



IT WORKED!

Building Math Leadership by Creating Parent Communication Documents

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I believe one of my most important jobs as a math coach is to build leadership in others. I want the teachers I work with to be creative, critical thinkers, and problem solvers. In one of my schools, I built a team of mathematics leaders consisting of Kindergarten through Fifth Grade educators and a Special Educator. We meet quarterly to work on our teaching practice. During one of our meetings, the teachers expressed a frustration with some parents teaching the standard algorithm before students had the conceptual understanding they were trying to build. This seemed like a perfect problem for this team to address. After some discussion, the teachers decided they wanted to create a document to give to parents that would help them better understand the standards they were teaching.

I arrived at our next meeting with copies of the *Draft K-5 Progression on Number and Operations in Base Ten* in hand ready to work. The progression for addition and subtraction seemed like the best place to start. Each teacher read the overview and the section pertaining to his/her grade level. We then shared what addition and subtraction looks like at each level beginning at Kindergarten. As each person shared, other grade levels began to chime in saying things such as, "I had no idea Kindergarteners learned that." "Oh, now I understand why third grade students learn addition the way they do." The teachers began to see their place in the curriculum, and were able to make connections they had not made before. Next, they wanted to decide on a format for the document and asked me what I wanted it to look like. I explained that I was not the audience. I asked, "What do you think will appeal to the parents of your students?" "What format will address their needs?" They realized that for most parents to pick it up and look at it, it needed to be in "parent-friendly" language. They also thought the parents needed an overview of all the elementary grades with respect to addition and subtraction, and they wanted to include a more detailed look at the current grade level's work.

Together, we worked on the timeline from kindergarten through fifth grade, and again discussed the main aspects of addition and subtraction at each grade level as we worded it in a way we thought parents would easily understand. Each teacher then worked on their grade-level document to add the piece that "zoomed in" on specific examples of what addition and subtraction looked like at their particular grade level. These documents were then used at parent information nights, conference nights, and as needed for individual parents.

At subsequent meetings, after we completed the addition and subtraction timeline for parents, we worked on one for multiplication and division as well as one for geometry. At each meeting, we spent time on one specific strand, following the same procedure. We first read the progression document, shared what it looked like at each grade, worked on the timeline together, and then worked individually to zoom in on each grade level. We are currently diving into the topic of fractions, and hope to continue to complete the other domains throughout this year. The teachers feel that this experience is not only giving them documents to use when speaking to parents and helping them understand the progression of standards in elementary school, but also, more importantly, it is building their own deeper understanding of the curriculum they teach.

I am confident we can give these documents to others and they would be able to use them with the parents of their students, but the most valuable part of this exercise was the process, not the product. There was a real problem to solve, teachers needed to read professionally and collaborate in order to solve it, and through the process learned and grew as mathematics leaders and teachers.

Links and Resources:

[CCSSM Progression Document: Number and Operations in Base Ten, K-5](#)

Addition and Subtraction Timeline (Numbers in Base Ten)					
K	1 st	2 nd	3 rd	4 th	5 th
Add and subtract within 100.	Adding and subtracting within 100.	Adding and subtracting within 1,000.	Adding and subtracting within 1,000 using strategies.	Use the standard algorithm to add and subtract multi-digit whole numbers.	Add and subtract decimals to hundredths, using concrete models or drawings and strategies.



Zoom in on Third Grade

Partial Sums

Here, two students used the partial sums strategy, and recorded their thinking in two different ways. Breaking apart the numbers helps make it easier to compute.

248 + 345 =	$\begin{array}{r} 248 \\ + 345 \\ \hline 500 \\ 80 \\ \hline 580 \\ + 13 \\ \hline 593 \end{array}$
500 + 80 + 13 =	500
500 + 80 = 580	80
580 + 13 = 593	13
	<hr style="width: 100px; margin-left: 0;"/>
	593

Adding up in chunks

Third graders can also use the strategy adding up in chunks. One number is kept whole and the second number is broken into easy-to-use chunks.

218 + 145 =	$\begin{array}{r} 218 \\ + 145 \\ \hline 100 + 40 = 140 \\ 140 + 5 = 145 \\ \hline 218 + 145 = 363 \end{array}$
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218 + 145
218 + (100 + 40 + 2 + 3)
218 + 100 = 318
318 + 40 = 358
358 + 2 = 360
360 + 3 = 363

Open Number Line

This third grader used an open number line and added up in chunks starting at 386 and counting up to 522 in order to subtract. Students are encouraged to use this strategy in a way that makes sense to them.

512 - 386 =	$(400 + 100 + 12) = 512$
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512 - 386 = 126

Multiplication and Division of Whole Numbers Timeline (Numbers in Base Ten)			
2 nd grade	3 rd grade	4 th	5 th
Skip counting by 10s and 100s. Partition rectangles into rows and columns. Use repeated addition to draw a total.	Understand division as an unknown-factor problem. Multiply one-digit numbers by multiples of ten in the range of 10-60. Fluently multiply one-digit whole numbers.	Multiply whole numbers using strategies based on place value and the properties of operations. Find whole-number quotients and remainders using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain multiplication and division calculations by using equations, rectangular arrays, and/or area models.	Fluently multiply using the standard algorithm. Find whole-number quotients using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain division calculations by using equations, rectangular arrays, and/or area models.



Zoom in on Fourth Grade

Illustrate and explain multiplication calculations by using equations, rectangular arrays, and/or area models.

Example: 13×24

10	$10 \times 20 = 200$	$10 \times 4 = 40$	200
3	$3 \times 20 = 60$	$3 \times 4 = 12$	60
			12
			<hr style="width: 100px; margin-left: 0;"/>
			312

Example: 6×325

6	$6 \times 300 = 1,800$	$6 \times 20 = 120$	$6 \times 5 = 30$
			1,800
			120
			30
			<hr style="width: 100px; margin-left: 0;"/>
			1,950

Illustrate and explain division calculations by using equations, rectangular arrays, and/or area models.

Example: $924 \div 4$

4	$924 \div 4 = 231$
	$\begin{array}{r} 231 \\ 4 \overline{) 924} \\ \underline{8} \\ 12 \\ \underline{12} \\ 0 \end{array}$

Find whole-number quotients and remainders using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.

8	$8 \overline{) 537}$	$8 \times 50 = 400$
	$\begin{array}{r} 67 \\ 8 \overline{) 537} \\ \underline{48} \\ 57 \\ \underline{56} \\ 1 \end{array}$	$8 \times 10 = 80$
		$8 \times 7 = 56$
		$400 + 80 + 56 = 536$
		$537 - 536 = 1$
		$67 \text{ R } 1$

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