Grade 4 Unit 2
Multiplication and Division of Whole Numbers

Volume 1 Issue 2

References

Helpful Links:

http://www.learner.org/courses/learningmath/number/session4/part_b/multiplication.html

http://www.adaptedmind.com/Fourth-Grade-Math-Worksheets-And-Exercises.html

http://resources.oswego.org/games/mathmagician/maths1.html

My Math Grade 4 Textbook Connection:

Ch. 3, Lessons 3.1- 3.8
Ch. 4, Lessons 4.1 – 4.5, 4.7
Ch. 5, Lessons 5.1 – 5.5
Ch. 6, Lessons 6.1 – 6.6, 6.8
Ch. 7, Lessons 7.1 – 7.4
Ch. 13, Lessons 1-2, 4-5

Textbook Online:

http://connected.mcgraw-hill.com/connected/login.do

Student User ID:
ccsd(student ID)
Password: cobbmath1

Dear Parents,

Your student's math class is calling for students to be actively engaged in doing math in order to learn math. In the classroom, students will frequently work on tasks and activities to discover and apply mathematical thinking. Students will be expected to explain or justify their answers and to write clearly and properly. Your student will receive a consumable My Math textbook and online access from his or her teacher.

Concepts Students will Use and Understand

- Explain how a multiplication equation can be used to compare
- Multiply and divide to solve word problems that use multiplication to compare
- Solve multistep word problems using the four operations
- Interpret the meanings of remainders
- Represent problems using equations with a letter standing for the unknown quantity
- Determine if answers make sense using mental math, estimation, and mental math
- Find factor pairs for whole numbers 1-100
- Recognize a whole number as a multiple of each of its factors
- Decide whether a whole number (1-100) is a multiple of a given one-digit number
- Determine if a whole number (1-100) is prime or composite
- Create a number or shape pattern that follows a given rule
- Identify characteristics about a pattern that are not part of a rule
- Multiply a four-digit whole number by a one-digit whole number using strategies and properties of operations
- Multiply two, two-digit numbers using strategies and properties of operations
- Apply strategies to find whole number quotients and remainders with up to four-digit dividends and one-digit divisors
- Represent and explain multiplication and division using an equation, rectangular array, and/or area models
- Apply the area formulas for rectangles and rectilinear figures.

Vocabulary

area model: a model for multiplication and/or division problems, in which the length and width of a rectangle represents the factors, or quotient and dividend
composite: a whole number that can be divided evenly by numbers other than one and itself (0 and 1 are neither prime nor composite)
distributive property: allows you to multiply a sum by multiplying each addend separately and then adding the products
dividend: the number to be divided
divisor: the number used to divide by
equation: mathematical expression where one part is equal to another part
expression: numbers and symbols with no equal sign

factors: numbers you multiply together to get another number
multiples: the result of multiplying a number by another number
place value: value of a digit according to its place in a number
prime: a whole number that can be divided evenly only by one or itself (0 and 1 are neither prime nor composite)
product: the answer to a multiplication problem
quotient: the answer to a division problem
rectangular array: arrangement of objects into rows and columns that form a rectangle
rectilinear: a polygon with all right angles
remainder: the amount left over after division

Symbols

X multiplication

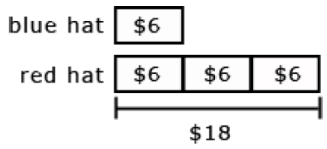
÷ division

= equals

Example 1

A red scarf costs $18. A blue scarf costs $6. How many times as much does the red scarf cost compared to the blue scarf?

$18 ÷ $6 = □



Example 2

There are 4 beans in a jar. Each day 3 beans are added. How many beans are in the jar for each of the first 5 days?

Day	Operation	Beans
0	$3 \times 0 + 4$	4
1	$3 \times 1 + 4$	7
2	$3 \times 2 + 4$	10
3	$3 \times 3 + 4$	13
4	$3 \times 4 + 4$	16
5	$3 \times 5 + 4$	19

Example 3

Your class is collecting bottled water for a service project. The goal is to collect 300 bottles of water. On the first day, Max brings in 3 packs with 6 bottles in each container. Sarah wheels in 6 packs with 6 bottles in each container. About how many bottles of water still need to be collected?

Student 1
First, I multiplied 3 and 6 which equals 18. Then I multiplied 6 and 6 which is 36. I know 18 plus 36 is about 50. I'm trying to get to 300. 50 plus another 50 is 100. Then I need 2 more hundreds. So we still need 250 bottles.

Student 2
First, I multiplied 3 and 6 which equals 18. Then I multiplied 6 and 6 which is 36. I know 18 is about 20 and 36 is about 40. 40 + 20 = 60. 300 – 60 = 240, so we need about 240 more bottles.

Example 4

What would an array area model of 74 x 38 look like?

	70	4
30	$70 \times 30 = 2{,}100$	$4 \times 30 = 120$
8	$70 \times 8 = 560$	$4 \times 8 = 32$

$2{,}000 = 560 + 1{,}200 + 32 = 2{,}812$

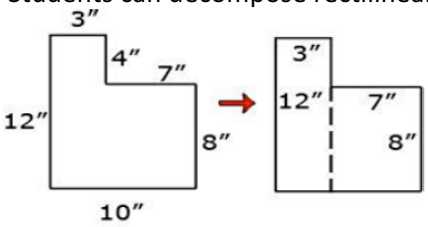
Example 5

There are 592 students participating in Field Day. They are put into teams of 8 for the competition. How many teams are created?

Student 1	Student 2			Student 3
592 divided by 8	592 divided by 8			I want to get to 592
There are 70 8's in 560	I know that 10 8's is 80	592		8 x 25 = 200
592 - 560 = 32	If I take out 50 8's that is 400	-400	50	8 x 25 = 200
There are 4 8's in 32	592 - 400 = 192	192		8 x 25 = 200
70 + 4 = 74	I can take out 20 more 8's which is 160	- 160	20	200 + 200 + 200 = 600
	192 - 160 = 32	32		600 - 8 = 592
	8 goes into 32 4 times	-32	4	I had 75 groups of 8 and
	I have none left	0		took one away, so there are
	I took out 50, then 20 more,			74 teams
	then 4 more			
	That's 74			

Example 6

Students can decompose rectilinear figures into different rectangles. Look at the example below:



area is 12 x 3 + 8 x 7 =
92 sq inches

Activities at Home

- Create a list of 5 items that you plan to purchase while at the supermarket. Have your child estimate the total amount.
- Roll five number cubes. Use four cubes to make a four-digit dividend, and use the fifth cube as the one-digit divisor. Repeat five times to make five different problems.
- Write 3 story problems that involve multiplication and 3 story problems that involve division. Use pennies, uncooked macaroni noodles, or other counters to represent each problem.
- Place a deck of cards face down (remove the face cards). Flip over two cards to create a two-digit number. List all of the factor pairs for the two-digit number. Repeat the activity 5 times.
- Skip count by 3s, 4s, 5s, 6s, etc. Discuss multiples of a number.
- Try to incorporate "real world" word problems often.