

Problem 1 (20 points). The following are the fourth powers of natural numbers in ascending order:

1, 16, 81, 256, 625, 1296, 2401, 4096, 6561, 10000, ...

The first ten entries of this sequence are spelt out in Ik, in arbitrary order:

- a. ɳamriá lebetse ñda tomínékwa túde ñda jirimí túde ñda kidi kɔn
- b. álifika ts'agúsé ñda tomínékwa túde ñda kidi ts'agúsé ñda jirimí túde ñda kidi kɔn
- c. álifika túde ñda kidi kɔn ñda ɳamriá túde ñda tomínékwa túde ñda kidi kɔn ñda nēbeε kɔn
- d. álifika tomín
- e. álifa kɔn ñda ɳamriá lebetse ñda tomínékwa túde ñda kidi ts'agúsé ñda jirimí túde ñda kidi kɔn
- f. tomínékwa túde ñda kidi ade ñda nēbeε kɔn
- g. tomíní ñda jirimí túde ñda kidi kɔn
- h. kɔn
- i. álifika lebetse ñda ɳamriá ts'agúsé ñda kɔn
- j. ɳamriá túde ñda kidi kɔn ñda tomínékwa lebetse ñda jirimí túd

(a) Determine the correct correspondence.

(b) Write in numerals:

- k. álifika tomíní ñda jirimí lebets
- l. tomínékwa túde ñda kidi kɔn
- m. tomínékwa túde ñda nēbeε kɔn
- n. álifika ɳamriá kɔn

(c) Write out in Ik: 3108.

(d) Write out the eleventh entry of the sequence in Ik.

⚠️ Ik belongs to the Nilo-Saharan family. It is spoken by approx. 7,500 people in Uganda.

ɓ, d, j, ɳ and ts' are consonants. ɔ, ε and ɪ are pronounced like o, e and i, respectively, but with the slightly lowered tongue. The mark ' denotes a high tone.

The fourth power of a number n is the result of multiplying four instances of n together.
($n^4 = n \times n \times n \times n$)

—Minkyu Kim