Grade 4 Important Math Information
Larger Number Multiplication and Division and Algebraic Thinking

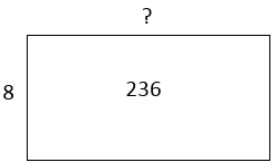
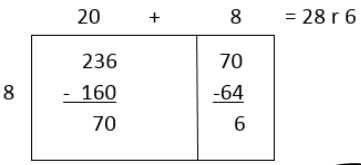
Dear Family,

Our class is beginning the last two units of study in mathematics before we circle back to review 4th grade content. The units are *Larger Number Multiplication and Division* and *Algebraic Thinking.* The first unit of study focuses on solving multiplication and division problems with larger numbers and sharing a variety of solution strategies. In the last unit, students learn about situations involving change and how to mathematically describe and represent the change. The specific learning goals your student will be working toward are listed below with examples of student work showing understanding of each learning goal.

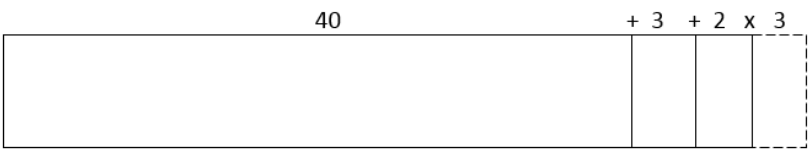
Learning Goal: Multiply a number up to four digits by a one-digit number and two two-digit numbers using various efficient strategies and be able to illustrate and explain calculations using arrays, models, and equations.

Example Problem	**Example Student Solutions**
Cassidy is ordering sandwiches for an upcoming party. She orders 15 trays, each with 24 sandwiches. How many sandwiches is Cassidy ordering?	15 x 24 20 4 ones x 5 ones 40 4 ones x 1 ten 100 2 tens x 5 ones + 200 2 tens x 1 ten 360 Cassidy is ordering 360 sandwiches. I know that I can multiply 10 by each digit in 24, and multiply 5 by each digit in 24 to find the partial products. Then I add the partial products together.

Learning Goal: Find quotients and remainders when dividing up to four-digit dividends and one-digit divisors using various efficient strategies and be able to illustrate and explain calculations using arrays, models, and equations.

Example Problems	**Example Student Solutions**
Doogie's Game Hut has 236 toys to be divided equally among 8 piñatas. How many toys will go into each piñata?	  28 toys will go in each piñata. There will be 6 toys left over. I know that I can use partial products to find the answer to a division problem. 8 x 20 is 160 and 70 is left. 8 x 8 is 64 which leaves 6 left over.

Learning Goal: Find estimated and actual answers to multi-step word problems involving the four operations and be able to represent the problems using equations.

Example Problems	Example Student Solutions
Brady and Ben have planted corn in their garden. The plants were 40 inches tall in May. In June, the plants grew 3 inches. In July, the plants grew 2 times as much as they grew in June. Write an equation to find how tall the corn plants are now, using ***p*** to represent the unknown quantity.	 I can use a bar model to represent the action in the problem. Then I can break down the action in the problem to make it easier to solve! 40 + 3 = 43 2 x 3 = 6 43 + 6 = ***p*** 43 + 6 = 49 inches Brady and Ben's corn plants are 49 inches tall.

Learning Goal: Express measurements in a larger unit in terms of a smaller unit and be able to solve measurement word problems involving the four operations.

Example Problems	Example Student Solutions
It took Stefano 7 minutes 38 seconds to run one mile. It took Charlie 9 minutes 13 seconds to run one mile. How many more seconds did it take Charlie to run one mile than Stefano?	*Stefano's time:* 60 x 7 + 38 = ? 420 + 38 = 458 *Charlie's time:* 60 x 9 + 13 = ? 540 + 13 = 553 553 – 458 = 95 I know that there are 60 seconds in a minute. To find each boy's time, I have to multiply the minutes by 60 and add the extra seconds. Then I can subtract Charlie's time from Stefano's time. It took Charlie 95 more seconds to run a mile than Stefano.

Learning Goal: Generate patterns that follow a rule and be able to analyze the patterns.

Example Problems	Example Student Solutions
The first number in the pattern is 3. The rule is "multiply by 2". Write the next 3 numbers in the pattern.	Numbers in the pattern: 3, 6, 12, 24 (X 2, X 2, X 2) I can use a table to help organize my numbers and see how the numbers relate to each other.

Learning Goal: Reason about numbers and operations to determine whether an equation is true or false and to determine the unknown in an equation.

Example Problems	Example Student Solutions
What number would make the equation true? 99 - ☐ = 89 - 19	I know that 99 is 10 more than 89. Whatever is subtracted from 99 must be 10 more than what is subtracted from 89 to keep the two sides of the equal sign balanced. 10 more than 19 is 29. 99 – 29 = 89 - 19

Mathematical Thinking and Practices Learning Goals:

- I can use numbers and symbols to represent situations and be able to explain how the numbers and symbols relate to the situation.
- I will be able to justify my thinking and be able to critique the reasoning of others.

Things you can do at home to support your student throughout these units of study:

Larger Number Multiplication and Division:

- Think about how you use multiplication and division in your everyday life. Ask for your child's assistance in working through the problems.
- Encourage your child to explain his or her strategies for multiplying and dividing numbers.

Algebraic Thinking:

- Look in the newspaper with your child at a multiday forecast. Talk about predicted changes in temperature. Will the temperature stay constant? Will it increase or decrease suddenly? Predict what will happen after the last day of the forecast. Describe the trend in the weather.