

Family of Numbers-Learning Place Value

Problem:

My students have always had a difficult time learning place value past one thousand. Very few students, if any, could complete the task of word form to standard form. If any of my students caught on to the concept while we were studying the topic, later in the year while reviewing or trying to relate something back to place value, my students were completely lost. In fact, you might think I was speaking French rather than English. Finally, I have figured out a way to relate place value to billions in a way my students can remember throughout the entire year.

Procedure:

I begin teaching place value by pulling out my models of ones, tens and hundreds, showing how each is named. The basic places of ones, tens, and hundreds is fairly easy. It is when the fourth graders move into the thousands that the confusion begins. This is where I really begin speaking of the number families.

For the family of numbers, there are three numbers in a family...ones, tens hundreds. Each family has these three members, just like a mom, dad and baby. I write a number on the board (any number) that goes up to the trillions or beyond, ex.

512,254,009,657,856,921,953. We start in the ones place and name the place of each of the numbers: ones, tens, hundreds, ones, tens, hundreds, ones, tens, hundreds, ones, tens, hundreds, etc. The students quickly pick up on the pattern.

I then write a six-digit number on the board, ex. 872,095. I write the place above each number:

Hundre ds	Tens	Ones	Hundred s	Tens	Ones
8	7	2	0	9	5

I write thousands in the appropriate place:

thousands					
Hundre ds	Tens	Ones	Hundred s	Tens	Ones
8	7	2	0	9	5

I tell my students that this is the thousands family. I tell them how much that family likes their name and they always have their name with them. They are very proud of their name,

etc., etc. I then circle the area above the first group of ones, tens, and hundreds (as shown below):

thousands					
Hundre ds	Tens	Ones	Hundred s	Tens	Ones
8	7	2	0	9	5

I explain that this is the "no name" family. From this point on we talk about the thousands family and the "no name" family. I explain that the families have to be separated and there is always a comma between the two families. Now, when determining the place of the number, the students only have to decide if it is ones, tens or hundreds, then they have to decide the family. So, if it is the 9 they tell me it is in the tens place and in the "no name" family. If it is the 7 it is the tens place in the thousands family. When they have to tell value they put the value of the 7 in the tens place, it would be 70 then it is the thousands family so they add ",000". Therefore the number would look like this: 70,000.

When working from word form to number form, we still focus on one family at a time. If the number is two hundred three thousand, twenty-one. We focus on the thousands family only. Remembering that there are 3 numbers in the thousands family, the students first find out how many hundreds. In this case 2, they know this because it says two hundred. Then they find out how many tens. Here they know to put a 0 in the tens place because there aren't any numbers with -ty or -teen. Next, how many ones? Three. At this point they have to put a comma (because a comma always separates the thousands family and the no name family), and continue with the same questions. How many hundreds? None, it doesn't say two hundred or anything so put a 0 in the hundreds place. How many tens? Two, it says twenty, the words ends with a -ty and it means 2 in the tens place. How many ones? One. This process is the same with each family no matter how many families are represented.

The nice part about teaching the family of numbers is that when we add millions and billions, my students already know what the place and values are. I only have to teach them the new family names. They can easily apply the skill of telling the place (ones, tens or hundreds) then adding the family name (millions or billions). When adding the zeros for the value of the number, they need to be sure to add zeros for the thousands family and the no name family. Therefore, it would look like this:

millions			thousands					
Hundre ds	Tens	Ones	Hundre ds	Tens	Ones	Hundred s	Tens	Ones
3	6	1	8	7	2	0	9	5

The 6 is in the tens place in the millions family. The value would be 60 and add ",000" for the thousands family and ",000" for the no name family. The final answer would look like 60,000,000.

In conjunction with these families, I teach the decimals the same way. However, I tell my students how very important the numbers in the decimals places are and they always like to have their name. Therefore, if we have the number 2.4 we call it two and four tenths because the tenths loves its name. Yet, if we have 0.35 then hundredths is much stronger than the tenths and they say their name instead. I tell the kids to first say the number...thirty-five...then tell the family name...hundredths. The number 0.35 would be thirty five hundredths. For a number like 0.254, first tell the number...two hundred fifty-four, then tell the name...thousandths. (Like the hundredths, the thousandths is the strongest and that is the only name that is told). My students tend to LOVE this when we act out being boastful tenths, hundredths and thousandths.

Impact:

Teaching the family of numbers has converted an abstract idea to something literal (or concrete). My students can now see the patterns of the numbers and everything is much clearer. Even when teaching 3 digit by 3 digit multiplication later in the year when commas are necessary, I can ask how many numbers in the no name family out of the blue and my students know exactly what I am talking about and they know they need three numbers then a comma. This is now a skill that they have learned and they keep in their repertoire forever. It doesn't fade into non-existence when not discussed for months at a time like in the past. In my classroom, the family of numbers is the way to go.

For more information, contact me at Krista_Phelps@scps.k12.fl.us.