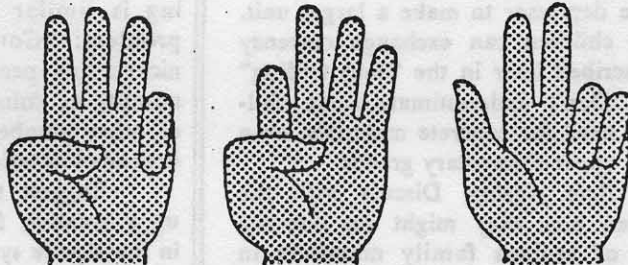# African Numbers

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On a scale of moja to kumi, African math studies rate kumi with kids

Mathematics is part of the daily lives of all peoples, at all levels of technological development. The concepts of math are the same throughout the world, but the applications vary from place to place and time to time. Children can learn to appreciate the differences among ethnic groups, as well as those aspects of life that are the same in many cultures, through a close look at the mathematics of a particular culture. In this way, they will enjoy learning and practicing math basics.

This is the second in a two-part series on mathematics in African culture and classroom activities derived from it. Using last month's African stones game as an introduction, this month's article offers a classroom study of many African mathematical customs, ranging from counting and number systems to marketplace activities. These can be selected or adapted according to the grade level and abilities of your students.

People who know little about Africa tend to think of the continent as a homogeneous region with a common language and culture. This is not the case. About a thousand different languages are spoken, each with its own set of number words. With so many different languages in existence, it is no wonder that African people of different ethnic backgrounds frequently use finger counting when they meet in the marketplace to exchange their wares.

Digital Calculations

I often ask children to imagine that they are in a strange country, one whose language is unknown to them. How would they indicate to a fruit vendor that they want to buy eight bananas? Many suggest making gestures with their fingers—the most natural calculating machine! I ask them to think of how they would indicate "eight" with their fingers. When I give the signal, all the children raise their hands to show "eight." Some use four fingers on each hand; others show five fingers on one hand and three on the other. Some indicate "five" by raising their fingers; others by clenching their fists. They show "three" with three consecutive fingers beginning with the pinky or the thumb or in some other way.

Try this procedure with other numbers. The children will come up with original ways of using their fingers and perhaps their toes or other parts of their bodies in many different combinations. Explain that African peoples have very formal systems of finger counting and would consider these variations as haphazard and curious as if one were to count—"Three, one, seven, two...."

Africa Counts

Children love to learn new words, so why not teach them to count in an African language. Your greatest difficulty will be to learn the words yourself. The children will memorize them before you do, and then *they* will help *you* with the words you have for-

gotten. I have found that the younger the child, the easier it is for him or her to pick up the new language. [For more on Swahili and other foreign languages, see "Center Spot," Oct. '76, p. 46.]

Ask if any of your students can count to 10 in a language other than English. Then teach the children counting words in Swahili—a language spoken in much of East and Central Africa. Every letter is enunciated, and the vowels are pronounced as follows: *a* as in *palm; e* as in *end; i* as in *eat; o* as in *note; u* as in *cool.*

1	moja	6	sita
2	mbili	7	saba
3	tatu	8	nane
4	nne	9	tisa
5	tano	10	kumi

For younger children bring in a copy of Muriel Feelings' book *Moja Means One: The Swahili Counting Book* (Dial, also in paperback). Many of the charming illustrations depict rural life in Africa. For example, *mbili* (two), is illustrated with a drawing of two African children playing the stone game.

Older students will enjoy analyzing the number words. The pronunciations of *nne* (four) and *nane* (eight), for instance, are closely related. This might suggest that the gesture for "eight" consists of two "fours"—holding up four fingers on each hand. Indeed, in some African counting systems, eight is indicated by this method.

"Nickel and Dime" System

You might want to introduce a language from West Africa. Children find it easy to learn the number words of the Kpelle people of Liberia. Once they have mastered the words for one to five, most of the work has been done. The system is based on groups of five and 10, so I call it the "nickel and dime" counting system. If students remember that five pennies equal a nickel and two nickels make a dime, they have learned the basic structure.

Following are the basic Kpelle number words (again, pronounce every letter, enunciating the vowels as you did for the Swahili words): one. *tono;* two *feere;* three, *saaba;* four *naang;* five, *noolu.* Higher numbers are built on *noolu* (five), with the connector *mei* (over) and *buu* (10), with *kau* (and). For example:

7 = 5 over 2 = *noolu mei feere*
13 = 10 and 3 = *buu kau saaba*