

# MATHEMATICS AND CULTURE

## Chuukese Use Multiple Counting Systems

It is often thought that mathematics develops only after a civilization has created some form of written record. However, this was not the case in Chuuk. The Chuukese developed not one but many different counting systems. Although not much is known about the history of Chuukese mathematics, it appears that Chuukese counting systems were converted to base 10 under Japanese administration prior to World War II.

The table below gives the Chuukese counting system as used in the Mortlocks Region. Looking at the table, how would you say 444 in Chuukese? *Puku* is the Chuukese way of saying *hundred*.

Like other languages in FSM, the Chuukese number system uses different word endings when counting different kinds of objects. For this reason, it sometimes takes fewer words to count objects in Chuukese than in English. For example, the phrase *one piece of paper* is four words in English, but two words in Chuukese (*echō taropwe*).

When counting flat objects, the Chuukese use the word ending *chō*. Objects counted using this system include paper, leaves, plywood, and tin roofs.

The Chuukese counting system as used in the Mortlocks Region is translated into English below.

English	Chuukese
one	eu
two	ruou
three	elu
four	ruanu
five	limou
six	onou
seven	fisu
eight	walu
nine	tuou
ten	engol
eleven	engol me eu
twelve	engol me ruou
thirteen	engol me elu
fourteen	engol me ruanu
fifteen	engol me limou
sixteen	engol me onou
seventeen	engol me fisu
eighteen	engol me walu
nineteen	engol me tuou
twenty	rua
thirty	elik
forty	faik
fifty	lima
sixty	ona'
seventy	fik
eighty	walik
ninety	tiwa
one hundred	epuku
two hundred	ruapuku
three hundred	elipuku
four hundred	fapuku
five hundred	limapuku

English	Chuukese for Flat Objects
one	echō
two	ruachō
three	elichō
four	fachō
five	limachō

Word endings also change when counting long objects. The word ending used in this case is *foch*. Objects counted using this system include canoes, fingers, pencils, and rebar.

English	Chuukese for Long Objects
one	efoch
two	ruofoch
three	elifoch
four	fofoch
five	limefoch

There is also a shift in the word ending when solid objects are counted. In this instance, the Chuukese word ending is *fou*. Objects counted using this system include coconuts, breadfruit, stones, and taro root.

English	Chuukese for Solid Objects
one	efou
two	ruefou
three	elifou
four	fefou
five	limefou

Finally, the word ending used in Chuukese to count layers of objects is *sar*. Objects counted using this system include oranges, layers of soil, and the layers of leaves and food items cooked in an *umw*, or outdoor oven.

English	Chuukese for Layered Objects
one	esar
two	ruesar
three	elisar
four	fesar
five	limesar

It is interesting to note that 4 (*ruanu*) has a special place in Chuukese counting systems. In the counting systems used for specific types of objects, a new root word replaces the word *ruanu*. For example, when applied to flat objects, 4 is *fachō*.

Certain objects can also be counted in sets of 10. The word to describe a set of clams is *emet*. For a set of coconuts, the word is *eef*.

In Chuukese, it is very hard to express exact weights and volumes. There are no words for pounds and ounces. To quantify something that weighs 50 pounds or less, you must lift it and decide whether it weighs 40 or 50 pounds. To measure objects that weigh more than 50 pounds, we use stones and baskets.

Nonetheless, there are Chuukese words for some English measurements.

English	Chuukese
one foot	emwalu
one yard	epou
three yards	engaf

However, the Chuukese people developed their own ways of measuring things, and these are not systematically taught to the younger generation. It is the older Chuukese people who were once boat and house builders who possess this knowledge. They used their knowledge and skills to build strong houses and fast, sturdy boats. Only a few people – the Chuukese craftsmen – still carry this knowledge with them. It will be a big task to find these people and record this information before it is lost. I hope that we will be able to do this before it is too late.

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