A Union of Professionals

Common Core
State Standards

Dear Parents and Caregivers,

Thank you for the support you give to your child's learning every day. Earlier we sent out information about one aspect of the Common Core State Standards in math for second grade: single-digit combinations and the idea of decomposing or splitting numbers to help children understand calculation better. This is part two of our guidance on addition and subtraction strategies used to help children make sense of numbers along the way. These strategies help develop underlying mathematical ideas stressed by the standards, in addition to arithmetic and problem solving. This time we look at helping children become fluent—able to easily do problems—with numbers up to 100.

This flyer addresses addition and subtraction within 100. Problems that do not require regrouping are easy. We will focus on problems that do require regrouping.

Children will represent and solve addition and subtraction problems within 100 with unknown amounts in all positions (2.OA.1)

Problem: Juan needs 28 more trading cards to have as many as Sammie. If Sammie has 72, how many does Juan have now? (The unknown here is what Juan has now; 28 plus what will equal 72?) Here are some strategies children may use.

Making 10s

72 – 28

22 6 72 – 22 = 50. Decompose 28 into 22 plus the rest, which is 6.

72 – 22 = 50 Subtract the 22.

50 – 6 = 44 cards needed. To subtract 6, think 6 plus what is 10? Since you are subtracting from 50, the final answer will be less than 50.

When the children think like this they are reasoning *about the numbers.*

Using the relationship between addition and subtraction

28 + *n* = 72 Similar to a "?" or a box *n* is a symbol for an unknown amount.

28 + **2** = 30 How many more to reach 72? Let's get to 30 by adding 2.

30 + **40** = 70 30 is 3 tens. 4 more tens will get us to 7 tens or 70.

70 + **2** = 72 70 plus two are 72. How much did we add? 2 and 40 and 2 more.

40 + 2 + 2 = 44 more cards. Now add the numbers used to get from 28 to 72.

The relationship between addition and subtraction is that one undoes the other. There are always at least two addends (numbers to add) and a sum in addition and subtraction equations. In subtraction we can find a missing addend! This is helpful for children having difficulty with subtraction.

Model the problem with concrete materials or a drawing

72 – 28

l l l l l l l o o Show 7 ten-rods and 2 units (ones)

~~l l~~ **l l l l l o o** Take away 2 tens: 72 – 20 leaves 52. There are still 8 more to subtract.

A child may break apart 8 and think: 52 – 2 – 6. 52 – 2 = 50 and 50 – 6 = 44.

The child may also exchange one 10-rod for 10 ones. Then he or she has 4 tens and 12 ones, and takes 8 from the 12 ones, leaving 4 ones. 4 tens and 4 ones are 44.

The standards say children should be able to model problems with objects or drawings and equations. Here are some other things you might see:

Using place value

Juanita has 28 stickers. Annie has 20 more than Juanita. How many stickers do the girls have?	Together Annie and Juanita have 76 stickers. If Annie has 48, how many does Juanita have?	
28 + 48 20 more than 28 is 48. Annie's amount. 20 + 40 = 60 Adding tens 8 + 8 = 16 Adding ones 60 + 16 Adding the subtotals 60 + 10 + 6 = 76 stickers	76 – 48 76 – 40 = 36 36 - 8 Split 36 into 20+16 (20 + 16) – 8 20 + (16-8) 20 + 8 = 28 stickers	76 – 48 76 – 40 = 36 subtract tens 36 – 8 36–6 –2 Decompose 8 Subtract 6.. 30 –2 Then subtract 2. 30 – 2 = 28 stickers

145
– 137

13 tens 15 ones
– 13 tens 7 ones
0 tens 8 ones
Answer: 8

Children can see that they have more ones to subtract than they have ones at first. So they recompose 145 to subtract. They take one of the 14 tens and put it with 5 to make 15 ones. *This is using a flexible understanding of place value.* Decomposing to create 15 ones *is the thinking behind the common method we learned in school. Here children are learning why it works.*

Add place values

367 + 423
300 + 400 = 700
60 + 20 = 80
7 + 3 = 10
Total: 790

Written horizontally like algebra, the real value of each partial addition is clear!

Decompose one addend

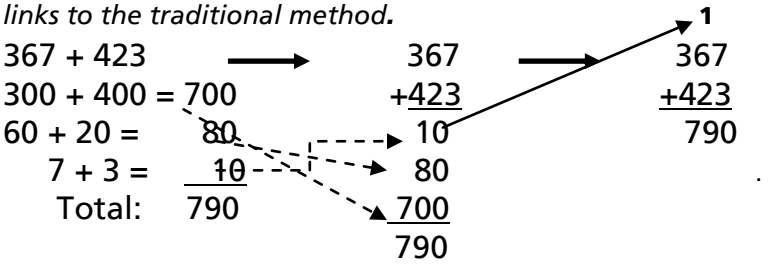
367+ 423
367 + 400 = 767
767 + 20 = 787
787 + 3 = 790
To use this method children should practice adding just tens and hundreds to numbers.

Make a 10 to subtract from

54 – 38
54 – 34 – 4
54 – 34 = 20
20 – 4 = 16
The child knows 4 + 6 = 10 and also that the answer must be less than 20

From understanding to the common method

You can see how to go from one method that keeps the sense of the numbers, to another method that still keeps the sense of the numbers, but record "partial addends" in full, and finally how it all links to the traditional method.



7 + 3 is 10. There are no ones. Add the new 10 with other tens. (1 + 6 + 2 tens is 9 tens.) Then add hundreds. *Can your child see and explain where all the numbers come from?*

Family practice
Mentally add/subtract tens and hundreds

64 + 20 67 + 30

43 – 20 88 – 50

172 – 40 648 - 300
367 + 30 358 + 200

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Second grade teacher