home/index** *Free, individualized web based program that helps to build student fluency.* | | | |
| **Focus Standards for Mathematical Practice** | | | |
| MP.6 Attend to precision. | | | |
| MP.8 Look for and express regularity in repeated reasoning. | | | |

**Qtr. 1: Weeks 4-6**
**August 28 – September 15 (14 Days)**
**Grade 4, Unit 2: Factors, Multiples, and Multiplication Strategies**

**UNIT OVERVIEW: EXPLORING MULTIPLES, FACTORS, AND MULTIPLICATION STRATEGIES**

In this unit students develop understanding of multiples and factors, applying their understanding of multiplication from the previous year. This understanding lays a strong foundation for generalizing strategies learned in previous grades to develop, discuss, and use efficient, accurate, and generalizable computational strategies involving multi-digit numbers. These concepts and the terms "prime" and "composite" are new to Grade 4, so they are introduced early in the year to give students ample time to develop and apply this understanding.

| **Essential Questions** | **Key Vocabulary** |
|---|---|
| How do area models and arrays connect to multiplication equations?<br>How do we assess the reasonableness of answers using mental math and estimation?<br>How do we know if a number is prime or composite?<br>How does recognizing patterns help us solve problems? | array, area model, multiply, factors, product, multiples, prime number, composite number, equations, unknown variable |

***Basic Fact Assessment: Multiplication factors 0-9***

**Standards/Objectives**

| **Mastery Standards** | **Standards Clarification** |
|---|---|
| **[4-OA.1]** Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.<br>• A multiplicative comparison is a situation in which one quantity is multiplied by a specified number to get another quantity (e.g., "a is n times as much as b"). Students should be able to identify and verbalize which quantity is being multiplied and which number tells how many times. | **[4-OA.1]** Multiplicative comparison (use language)<br><br>Examples: 1 thousand is 10 **times as much** as 1 hundred<br>42 is 7 **times as many** as 6 and 6 times as many as 7 |

| Opportunity for Depth Standards | Standards Clarification |
|---|---|
| **[4-NBT.5]** Multiply a whole number of up to ~~four~~ digits by a one-digit whole number, ~~and multiply two two-digit numbers~~, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.<br>• Multiple strategies enable students to develop fluency with multiplication and transfer that understanding to division. **Use of the standard algorithm for multiplication is an expectation in the 5th grade.** | **[4-NBT.5]** Multiply 2 digit by 1 digit (use groups of drawings, open area model, arrays, and connect to equation). |
| **Supporting Standards** | **Standards Clarification** |
| **[4-OA.4]** Find all factor pairs for a whole number ~~in the range 1-100~~. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.<br>• This standard requires students to demonstrate understanding of factors and multiples of whole numbers. This standard also refers to prime and composite numbers. | **[4-OA.4]** Factor pairs/prime/composite from 1-50 (target goal first qtr.). |
| **Additional** | **Standards Clarification** |
| **[4-OA.5]** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.<br>• Numerical patterns allow students to reinforce facts and develop fluency with operations. | **[4-OA.5]** Number patterns for a rule in additive situations (i.e.+3 or -3). |

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| **Resources Qtr. 1 Unit 2** | | | |
|---|---|---|---|
| **Engage New York Module 3: Topic B, C (Lesson 7), D, F – (NBT5, OA1, OA4)** https://www.engageny.org/resource/grade-4-mathematics-module-3<br><br>**FAL:** ***Beads Under the Clouds*** **-(OA5)** http://education.ky.gov/curriculum/conpro/Math/Documents/KDE_Patterns_Beads_Under_the_Blanket_Intermediate_and_Middle_Grades.pdf | **Georgia Standards Unit 2 – (NBT5, OA1, OA4, OA5)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-2.pdf<br><br>**FAL:** ***Beads Under the Clouds*** **-(OA5)** http://education.ky.gov/curriculum/conpro/Math/Documents/KDE_Patterns_Beads_Under_the_Blanket_Intermediate_and_Middle_Grades.pdf | **North Carolina**<br>**OA1: Tasks 1** http://3-5cctask.ncdpi.wikispaces.net/4.OA.1-4.OA.3<br>**OA4: Tasks 1-3** http://3-5cctask.ncdpi.wikispaces.net/4.OA.4<br>**OA5: Task 1-2** http://3-5cct[4-ask.ncdpi.wikispaces.net/4.OA.5<br><br>**FAL:** ***Beads Under the Clouds*** **-(OA5)** http://education.ky.gov/curriculum/conpro/Math/Documents/KDE_Patterns_Beads_Under_the_Blanket_Intermediate_and_Middle_Grades.pdf | **Math in Focus**<br>**Chapter 2 - (OA4)**<br>**Chapter 3 - (OA1, NBT5)**<br><br>**FAL:** ***Beads Under the Clouds*** **-(OA5)** http://education.ky.gov/curriculum/conpro/Math/Documents/KDE_Patterns_Beads_Under_the_Blanket_Intermediate_and_Middle_Grades.pdf |
| **Xtra Math** http://xtramath.org/#/home/index *Free, individualized web based program that helps to build student fluency.* | | | |
| **Focus Standards for Mathematical Practice** | | | |
| MP.3 Construct viable arguments and critique the reasoning of others. | | | |
| MP.7 Look for and make use of structure. | | | |

**Qtr. 1: Weeks 7-9**
**September 18 – October 6 (15 days)**
**Grade 4, Unit 3: Problem Solving**

**UNIT OVERVIEW: SOLVING PROBLEMS USING MULTIPLICATIVE COMPARISONS & OTHER MULTI-STEP STRATEGIES**

In this unit students are introduced to multiplicative comparison problems. For students to develop this concept, they must be provided rich problem situations that encourage them to make sense of the relationships among the quantities involved, model the situation, and **check their solution using a *different method***. Also, in this unit students continue using computational and problem-solving strategies with addition and subtraction, with an added focus on building conceptual understanding of multiplication and division. Area and perimeter of rectangles provide one context for developing such understanding**.**

| **Essential Questions** | **Key Vocabulary** |
|---|---|
| How are multiplication and division related to each other?<br>How do multiplication, division, and estimation help you solve real world problems?<br>How does the area change as the rectangle's dimensions change (with a fixed perimeter)? | multiply, factors, product, multiples, divide, divisor, dividend, quotient, remainder, divisible, equations, unknown variable, reasonableness, mental computation, estimation, rounding, arrays, area model, area, perimeter |

***Basic Fact Assessment: Multiplication factors 0-9***

**Standards/Objectives**

| **Mastery Standards** | **Standards Clarification** |
|---|---|
| **[4-OA.2]** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.<br>• This standard calls for students to translate comparative situations into equations with an unknown and solve. | **[4-OA.2]** Multiplication and division word problems, examine role of factors in different situations – unknown product (equal groups, arrays, area), number of groups, numbers in each group - WHOLE NUMBERS ONLY. |
| **[4-OA.3]** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. **Assess the reasonableness of answers using mental computation and estimation strategies including rounding.**<br>• The focus in this standard is to have students use and discuss various strategies to solve multi-step problems with whole numbers. | **[4-OA.3]** Multi-step problems with whole numbers (include rounding); first quarter problems should be 2 steps, easy/medium +/- combined (compare rounded to actual answer) – and 1 easy multiply or divide. |

| Opportunity for Depth Standards | Standards Clarification |
|---|---|
| **[4-NBT.6]** Find whole-number quotients and remainders with up to ~~four~~ digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. | **[4-NBT.6]** Divide 2 digit by 1 digit (connect to multiplication, use models, and examine cases w/o types: number of groups, size of group). |
| **[4-MD.3]** Apply the area and perimeter formulas for rectangles in real-world and mathematical problems.<br>• Example: Find the width of a rectangular room given the area of the flooring and the length by viewing the area formula as a multiplication equation with an unknown factor.<br>• This standard provides the context of area and perimeter of rectangles to use for problem solving. | **[4-MD.3]** Apply area/perimeter formula in real-life situations. Connect to arrays to make sense of the formulas. |

**Resources Qtr. 1 Unit 3**

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|---|---|---|---|
| **Engage New York Module 3: Topics A & E - (OA2, OA3, NBT6, MD3)** https://www.engageny.org/resource/grade-4-mathematics-module-3 | **Howard County**<br>**OA2** https://hcpss.instructure.com/courses/107/pages/4-dot-oa-dot-2-assessment-tasks<br>**OA3** https://hcpss.instructure.com/courses/107/pages/4-dot-oa-dot-3-assessment-tasks<br>**NBT6** https://hcpss.instructure.com/courses/107/pages/4-dot-nbt-dot-6-assessment-tasks | **North Carolina**<br>**OA2: Tasks 1-2** http://3-5cctask.ncdpi.wikispaces.net/4.OA.1-4.OA.3<br>**OA3: Tasks 1, 2, 3, 5** http://3-5cctask.ncdpi.wikispaces.net/4.OA.1-4.OA.3<br>**NBT6: Tasks 1** http://3-5cctask.ncdpi.wikispaces.net/4.NBT.4-4.NBT.6<br>**MD3: Tasks 1-2** http://3-5cctask.ncdpi.wikispaces.net/4.MD.1-4.MD.3 | **Math in Focus**<br>**Chapter 3, lessons 1, 3, & 4 - (OA2, OA3, NBT6)**<br>**Chapter12, lessons 1 & 2 - (OA3, MD3)** |

**Xtra Math** http://xtramath.org/#/home/index *Free, individualized web based program that helps to build student fluency.*

**Focus Standards for Mathematical Practice**

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

MP.2 Reasoning abstractly and quantitatively.

MP.8 Look for and express regularity in repeated reasoning.