Grade Level	Content Area	Course Title *(For 9-12 Samples Only)*	Unit Title
Grade 3	**Mathematics**		**Literature Computations**

Length of Unit	Time of Year Taught	Expected Prior Knowledge
Ten Lessons	Fall	Numbers and number sense; Computation; Money

Unit Description This unit is designed to teach computation through the use of children's literature by integrating the mathematical concept with the stories. This unit introduces, reviews, and reinforces computation and problem solving skills to ensure mastery of the core objectives

Standards: Common Core State Standards for Mathematics	**Domain:** Operations and Algebraic Thinking **Cluster:** Represent and solve problems involving multiplication and division**.** **Standard**: #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.* .
Summative Assessment *In addition to the description, include a copy of the summative assessment in the application package.*	Students look over 3 different arrays, count the symbols in each row and column and then write the **multiplication** fact for each array.
Scoring for Summative Assessment *In addition to the description, include a copy of the answer key and scoring rubric (if applicable) for the summative assessment in the application package.*	Mastery is set at 80%. Total points on the assessment – 43. Students must achieve 34 points to demonstrate mastery.
Materials/Resources Needed *Include all items for the entire unit.*	*Each Orange Had 8 Slices*. E. Pallotta, J. *The Hershey's Milk Chocolate Multiplication Book* and *Hershey's Kisses Multiplication and Division*; Pinczes, E.; *Mrs. Fitz's Flamingos*; I. Neuschwander, C. *Amanda Bean's Amazing Dream: A Mathematical Story; Math Appeal* Greg Tang; 100's Chart for each student; dice; Handouts: Flamingos Everywhere!, Chocolate Candy Company, Amanda's Dreamhouse, Rubric for Amanda Bean, Meeting Seating, The Meeting Rubric, Each Child Has Two Eyes, Rubric for Two Eyes

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Instruction and Timeline Each lesson should take approximately 75 minutes.	**Multiplication by 2s-*Mrs. Fitz's Flamingos*** *Key Vocabulary:* 1. skip counting 2. pattern 3. multiplication Read Mrs. Fitz's Flamingos to class. Discuss Mrs. Fitz's pattern of purchasing flamingos (she bought them 2 at a time). Have students use hundreds chart to skip count by 2s. They will count by twos and shade in the numbers. Discuss anything the students observe (pattern, numbers are even, etc.) Use overhead of "Flamingos Everywhere." As a class, discuss how many flamingos would be purchased in one month. Have students use hundreds chart to compute the amount of flamingos bought in 6 months and then one year (52 weeks). Discuss what students discovered. Demonstrate that repeated addition can also employ multiplication. Show 2+2+2+2 is the same as 2x4. Demonstrate how to compute multiplication using the hundreds chart (start on 2 and go to the next 2 in succession by the number you are	**Chocolate Arrays** *Key Vocabulary:* 1. vertical – up and down 2. horizontal- side to side 3. commutative property of multiplication- reversal of factors will give the same product. 4. dimension- the measurement of a length or width. 5. array- grid representing multiplication equation. Teacher will tell the students that a chocolate candy company has approached her and asked if the students in his/her class have ideas for a new candy that kids their age would enjoy. The company will need to create the candy size based on the desire for chocolate. They will need to know how many pieces each bar should contain to satisfy their customers needs. Discuss with students that at the end of the lesson, they will have an opportunity to create their own candy bar. Teacher will introduce/review vocabulary. Teacher will model arrays using colored tiles on overhead of ideas for the various candy sizes beginning with 3 X 5. Teacher will demonstrate how students can skip count vertically or horizontally to come up with an answer.	**My Dream House** *Key Vocabulary:* 1. column –A line of numbers, words or objects running down a page 2. row – A line of numbers, words or objects side by side 3. group – a number of things that go together or are similar in some way. Begin this lesson with reading the book, *Amanda Bean's Amazing Dream – A Mathematical Story*, to the class. Discuss with the class a time they felt it took too long to count something. "Would it have been easier and faster to multiply?" Discuss the possibilities of multiplying rather than adding. In order to be able to multiply, things must come in groups, rows, or columns. (Refer back to the pictures of items coming in groups, columns and rows, from *Amanda Bean's Amazing Dream*) Put on the overhead a copy of Amanda's Dream House. (Appendix D) Have the students look at each room in her house. Since Amanda loved to count everything, she wanted to find out how much space her house takes up on paper. Ask the students to figure out the amount of space that Amanda's bedroom took up.	**How many at the Meeting?** *Key Vocabulary:* 1. column – A line of numbers, words, or objects running down a page. 2. row – A line of numbers, words, or objects side by side. 3. group – a number of things that go together or are similar in some way. 4. skip counting – assigned a given interval, count by that number and skip the numbers in between (5, 10, 15, 20, 25…) Begin this lesson by discussing an important meeting that the principal of your school is having in the cafeteria. When you went in to see if the meeting had started yet, you see the chairs all set up. Using the overhead, draw out 25 chairs (use x's) with 5 chairs in each of 5 rows. Have the children count by ones, the number of chairs the principal set up. Ask the students if there is a faster way to count the chairs. Skip count by 5's to count the chairs. (5, 10, 15, 20, 25) Then discuss how many rows of chairs were set up. How many chairs in each row?(5x5 =25). Model for the students the repeated addition for this number of chairs, as well as the multiplication equation. Repeat this for 15 chairs (5x3=15) , 30 chairs (5x6=30) and 12 chairs (3x4 =12)	**Each Child Has Two Eyes** *Key Vocabulary:* 1. equal – having the same quantity 2. set- a group of matching or related things 3. skip counting – counting numerals based on a numerical pattern Teacher will call on four students to come to the front of the classroom. Pose the following problem. There are four students standing at the front of the room. Each student has 2 eyes. How many eyes do the four students have altogether? The teacher will draw three circles on the board to represent the three children. Within each circle the teacher will place two tally marks to represent eyes. Ask students for answer. The teacher will write the equation on the board and label the factors and product. Repeat step one 3 more times using different criteria for problems such as: 5 children – each has 10 toes – How many toes are there altogether? 6 children – each has 2 legs – How many legs are there altogether? 7 children – each has 5 fingers – How many fingers are there in all?

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
	multiplying by. Ex. 2x6 = start at 2 and count 5 more 2s, ending on 12). *Assessment/Evaluation* 1. Students will work in learning partners to play "Flamingo"!	Discuss and label arrays modeled on overhead. Teacher will pass out grids and plastic baggies filled with 25 colored tiles. Teacher will model an equation such as 2 X 6 and 6 X 2. Teacher will ask students if the amount of space has changed. Students should notice that the product stays the same even if the factors are reversed. Tell students that this is the commutative property of multiplication. Teacher will call out equations for students to solve using arrays. Ask for volunteers to share answers.	Count with them by ones. Ask the student's what might be a faster way of counting the space for her room. Skip count with the students by 5's. Next, point out to them the number of columns and rows that make up Amanda's room. 5X6=30. On Amanda's dream house, write in the space of her bedroom the addition problem, (5+5+5+5+5+5=30) as well as the multiplication problem used to find the space needed for her room, (5x6=30). Write the total amount of space needed and circle it in the room, (30). Repeat this process for the other rooms in Amanda's Dream House. Discuss with the class which is faster for finding how much space each room takes up, addition or multiplication. *Assessment/Evaluation:* Teacher will informally assess student understanding through the discussions while working on the overhead with the whole class. Rubric for *Amanda Bean*	Read aloud to the students "Frog Gone", from Greg Tang's Math Appeal. Pay close attention to the clue at the end of the page for figuring out the number of frogs. Brainstorm with the class ideas of how to come up with the answer to how many frogs there are without counting each individual frog. Count the rows of lily pads. Count how many lily pads in each row. Have a student write on the board the repeated addition problem. Have another student come up and write the multiplication problem. (5+5+5+5+5=25) (5x5=25). Discuss with the class how this gets us closer to finding out the number of frogs on the page. Getting back to the meeting the principal is having in the cafeteria, use the overhead transparency we began with counting the 25 chairs (5 rows of 5 chairs). Circle 6 chairs randomly. Let the children know that the chairs you have circled are empty seats. How many people actually attended the meeting? How can you figure this out quickly? Again show the multiplication for the seating arrangement, then subtract the number of open seats. Discuss with the class other situations they might be able to use this. Remember you can only multiply when things come in	*Evaluation/Assessment:* Teacher will use a rubric to score understanding of lesson

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
				rows, columns, or groups. *Assessment/Evaluation* Teacher will informally assess student understanding through the discussions while working on the overhead with the whole class The Meeting Rubric	

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Student Activities and Timeline	Students will use hundreds chart to skip count by 2s. They will count by twos and shade in the numbers. Students will work in learning partners to play "Flamingo"! Each set of partners needs a pair of number cubes, a hundreds chart, a piece of paper, and a pencil. The first student rolls the number cube. He/she multiplies whatever numbers he rolls by 2. Ex. Learner rolls a 2 and a 7. They must add up the two numbers (2+7) (9) and multiply that by 2 (18). They may use the hundreds chart to find the answer. The second student rolls and does the same thing. The student with the largest answer wins. He/she puts the letter F on their paper. The game continues with students earning letters to spell Flamingo. The first person that spells Flamingo wins!	Students will solve equations using arrays. Students will record in their math journal what they learned during the lesson. *Assessment/Evaluation* 1. Students will create their own chocolate candy bar using appendix B.	The student will then get a piece of grid paper to make up their own dream house. Instruct the students to write an addition and multiplication sentence for each room in their house. In addition to these sentences, they should write and circle the total amount of space needed for each room. When each room is completed, the students will total up the amount of space their dream house takes up.	Read "Rock Stars", from Greg Tang's Math Appeal. Be sure to pay close attention to the last couple of sentences that give a clue to how to figure this out quickly. Students will discuss in groups how many rows of stars there are, and how many stars are in each row. Students shall be able to skip count 6, 12, 18, 24, 30, 36 and write the repeated addition problem. (6+6+6+6+6+6=36) and then write the multiplication sentence 6x6=36. Next count the missing stars. Discuss with the group how you can use this information to determine the number of stars on the page. Student will write repeated addition problems. They will then write the multiplication sentence on the board that corresponds to the addition problem.	Students will read *Each Orange Had Eight Slices* in groups. Students will record facts in their math journal. After the facts are written down, the students will create a pictorial model of the problem. Students will use their math journals to write down what they learned during the lesson. *Assessment/Evaluation* 1. Students will create their own word problem. Compile into a class book or hang around the room so that other students can solve their classmates problems. .

				Break the class up into partners. Give each set of partners 4 “ Meeting Seating” cards. Have the students figure out the attendance at each of the meetings. Be sure they show their work by skip counting, writing the multiplication sentence.	

Appendix A

Flamingos Everywhere!

Mrs. Fitz bought 2 flamingos every Thursday. How many flamingos did she buy in 1 month (4 weeks)? In 3 months?

Number of flamingos bought	Week	Total Number of Flamingos
2	1	2
2	2	4
2	5	10
	6	
	7	
	8	
	9	
	10	
	11	
	12	

Appendix B

Name_____

The president of the Chewy Chocolate Candy Company has asked for your ideas on the creation of a new candy bar. He is trying to decide the amount of chocolate it will take to satisfy the customers sweet tooth. Design your chocolate bar in the box above. List the dimensions of the candy bar and tell how many pieces there will be in all.

On the lines below, convince the president why he should choose your design.

Appendix C

Amanda's Dreamhouse

Appendix D

Rubric for *Amanda Bean*

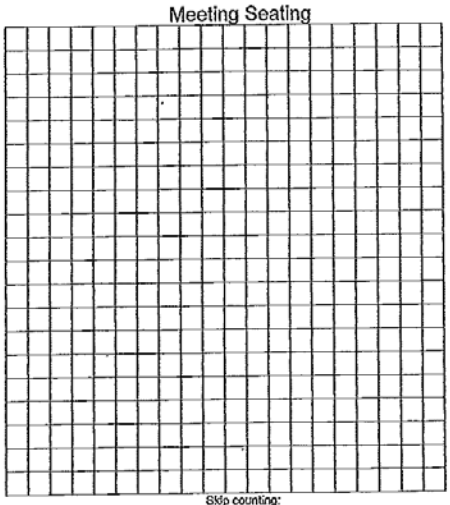
Topic_____ Name_____

Category	4	3	2	1
Diagrams	Diagrams and equations are completed with 90% accuracy or above	Diagrams and equations are completed with 80% accuracy	Diagrams and equations are completed with 70% accuracy	Several of the problems are incomplete and inaccurate
Reasoning	Uses higher level thinking skills	Uses effective reasoning	Uses some evidence of reasoning	Uses little evidence of reasoning
Explanation	Explanation is detailed and clear	Explanation is clear	Explanation is somewhat difficult to understand, but includes necessary components	Explanation is very difficult to understand and is missing necessary components

Final Score_____

Appendix E

Meeting Seating



Skip counting:
Multiplication sentence:
How many seats allogether?
Number of empty seats:
Subtraction sentence:
How many people were at the meeting?

Appendix F

The Meeting Rubric

Topic _____ Name _____

Category	4	3	2	1
Completion	All problems are completed with 100% accuracy	All problems are completed with 80% accuracy	All problems are completed with 70% accuracy	Several of the problems are incomplete and/or inaccurate
Reasoning	Uses higher level thinking skills	Uses effective reasoning	Uses some evidence of reasoning	Uses little evidence of reasoning
Accuracy and Neatness	Math work is correct and neat	Math work is correct and somewhat neat	Math work is correct, but not neat	Math work is incorrect and not neat

Final Score _____

Appendix H

Each Child Has Two Eyes
Name _____

How many _____ were there?

How many _____ were there?

How many _____ were there in all?

Appendix I

Rubric for Two Eyes

Topic _____ Name _____

Category	4	3	2	1
Math Concepts	Explanation shows complete understanding of the concept	Explanation shows substantial understanding of the concept	Explanation shows some understanding of the concept	Explanation shows very limited understanding of the concept
Reasoning	Uses higher level thinking skills	Uses effective reasoning	Uses some evidence of reasoning	Uses little evidence of reasoning
Explanation	Explanation is detailed and clear	Explanation is clear	Explanation is somewhat difficult to understand, but includes necessary components	Explanation is very difficult to understand and is missing necessary components
Accuracy and Neatness	Math work is correct and neat	Math work is correct and somewhat neat	Math work is correct, but not neat	Math work is incorrect and not neat

Final Score _____

Appendix J

Name: _____

Multiplication with Arrays

When you multiply, think of the multiplication symbol as having the meaning "rows of."

The fact 3 x 6 would actually mean "3 rows of 6"

To solve this fact, draw 3 rows of 6 symbols.

```
x x x x x x
x x x x x x      3 rows of 6 symbols equals 18 symbols.
x x x x x x      3 x 6 = 18
```

Symbols aranged in neat rows and columns are called arrays.

Look at each array. Count the symbols in each row and column carefully. Write the multiplication fact for each.

1.
```
O O O O O O O O
O O O O O O O O
O O O O O O O O
O O O O O O O O
```
_____ rows of _____ equals _____

_____ x _____ = _____

2.
```
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
```
_____ rows of _____ equals _____

_____ x _____ = _____

3.
```
◆ ◆ ◆ ◆
◆ ◆ ◆ ◆
◆ ◆ ◆ ◆
◆ ◆ ◆ ◆
```
_____ rows of _____ equals _____

_____ x _____ = _____

Now try this: On the back of this paper, draw an array for each of these facts:
7 x 4 ***8 x 3*** ***9 x 6*** ***3 x 7*** ***8 x 5***

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Answer Key:

1. 4 rows of 8 equals 32; 4 x 8 = 32 6 points
2. 5 rows of 9 equals 45; 5 x 9 = 45 6 points
3. 4 rows of 4 equals 16; 4 x 4 = 16 6 points

4 – 8. Answers may vary 5 points each

Total points on test=43