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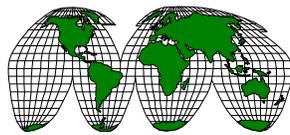
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AFRICAN MENDE ADDITION

The **Mende** are the largest ethnic group in Sierra Leone, West Africa, with a population of over one million. They have a rich culture and excel in the traditional arts of carving, singing and storytelling. Mathematics is also a part of their traditional culture. When Mende people **count**, they use a method of **addition** - they add one to the previous number to get to the next number. And when they do addition, they don't say "five, six, seven" but rather "five oranges, six oranges, seven oranges." Mathematics is used by the Mende in their everyday lives, so they do not use numbers just as numbers, but instead must think of the numbers as being connected to something that they can count, like oranges.

To count, the Mende use a system called "**puu**". The word "pu" in Mende relates to the process of using two hands to scoop rice from one container and put it into another container. The two hands together have ten fingers, so we can say that the counting system used is **base ten**. The Mende have another way of describing counting called "**nuu yila gboryongor**" that relates to the fingers and toes of a person being completely counted. The fingers and toes add to twenty, so we can say that the counting system is **base twenty**. The word "**mahu**" in Mende means **add to**, and this word is used when counting to show that the counting process is really a system of adding to previous numbers to get the next numbers.

In the United States, we have a method of expanding numbers by using their place value. For example, the number 23,874 can be written in expanded form as
20,000 + 3,000 + 800 + 70 + 4. The Mende use a similar method of expanding numbers to perform addition. This method also uses the **Commutative and Associative Properties of Addition.**

Here is an example of Mende addition.

225 oranges + 112 oranges = 200 oranges + 100 oranges = 300 oranges
20 oranges +   10 oranges = 30 oranges
5 oranges +   2 oranges = 7 oranges
300 oranges + 30 oranges + 7 oranges   = 337 oranges

We can re-write the problem like this:

225 + 112 = 200 + 20 + 5 + 100 + 10 + 2   **Expansion**
        200 + 100 + 20 + 10 + 5 + 2   **Commutative Property**
        (200 + 100) + (20 + 10) + (5 + 2)**Associative Property**
          300 + 30 + 7   **Addition**
          337   **Addition**

Here is a more challenging problem:

479 bags of rice + 264 bags of rice =   400 bags + 200 bags = 600 bags
          70 bags + 60 bags   = 130 bags
          600 bags + 100 bags = 700 bags
     (using the hundreds above and leaving 30)
          9 bags + 4 bags   = 13 bags
          30 bags + 13 bags = 43 bags
          700 bags + 43 bags = 743 bags

We can re-write the problem like this:

479 + 264 = 400 + 70 + 9 + 200 + 60 + 4   **Expansion**
        400 + 200 + 70 + 60 + 9 + 4   **Commutative Property**
        (400 + 200) + (70 + 60) + (9 + 4)**Associative Property**
          600 + 130 + 13   **Addition**
          600 + 100 + 30 + 13   **Expansion**
          (600 + 100) + (30 + 13)   **Associative Property**
          700 + 43   **Addition**
          743   **Addition**

YOUR PROJECT:

    1.   Solve these two addition problems using Mende addition.
Remember that the Mende need to count **something**.

        a)   445 loaves of bread + 313 loaves of bread =
        b)   687 guavas + 235 guavas =

    2.   Re-write the solutions and state the properties and operations used.

Reference: African Mende Addition

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