MINISTRY
OF
EDUCATION, YOUTH & INFORMATION
Every Child Can Learn, Every Child Must Learn

MATH COUNTS

Subject: Mathematics	**Grade**: Four (4)	**Strand**:	**Duration:** 60 Minutes
Topic: Division	**Focus Question**: How do I use my calculator to determine and prove results?		
Standard:	Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.		
Attainment Targets:	Explain the processes of the basic operations, use estimation appropriately, and demonstrate proficiency with basic facts.		
Benchmarks:	• Model the number operation: Division of five digit numbers by up to two digit numbers • Use approximation and estimation with numbers involving division		
Materials:	Base 10 pieces		

Specific Objectives

- *By the end of the lesson, students will be able to:*
  - Divide 3 or 4 digit numbers by 1 digit numbers with renaming.

Prior Learning:

- *Students should already be able to:*
  - Write pairs of multiplication and division facts from an array or given product and factors.
  - Recall basic multiplication facts up to 10 × 10
  - Apply knowledge of place value
  - Use estimation

Content Summary

- Division is the process of sharing an amount into equal size groups
- When dividing multi-digit numbers, tens may have to be renamed as ones, hundreds as tens, thousands as hundreds and so on.

Engage

- Play the remainders game:
  - Write a two digit number less than 40 (or one for which students possess related multiplication and division of facts). Write the number on a piece of paper and tape it face down on the board.
  - Ensure that students do not know what number is written on the paper.
- On the board draw the following table:

When secret # is divided by:									
The remainder is:									

- Create two groups in the class (e.g. males vs. females) and allow groups to take turn guessing

number to divide into the secret number.

- Record each guess and the remainder left after the division has been done. For example, if the secret number is 35 and a group guessed 8, record this in the first row and a remainder of 3 in the second row.
- Groups will play alternately. The first group to correctly guess the secret number is the winner. After students have guessed correctly, then turn over the secret number to confirm their guess. Play 3 or 4 times to determine an overall winner.

Explore

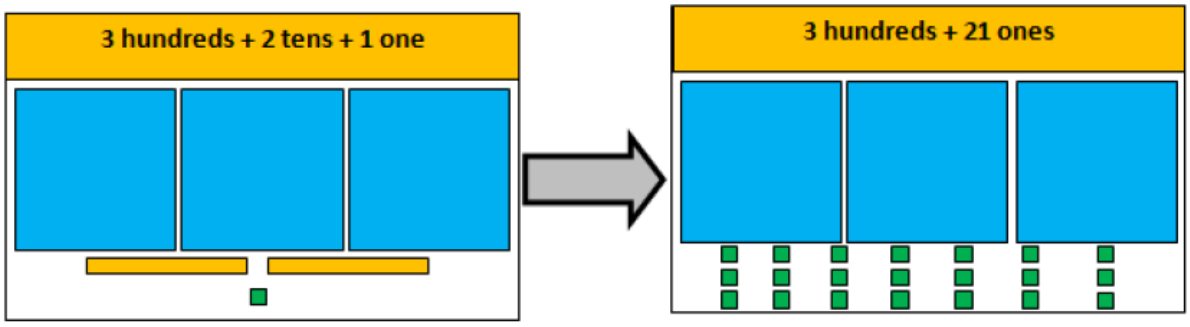
- Place students in groups of 4 – 5. Give each group a set of base 10 pieces (about 6 flats, 30 longs and 30 ubes), providing brief explanation about the pieces as needed.
- Allow students to represent 424 with the base 10 pieces. Discuss how they would divide this amount into 2 groups. Allow each group to physically share the amount into two groups and to associate it with the division sentence 424 ÷ 2 = 212.
- Allow students to divide the following with their base 10 pieces and to write division sentences to show their answers.
  - 369 ÷ 3
  - 840 ÷ 4
  - 505 ÷ 2
- After verifying these solutions, allow students to complete the following with their base 10 pieces – 321 ÷ 3.

Explain

- engage students in a discussion:
  - How is this division different from the others that you have done?
  - Can you divide 2 tens into 3 equal groups of ten?

Extension

- Introduce students to the need to rename when dividing. Explore different ways of modelling 321 with the base 10 pieces:



- Discuss the similarities and differences between the two ways of representing 321 (that is, 300 + 20+ 1 vs. 300 + 21). Ask questions such as:

- What place value was renamed? How was it renamed?
- Why were tens renamed as ones?
- Why would it not be as useful to rename 'hundreds' as 'tens' in order to solve this problem?

○ Allow students to divide 3 hundreds + 21 ones into 3 groups and to write the associated division sentence.

○ Assign the following division questions to each group. Discuss solutions when students are finished:

- 312 ÷ 3
- 416 ÷ 4
- 232 ÷ 2

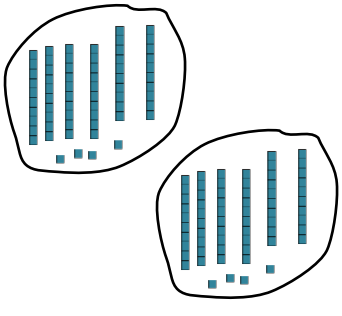
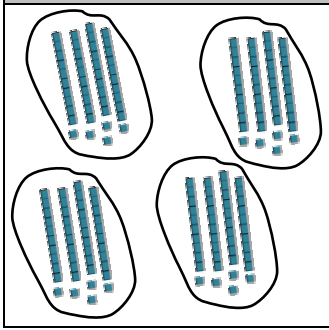
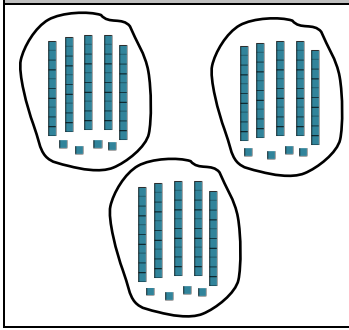
Evaluation

Students' Evaluation

1. For each division question below,
   a) Use base 10 pieces to help in renaming where necessary to determine the correct answer.
   b) Draw models of the base 10 pieces to show your answer.

424 ÷ 4 = _____	117 ÷ 3 = _____	472 ÷ 4 = _____

2. Write the number sentence that is represented by each of the models shown below.

_____ ÷ _____ = _____	_____ ÷ _____ = _____	_____ ÷ _____ = _____
		

Teacher Evaluation

What percentage of students able to:	**0% - 50%**	**51% - 80%**	**81% - 100%**
Use models to show the solution to a division problem			
Divide 3 or 4 digit numbers by 1 digit numbers without renaming.			
Divide 3 or 4 digit numbers by 1 digit numbers with renaming.			

Comments:

Areas of strengths

Areas of weaknesses

Actions to be taken