Grade: 3 Unit: 1	Operations and Algebraic Thinking	9 Weeks

Progression	
2nd Grade	Students learned to…Work with equal groups and build rectangular arrays.
3rd Grade	**Students will learn to…**represent and solve problems with multiplication and division, understand the properties of multiplication and division and the relationship between the two operations. Students will multiply and divide within 100. Finally, students will solve problems using the four operations, identifying and explaining patterns in arithmetic.
4th Grade	Students will extend their work…to gain familiarity with factors and multiples.

STUDENT LEARNING GOALS

Mathematics Standards *(Appendices A & B)*

3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*

.3.OA.B.5 Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*

3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*

.3.OA.B.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*

.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

.3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Interdisciplinary Standards	
Technology Integration *(Appendix C)*	**21st Century Skills** *(Appendix D)*
IS1. Information Strategies IS2. Information Use	TCS1. Use of Information TCS5. Problem Solving

Key Vocabulary	
array	**Division**
factor	**divide**
multiplication	**dividend**
multiply	**divisor**
product	**quotient**
times	**commutative property**
	associative property
	distributive property

Enduring Understandings	Essential Questions
• I can use multiple strategies, such as repeated addition and drawing an array, to solve a multiplication equation. • I understand that multiplication means combining equal groups. • I can write situations where multiplication can be applied and solve these problems. • I can apply the commutative property of multiplication as a strategy to solve problems. • I can apply the associative property to make multiplying easier. • I can decompose numbers as a strategy for multiplying. • I can apply the distributive property as a strategy to learn multiplication facts & to solve problems. • I understand that division means sharing equal groups. • I can write situations where division can be applied and solve these problems. • I understand the relationship between multiplication and division. • I understand that fact families produce related multiplication and division number sentences. • I can find the unknown number in a whole number multiplication or division problem. • I can fluently multiply and divide within 100 (by the end of third grade) • I can solve word problems using equations with the missing whole number in different places. • I can use hundreds charts, addition tables, and multiplication tables to model addition or multiplication patterns and explain why those patterns make sense.	• How are multiplication equations represented? • What does multiplication mean? • What strategies can be used to find products? • Why is multiplication called “repeated addition”? • How can the commutative, associative, and distributive properties apply to multiplication? • What does division mean? • What strategies can help solve division problems? • What situations in life require multiplication and division? • How are multiplication and division related? • How can fact families be applied to multiplication and division? • How can I find an unknown number in a multiplication and division problem? • Why is it important to be able to fluently multiply and divide? • What patterns are found on hundreds charts, addition tables, and multiplication tables? • How do patterns help to make multiplication and division make sense?

Assessment Plan	
Summative Assessment(s)/Performance Based Assessments including 21st Century Learning RCC Interim Assessment, Student p. 58-59 RCC Performance Task, Student p. 67	**Formative and Diagnostic Assessment(s)** STAR Math Assessment (Fall) RCC Embedded Tasks and Assessments

Learning Plan Components	
Text	**Ready Common Core Mathematics Instruction 3**, 2014, Curriculum Associates, ISBN: 978-0-7609-8637-0
Print	**Ready Common Core Mathematics Teacher Resource Book 3**, 2014, Curriculum Associates, ISBN: 978-0-7609-8644-8
Electronic	www.teacher-toolbox.com www.stratfordmath.wikispaces.com www.xtramath.org
Weeks 1 & 2	Students will: • Understand that the symbol x means "groups of" • Interpret a multiplication problem situation using pictures, objects, words, numbers, and equations. • Understand that repeated addition and skip counting are strategies for finding a product, but the meaning of multiplication is finding numbers of equal groups.

Lessons	Tasks / Activities	Worksheets	Technology
Ready Common Core Lesson 1 pgs. 4-9 Differentiation p. 10	What's My Product" (Georgia) * *Ready CC* p. 4 "Hands on Activity" * "One Hundred Hungry Ants" (Georgia) * "Arrays on a Farm" (Georgia)	www.commoncoresheets.com Scott Foresman R 5-1, R 5-2 Exit Slips Task 13 (Howard Country)	

Week 3	Students will: • Understand the commutative property (numbers can be multiplied in any order and the product will be the same). • Apply the commutative property as a strategy to solve multiplication problems. • Understand the associative property (that three or more factors in a problem can be grouped in different ways and the product will be the same). • Apply the associative property to make multiplying easier and as a strategy to solve problems.

Lessons	Tasks / Activities	Worksheets	Technology
RCC Lesson 2 pgs. 11-22	"Circles & Stars" "How Long, How Many"	Scott Foresman PS 6-9, P5-3 Exit Slips Tasks 1, 3, 7 (Howard County)	

Week 4	Students will: • Apply the distributive property (break apart a factor as a strategy for multiplying). • Apply the distributive property as a strategy to learn multiplication facts and solve multiplication problems.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 3 pgs. 23-32	*"Making the Hard Facts Easy" (Georgia) *Ready CC p. 28 "Hands on Activity"- Using tiles to break apart factors * *Ready CC p 32* "Hands on Activity	Scott Foresman E 6-1, PS 5-9, P 5-9 (multiplying 0 & 1) Exit Slips- (Howard County)	
Week 5	Students will: • Understand division as sharing, knowing the equal shares and finding the number in each share or group • Understand division as separating equal shares or groups and finding the number of shares. • Describe stories or contexts for division expressions.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 4 pgs. 33-40	* "The Doorbell Rang" (Georgia) * *Ready CC* p. 34 & 35 "Hands-On Activity" * "Solving Division Problems" (N.Carolina)	Scott Foresman P 7-1 & PS 7-1 Division as Sharing, P 7-2 & PS 2Division as Repeated Sub. Exit Slips (Howard County)	"How Long, How Many" *See Marilyn Burns *Lessons for Introducing Division* online

Week 6	Students will: • Understand the relationship between multiplication and division. • Demonstrate that fact families produce related multiplication and division number sentences. • Find the unknown number in a whole number multiplication or division problem.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 5 pgs. 41-48	*"Arranging our Fact Families" (Georgia) *"My Special Day" (Georgia) * *Ready CC* p. 45 "Hands on Activity"	Scott Foresman P 7-3 & PS 7-3 Writing Division stories Exit Slips	Multiplication.com Mathplayground.com
Week 7	Students will: • Begin to fluently multiply and divide within 100 (goal is by end of third grade). • Use fact families and the relationship between multiplication and division to find unknown whole numbers in multiplication and division. • Solve word problems using equations with the missing whole number in different places.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 6 pgs. 49-58	*"Shake, Rattle, Roll Revisited" (Georgia) **Ready CC* p. 54 "Hands on Activity" *Game "Pathways" (see website)	Scott Foresman PS 7-5 Relating Mult. & Div. Factors worksheets: Multiplication P 6-1, P 6-2, PS 6-2, P 6-3, P 6-4, P 6-5, P 5-11 Division: P 7-10, PS 7-10, P 7-6, P 7-8, PS 7-8	"Pathways" game http://www.mathsolutions.com/documents/Game25_Pathways_nl46.pdf Games boards: http://mathsolutions.com/documents/i29_gameboards.pdf Xtra Math website
Week 8	Students will: • Use hundreds charts, addition tables, and multiplication tables to model addition or multiplication patterns and explain why patterns make sense. • Use number properties to find and explain patterns. • Use knowledge of even and odd numbers to find and explain patterns.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 7 pgs. 59-66	* "Skip Counting Patterns" (Georgia) * "Multiplication Chart Mastery"		http://parccgames.com/?page_id=61
Week 9	Students will: • Demonstrate mastery of unit objectives.		
Summative Assessment		**Performance Task**	
RCC Unit 1 Interim Assessment -Student p. 58-59 -Scoring Guide p. 67		RCC Unit 1 Performance Task -Student p. 60 -Rubric p. 69	