

# DUVAL Math

## Parent Tips

### Addition and Subtraction Within 1,000 with Word Problems to 100

In this module, students build upon all their previous work with place value. They extend their work with addition and subtraction algorithms to numbers up to 1,000. Students continue to use drawings and models to strengthen and deepen their conceptual understanding. They also continue to work with various types of word problems with numbers up to 100.

Second Grade,  
Module 5

**What Came Before this Module:** Students worked on fluency in adding and subtracting to 100 and built conceptual understanding for operations on numbers up to 200.

**What Comes After this Module:** In Module 6, students begin to examine the foundations of multiplication and division. They learn about equal groups, arrays, and the idea that numbers other than 1, 10, and 100 can be units/groups.

#### Special points of interest:

- ✓ Words to Know
- ✓ Strategies for Composing Tens and Hundreds Within 1,000
- ✓ Student Explanations for Choice of Solution Methods
- ✓ Mathematical Practices
- ✓ Homework Help-line

### Words to Know

**Algorithm:** a step-by-step procedure to solve a particular type of problem

**Compensation:** a simplifying strategy where students add or subtract the same amount to or from both numbers to create an equivalent but easier problem, e.g.,  $610 - 290 = 620 - 300 = 320$

**Compose:** to make 1 larger unit from 10 smaller units

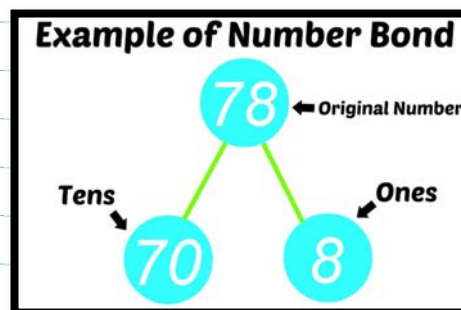
**Decompose:** to break 1 larger unit into 10 smaller units

**New groups below:** show newly composed units on the line below the appropriate place in the addition algorithm

**Simplifying strategy:** e.g., to solve  $299 + 6$ , think  $299 + 1 + 5 = 300 + 5 = 305$

**Arrow notation (the arrow way):** a strategy in which you add or subtract multiples of 1, 10, or 100 and draw arrows to point to what the number becomes after you change it.

**Number Bond:** a simple addition sum; they are simply the pairs of numbers that make up a given number.



#### Questions?

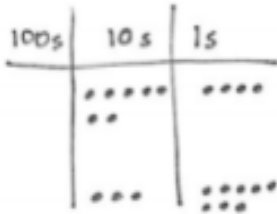
Mrs. Wendy Dobson

Supervisor, Mathematics K-5

[dobsonw@duvalschools.org](mailto:dobsonw@duvalschools.org)

Strategies for Composing Tens and Hundreds Within 1,000

**Chip Model-** Each dot represents 1 unit of the column that it is in.



**Place Value Chart**

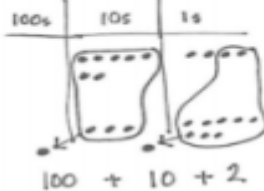
Place Value Chart with Headings  
(use with numbers)

hundreds	tens	ones
7	2	6

**Place value** determines the value of the position of each digit.

6 tens = 60  
3 ones = 3

**Bundle, unbundle, regroup, rename, change** (compose or decompose a 10 or 100)



**Mental Math**

Calculations that are done in a student's head without the guidance of pencil and paper, calculators or other aids. Students move from concrete conception to pictorial representation as they draw chip models to represent addition within 1,000. As they did with the manipulatives, students record each action in their drawings step by step on the algorithm.

Students relate manipulative representations to the algorithm, then transition to making math drawings in place of the manipulatives. Students model decompositions with number disks on their place value charts while simultaneously recording these changes in the written vertical form.

**Vertical Method-** Strategy used to solve addition and subtraction problems.

$$\begin{array}{r} 312 \\ - 186 \\ \hline \end{array}$$

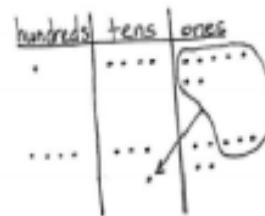
$$\begin{array}{r} 2012 \\ - 186 \\ \hline 126 \end{array}$$

**Arrow Way** – Strategy used to solve addition and subtraction problems.

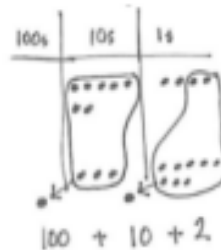
$$320 + 200$$

$$320 \xrightarrow{+100} 420 \xrightarrow{+100} 520$$

**Number Disk** – Strategy used to solve addition and subtraction problems.



**Unbundle** - decompose a 10 or 100



## Student Explanations for Choice of Solution Methods

Students will determine which strategy to apply to a variety of addition and subtraction problems, including number bond problems and problems with the unknown in all positions. (Example:  $200 + \underline{\quad} = 342$  or  $\underline{\quad} - 53 = 400$ ) Then, students will solve and explain their chosen methods.

### POSSIBLE STRATEGIES

**Strategy: Number Bond with Algorithm**

$320 + \underline{\quad} = 418$

**Possible Explanation:**  
I drew a number bond to show the missing part, and then I used related subtraction to solve. I thought drawing a number bond was a good idea, because it helped me know where to start to find the answer.

**Strategy: Compensation/Tape Diagram**

$546 - 297 = \underline{\quad}$

**Possible Explanation:**  
I used compensation and added 3 to both numbers, so that I could subtract 300 instead of 297. So, 549 minus 300 equals 249. Easy!

**Strategy: Chip Model**

$180 + 440 = \underline{\quad}$

**Possible Explanation:**  
I chose the chip model. The chip model took longer, but I was able to check my work easily with the drawing.

## Standards for Mathematical Practice

### Mathematical Practices Addressed in this Module:

- MP.3** Construct viable arguments and critique the reasoning of others. Students construct viable arguments when they use place value reasoning and properties of operations to explain why their addition and subtraction strategies work and when they use that reasoning to justify their choice of strategies in solving problems. They critique the reasoning of others when they use those same concepts to disprove or support the work of their peers.
- MP.6** Attend to precision. Students attend to precision when they label their math drawings and models with specific place value units. They calculate accurately and efficiently when adding numbers within 200 and when using the relationship between addition and subtraction to check their work.
- MP.7** Look for and make use of structure. Students look for and make use of the base ten structure when composing and decomposing. They extend their understanding from Module 4, viewing 10 tens as forming a new unit called a *hundred*, just as they understand that 10 ones forms 1 ten. They apply this understanding of base ten structure when adding and subtracting three-digit numbers, repeatedly bundling and unbundling groups of ten. Students also make use of structure when they use simplifying strategies, such as compensation, to create a multiple of ten or a hundred.
- MP.8** Look for and express regularity in repeated reasoning. As students repeatedly manipulate models and record the work abstractly, they recognize the cyclic pattern of the addition or subtraction of like units and the subsequent potential composition or decomposition of units through the place values. They see that the vertical form represents the same cycle they use with the manipulatives.



### Grades K-5 Homework Help Duval County Parent Helpline

Tuesday and Thursday Evenings (see dates to the right)

6:00 p.m. – 8:00 p.m

Grades K-5 Homework Help

*You can access this help on your home computer so that we can demonstrate the mathematics on a white board or call in via telephone.*

**By Telephone:** (571)-392-7703 PIN: 731 439 616 412

**By Web:** [click here](#)

Want to help your child at home with DUVAL Math?

Every Tuesday and Thursday evening, we are offering a Homework Helpline! You can access using a home computer or call in via telephone. Use the link below to access more information!

<http://www.duvalschools.org/Page/17877>

