



2nd Grade Math

Module 4: Addition and Subtraction within 200 with Word Problems to 100

Math Parent Letter

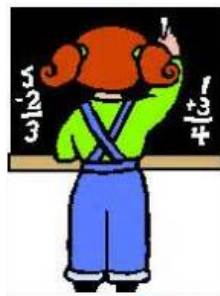
This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 4 of Eureka Math (Engage New York) covers strategies for adding and subtracting within 200. This newsletter will discuss Module 4, Topic F.

Topic F: *Student Explanations of Written Methods*

Words to know:

Totals below written method

New groups below method



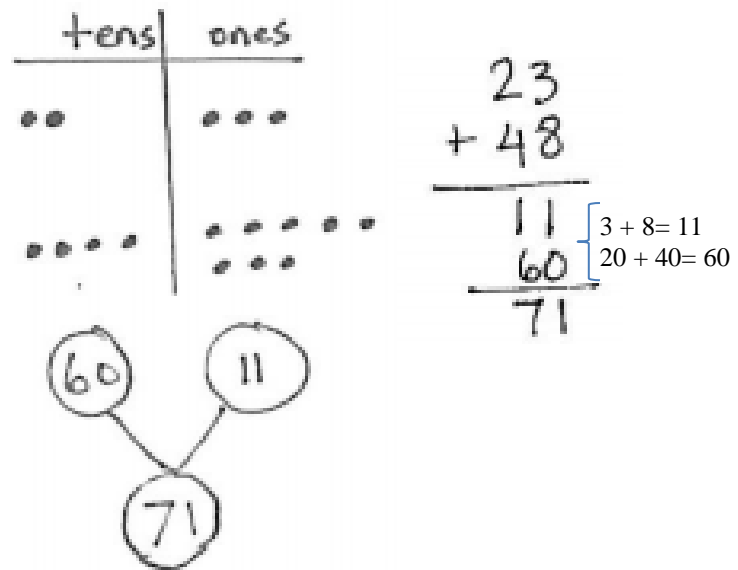
OBJECTIVES OF TOPIC F

1. Use and explain the totals below written method using math drawings, and numbers.
2. Compare totals below to new groups below as written methods.
3. Solve two-step word problems within 100.

Focus Area– Topic F

Strategies for Decomposing Tens and Hundreds

Students learn the totals below written method. The **totals below method** gives students the option of adding from left to right or from right to left. Students explain how each step of their math drawing relates to this written method.



Students move towards the abstract when they model decompositions on their place value chart while simultaneously recording the changes in the written form.



Students compare **totals below** and to **new groups as written methods**. Compare these different methods and explain why they all work.

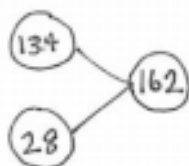
1
$$\begin{array}{r} 134 \\ + 28 \\ \hline 12 \\ 50 \\ 100 \\ \hline 162 \end{array}$$
 $\left\{ \begin{array}{l} 4 + 8 = 12 \\ 30 + 20 = 50 \\ 100 + 0 = 100 \end{array} \right.$

2
$$\begin{array}{r} 134 \\ + 28 \\ \hline 100 \\ 50 \\ 12 \\ \hline 162 \end{array}$$
 $\left\{ \begin{array}{l} 100 + 0 = 100 \\ 30 + 20 = 50 \\ 4 + 8 = 12 \end{array} \right.$

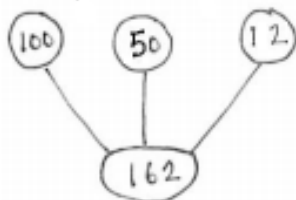
3
$$\begin{array}{r} 134 \\ + 28 \\ \hline 162 \end{array}$$
 $\left\{ \begin{array}{l} 4 + 8 = 12 \text{ ones} \\ 12 \text{ ones is} \\ \text{renamed as 1} \\ \text{ten and 2 ones} \end{array} \right.$

Student explanations:

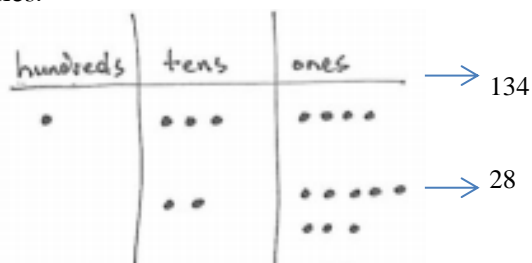
A number bond was drawn to show why the algorithm works. The total is 162 and the parts are 134 and 28.



A number bond was drawn to show why the totals below method works. 162 is the whole, and, since we added 134 and 28, the parts are 12, 50, and 100. We added the hundreds, tens, and ones by themselves to get each of the numbers we see below the problem. Then we added those parts up!



A chip model was drawn to show why they all work. It shows the parts that are 134 and 28 by themselves, but when you circle the dots to rename ten ones as 1 ten, you can see how 1 hundred 5 tens 12 ones becomes 1 hundred 6 tens 2 ones.



Students represent and solve problems using both the totals below and the new groups below methods (students used the latter method throughout the module). They relate both methods to their math drawings and discuss the differences and similarities between the two.

Horizontal Notation

$$\begin{array}{r} 127 \\ + 59 \\ \hline 186 \end{array} \rightarrow 100 + 20 + 7$$

$$\begin{array}{r} 100 + 20 + 7 \\ + 50 + 9 \\ \hline 186 \end{array}$$

$100 + 70 + 16 =$
 $170 + 16 =$
 $10 \quad 6$
 $170 + 10 + 6 =$
 $180 + 6 = 186$

Totals Below

$$\begin{array}{r} 127 \\ + 59 \\ \hline 100 \\ 70 \\ 16 \\ \hline 186 \end{array}$$

Left to Right

$$\begin{array}{r} 127 \\ + 59 \\ \hline 16 \\ 70 \\ 100 \\ \hline 186 \end{array}$$

Right to Left

Students apply knowledge of addition and subtraction strategies to solve two-step word problems. Students are challenged to make sense of more complex relationships as they are guided through more difficult problem types, such as comparison problems. These problems will involve smaller numbers and will be scaffolded to address the heightened level of difficulty.

Solve a two-step word problem by drawing tape diagram. Then, use any strategy they have learned to solve.

Mindy is carrying 53 glass vases. She trips and breaks 17 of them. The store manager gives her 18 more vases. How many vases does Mindy have now?

53
17
?

$53 - 17 = \square$
 $17 + \square = 53$

36
18
more

36 + 18 = 54
34 2

18 + 2 = 20
34 + 20 = 54

Mindy has 54 vases now.