Curriculum Sample for 4th Grade Math

Grade Level	4th	**Content Area**	Math
Course Title (grades 9-12 Only)	n/a		
Length of Unit	5 days	**Time of Year**	3rd Quarter
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	Students will be able to multiply one digit whole numbers by multiples of 10 in the range of 10 to 90 using strategies based on place value and properties of operations. Students will be expected understand various meanings of multiplication.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	Students will be taught using scaffolding methods as well as with direct instruction. Through lecture-discussions and demonstrations, students will develop their knowledge while practicing problem-based learning & inquiry activities.		
Standard Number and Description *List the Number* and full description for the required Standard.*	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.		
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	Students will complete an assessment that demonstrates Students can compute whole –number quotients and remainders with 1-, 2-, 3-, and 4-digit dividends and one-digit divisors based on place value, properties of operations and relationships between multiplication and division. Students will also show competence in illustrating and explaining division using rectangular arrays and/or area models.		
Scoring Scale and Mastery Level *Explain how the assessment is scored, to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy of the answer key and scoring rubric (whichever applicable) must be attached to the curriculum sample.*	Students will show competency in solving whole-number quotients and remainders by completing a quiz that starts with a simple question in illustrating a division problem. Students then go one to complete four 2-digit division problems to show sufficient knowledge. Then Students, complete a word problem and record an equation that matches the problem and solve the problem. Next, Students illustrate another rectangular array with a remainder. Finally, Students complete eight 3-and 4-digit division problems using properties of operations. Question 1 = 5 points; Question 2 = 4 points; Question 3 = 2 points; Question 4 = 2 points; Question 5 = 8 points. Total of 24 points; 20 points or higher = mastery which is set at 80%.		
Materials/Resources Needed	Teacher's Edition Saxon Books, Volume 1 and 2; multiplication tables; Student books; iPads; Division Assessment; Answer Key		

Lesson (add as needed)	**Instruction**	**Student Activities**
1	Teacher states, "Today we will learn division." Teacher reminds Students that multiplication problems have three numbers. (The multiplied numbers are "factors" and the answer is the "product." Teacher emphasizes, "If we know the two factors, we multiply to find the product. If the factors are four and three, the product is 12. If we know one factor and the product, we can find the other factor." Teacher points out, "We can use division to find a missing factor. Division 'undoes' a multiplication." Teacher displays a multiplication table and states, "We can use a multiplication table to find a missing factor. If we know that one factor is 3 and the product is 12, we look across the row that starts with 3 until we see 12. Then we look up to the top of the column containing 12. There we find 4, which is the missing factor. We write the numbers 3, 4, and 12 with a division problem this way: 12/3 = 4." Teacher asks Students to divide 32 by 4. Teacher states, "We want to find the missing factor. We think, 'Four times what number is thirty-two? We find the missing factor using the multiplication table. First we find the row beginning with 4. Then we follow this row across until we see 32. Then we look up this column to find that the answer is 8. Teacher instructs Students to get out their iPads and watch the Youtube video of long division (3.11). Next Teacher instructs Students to practice division on the website: http://www.ixl.com/math/grade-4/division-facts-to-12	Students listen to Teacher's instructions. Students divide 32 by 4 to get 8. Students get out their iPads and practice division on the website: http://www.ixl.com/math/grade-4/division-facts-to-12 Students complete "Lesson Practice 46."

	Teacher instructs Students to complete the "Lesson Practice 46."	
2	Teacher states, "Today we will be learning how to divide a one-digit number with a remainder." Teacher reviews all division with Students – including use of arrays, place value, and standard algorithm to solve problems. Teacher explains, "We can divide 12 objects into equal groups of four. Here we show 12 dotes divided into three equal groups of four. However, we cannot divide 13 dots into equal groups of four, because there is one dot too many. We call the extra dot the 'remainder.' We can show 13 is to be divided into groups of four by writing 13/4 =." Teacher states, "As we look at this problem, we might wonder what to write for the answer. The answer is not exactly 3, because 3 x 4 = 12, which is less than 13. How3ever, the answer cannot be 4 because 4 x 4 = 16, which is more than 13. Since we can make three groups of four, we write, '3' for our answer. Then we multiply 3 by 4 and write '12' below the 13. We see that 13 is more than 12. Now we find out how much is left over after making three groups of four. To do this, we subtract 12 from 13. There is one left over. The amount left over is the remainder. Using the letter 'R' for 'remainder' we write the answer to the division problem as '3 R 1.'" Teacher demonstrates that step 1 is to "divide," step 2 is to "multiply," step 3 is to "subtract," and step 4 is to "bring down." Teacher writes the problem, "16 divided by 3 on the board" and asks a volunteer to come answer the problem using a sketch with dots to help answer the problem. Teacher instructs Students to get out their iPads and practice division with remainders from the website:	Students listen to Teacher's instructions. Students review division from yesterday. Students divide 13 by 4 to get 3 R 1. Students get out their iPads and practice division on the website: http://www.ixl.com/math/grade-4/divide-by-1-digit-numbers-interpret-remainders Students complete "Lesson Practice 53."

	http://www.ixl.com/math/grade-4/divide-by-1-digit-numbers-interpret-remainders Teacher instructs Students to finish up the "Lesson Practice 53."	
3	The following day, Teacher states, "In this lesson we will learn a pencil-and-paper method for dividing a two-digit number by a one-digit number. We will demonstrate this method as we solve this problem: 'The seventy-eight fifth-graders at Washington School need to be divided equally among three classrooms. How many students should be in each classroom?" Teacher explains, "There are three numbers in this 'equal groups' problem: the total number of students, the number of classrooms, and the number of students in each classroom." Teacher writes on the board: "Number of groups x number in each group = total. 3 classrooms x N students in each classroom = 78 students." Teacher reiterates, "To find the number of students in each classroom, we divide 78 by 3." Teacher states, "For the first step we ignore the 8 and divide by 7 and 3. We write '2' about the 7. Then we multiply 2 by 3 and write '6' below the 7. Then we subtract and write '1.' Next we bring down the 8. Together, the 1 and 8 form 18. Now we divide 18 by 3 and get 6. We write the 6 above the 8 in 78. Then we multiply 6 by 3 and write '18' below the 18. We subtract and find that the remainder is zero. This means that if the students are divided equally among the classrooms, there will be 26 students in each classroom. Since division facts and multiplication facts form fact families, we may arrange these three numbers to form a multiplication fact: 3 x 26 = 78. We can multiply 3 by 26 to check our work." Teacher writes the example on the board: Divide 87 by 3. Then	Students listen to Teacher's instructions. Students review division from yesterday. Students divide practice dividing by two-digit numbers. Students get out their iPads and practice division on the website: http://www.ixl.com/math/grade-4/divide-by-2-digit-numbers Students complete "Lesson Practice 64."

	check your work. Teacher asks for Students to volunteer to solve the equation on the board. Teacher checks the work and writes down other examples for Students to complete. Teacher then asks Students to get out their iPads and practice using the website: http://www.ixl.com/math/grade-4/divide-by-2-digit-numbers Teacher then instructs Students to complete the "Lesson Plan 64."	
4	The next day, Teacher states, "Today we will learn division with three-digit answers. Let's review the steps to a division problem (Divide, multiply, subtract and bring down.) For each step we write a number. When finish step 4 (bring down) we go back to step 1 and repeat the steps until no digits remain to bring down. " Teacher writes the problem on the board: "Divide: 794/3 =." Teacher explains each step of this problem on the board. Teacher gives Students several other problems like this. Teacher then states that if Students are able to divide 3-digit numbers, they can divide 4-digit numbers. Teacher writes, "5692/3 =" on the board. Teacher asks Students to come up to the board and try to solve problems. Teacher then instructs Students to practice two websites: http://www.ixl.com/math/grade-4/divide-numbers-ending-in-zeroes-multi-digit-divisors and http://www.ixl.com/math/grade-4/divide-numbers-ending-in-zeroes-multi-digit-divisors-word-problems Teacher assigns the "Lesson Practice 76" to Students	Students listen to Teacher's instructions. Students review division from yesterday. Students divide practice dividing by three-digit and four-digit numbers. Students get out their iPads and practice division on the websites: http://www.ixl.com/math/grade-4/divide-numbers-ending-in-zeroes-multi-digit-divisors and http://www.ixl.com/math/grade-4/divide-numbers-ending-in-zeroes-multi-digit-divisors-word-problems Students complete "Lesson Practice 76."
5	Teacher passes out "Division Assessment" to Students. Teacher collects assessment.	Students complete "Division Assessment." Students turn in tests.

Summative Assessment:

Division Assessment

Name _____ Date _____

Directions: Please answer all questions by computing whole-number quotients of whole number with up to four-digit dividends and one-digit divisors, using the relationship between multiplication and division. Students will also demonstrate knowledge by illustrating and explaining the calculation by using equations, rectangular arrays and/or area models.

1. Illustrate the following division problem using a rectangular array of dots: Twenty divided by five = four

2. Complete:

45/ 9 = _____ 81/9 = _____ 35/7 = _____ 42/6 = _____

3. The bag had 783 jellybeans, and Aidan and her four friends want to share them equally. How many jellybeans will Aidan and each of her friends get? Show your work.
Equation: _____
Answer (you should have a remainder): _____

4. Illustrate the following division problem using a rectangular array of dots and solve the equation: 32/3 = _____

5. Complete and show your work:

876/4 = _____ 659/2 = _____ 131/4 = _____ 711/6 = _____

8901/3 = _____ 1199/5 = _____ 7892/5 = _____ 4300/8 = _____

Answer Key/Scoring Rubric:

Answer Key

Total = 24 points; 20 points or higher = mastery

1. Student drew 20 dots and circled groups of 5 to equal 4 dots per group. (5 points)
2. 5; 9; 5; 7 (4 points)
3. 783/5 = 156 R3 (2 points)
4. Student drew a rectangular array using dots and circled three groups of 10 and one group of 2; Student solved the equation = 32/3 = 10 R2 (5 points)
5. 219; 329 R1; 32 R3; 118 R3; 2967; 239 R4; 1578 R2; 537 R4 (8 points)

Total Points = _____/24

Comments:

Points	Percentage
17	71
18	75
19	79
20	83 *mastery
21	88 *mastery
22	92 *mastery
23	96 *mastery
24	100 *mastery