



# MATH NEWS



Grade 4, Module 3, Topic G

December 2013

## 4<sup>th</sup> Grade Math

Module 3: Multi-Digit Multiplication and Division

### Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 3 of Eureka Math (Engage New York) covers Multi-Digit Multiplication and Division. This newsletter will discuss Module 3, Topic G.

Topic G. Division of Thousands, Hundreds, Tens, & Ones

### Words to know

- place value chart
- standard division
- tape diagram
- number bond
- area model
- decompose

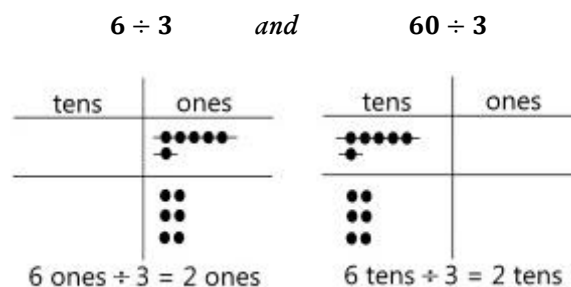
## OBJECTIVE OF TOPIC G

- 1 Divide multiples of 10, 100, and 1,000 by single-digit numbers.  
Represent and solve division problems with up to a three-digit dividend numerically and with number disks requiring decomposing a remainder in the hundreds place.
- 2 Represent and solve three-digit dividend division with divisors of 2, 3, 4, and 5.  
Represent numerically four-digit dividend division with divisors of 2, 3, 4, and 5, decomposing a remainder up to three times.
- 3 Solve division problems with a zero in the dividend or with a zero in the quotient.  
Interpret division word problems as wither number of groups unknown or group size unknown.
- 4 Interpret and find whole number quotients and remainders to solve one-step division word problems with larger divisors of 6, 7, 8, and 9.  
Explain the connection of the area model of division to the long division algorithm for three- and four-digit dividends.

## Focus Area– Topic G

Division of Thousands, Hundreds, Tens & Ones

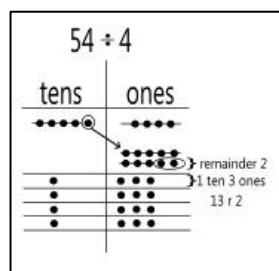
### Place Value Charts



|   |   |
|---|---|
| $6 \div 3$  | $60 \div 3$   |
| Draw 6 ones, divide it into 3 groups. There are 2 ones in each group. | Draw 6 tens, divide it into 3 groups. There are 2 tens in each group. |
| $6 \div 3 = 2$  | $60 \div 3 = 20$  |

### Regrouping with a place value chart

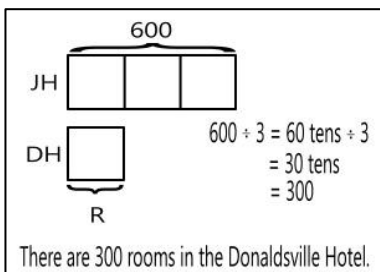
Notice on the place value chart in the top row on the top line the value is 54. When dividing being with the tens place on the place value chart. 50 is divided into 4 groups (each row represents one group). Place 1 ten in each group. This leaves 1 ten that cannot be divided evenly into 4 groups. Circle the ten and decompose it to



10 ones, making sure to circle the ten and draw the arrow to show that it has been moved to the ones place. Next divide the 14 ones into 4 groups. Notice the line drawn through the circles on the top row, this is to help students remember if the number (circle) has been counted already when dividing. Each group has 3 ones and there are 2 ones remaining. 4 can be divided into 54 how many times? 1 ten and 3 ones remainder 2 ones or 13 r 2 times

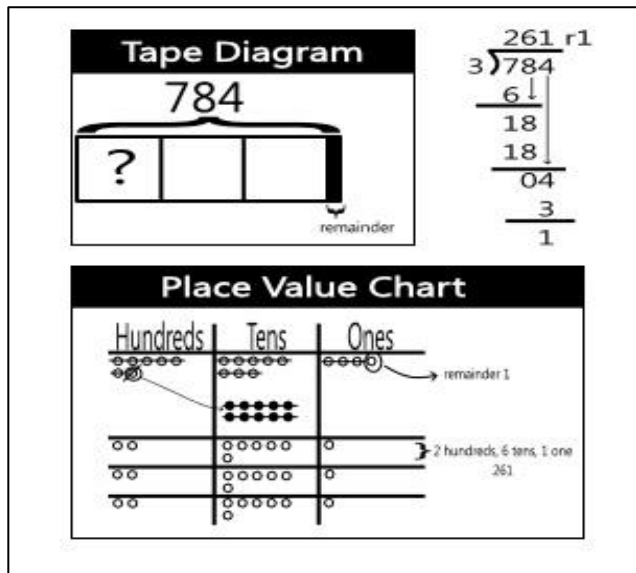
The Jonesville Hotel has a total of 600 rooms. That is 3 times as many rooms as the Donaldsville Hotel. How many rooms are there in the Donaldsville Hotel?

Draw a tape diagram to model this problem.



The Thomasville High School is replacing the seats in the football stadium. They purchased 750 seats and 34 seats were donated. There are 3 sections for seats and they want to place the same number of seats in each section. How many seats would be in each section? How many seats do they have left?

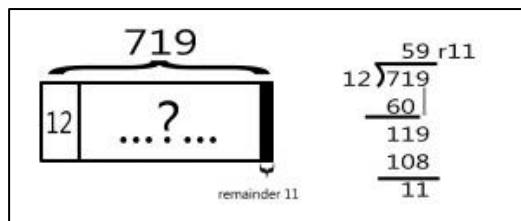
First find the total number of seats.  $750 + 34 = 784$   
 Next divide to solve the problem. Each section will have 261 seats and there will be one seat left that will not be used in the stadium.



Look at the image above, a tape diagram is drawn. A tape diagram uses a rectangle(s) with numbers to represent the number in a word problem. Now that numbers are getting bigger a rectangle is used to represent the number instead of drawing dots or pictures. A **tape diagram** allows the student to visualize the problem. The image also has a sample of a **standard division** problem and a **place value chart**. Students can use various tools to solve word problems.

Students will compare standard division to a tape diagram and find the relations between the two tools used for solving division problems.

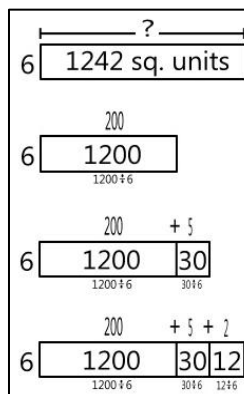
In one day, the donut shop made 719 chocolate donuts. They sold all of them by the dozen. A few donuts were left over and the baker took them home. How many donuts did the baker take home?



There are 719 donuts sold in sets of 12. The donut shop sold 59 boxes of donuts and the baker took 11 donuts home.

Students will also learn how to divide using number bonds and area models.

Drawing an **area model** to solve  $1242 \div 6$ :



Draw a rectangle with a width of 6 (This is the known side). Six times how many hundreds gets us as close as possible to an area of 1200? 2 hundreds. ( $200 \times 6 = 1200$ ) How many hundreds remain? Zero. ( $1242 - 1200 = 42$ ) We have 42 units left with a width of 6. Six times how many units gets us close to 4 tens? 5 ones. ( $5 \times 6 = 30$ ) Add 5 ones to the length. How many tens remain? 1 ten 2 ones. ( $42 - 30 = 12$ ) We have 12 units remaining. Six times how many units gets us close to 1 ten 2 ones? 2 ones. ( $2 \times 6 = 12$ ) How many remain? Zero. Then length of the unknown side is  $200 + 5 + 2 = 207$

Create a **number bond** to solve  $1242 \div 6$ :

A number bond is similar to an area model. Follow the same steps as the area model. How many hundreds, tens, etc? Recording the numbers as the problem is being solved. Look at the number bond that is separated into 5 bonds. Sometimes it is easier to divide with smaller numbers.

Not all students will **decompose** the numbers in the same way, but as long as the number bonds add up to the number they are decomposing the answer will remain the same.  $1200 + 30 + 12 = 1242$  and  $600 + 300 + 300 + 30 + 12 = 1242$ . When dividing both answers will be 207.

