

Eighteenth International Linguistics Olympiad

Ventspils (Latvia), 19–23 July 2021

Individual Contest Solutions

Problem 1.

- ena 1, wija 2, wido 3, wi 4, idibi 5, benomi 6, waroewo 8, ije 9
- rati 10, mepina 20, joka rati 30, mepija 40, rati beo 50, moeto 60
- α -ma $10\beta = 10\beta + \alpha$ ($1 \leq \alpha \leq 9$, $1 \leq \beta \leq 5$)
- ije $10(\beta + 1) = \text{ijema } 10\beta$ ($1 \leq \beta \leq 5$)
- γ daemita moeto = $60 + \gamma$ ($1 \leq \gamma \leq 59$)
- moeto δ [ma γ ka $(\delta + 1)$] = 60δ [+ γ] ($1 \leq \gamma \leq 59$, $2 \leq \delta \leq 5$)

- (a) moeto waroewo 480
 ijema joka rati 39
 moeto wido ma benomi ka wi 186

- (b) 1 ena
 19 ijema rati = ije mepina
 26 benomima mepina
 104 wima mepija daemita moeto
 292 moeto wi ma wijama rati beo ka idibi

Problem 2.

- -ya collectivity: homa- ‘juniper leaf’ + -ya → homa-ya- ‘juniper branch’
- N:-N (N = noun):
 ha- ‘leaves’ + k’yawe ‘water’ → ha:-k’yawe ‘tea’
- N:-A (A = adjective):
 mu- ‘bread’ + chikwa ‘sweet (adj.)’ → mu:-chikwa ‘chocolate bar’

	singular	plural, substance
monosyllabic stem	-’le	-we
polysyllabic stem	-nne	-:we

- (a) 1. mo:chikwa datda:we — I. peach trees
 2. haya:we — G. lit. piles of leaves (actually planted fields [fields of plants])
 3. doko:ko mo’le — H. chicken egg
 4. ma:chikwa — C. sugar
 5. mu:chikwa — J. chocolate bar
 6. mulonne, mu’le — D. loaf of bread
 7. mowe — E. beads
 8. ha:k’yawe — B. tea
 9. doko:ko shiwe — A. chicken meat
 10. mo:chikwa mulo:chikwa — F. peach pie

- (b) 11. **ade muwe** — O. *blood clots*
 12. **beyanne** — P. *field of grass*
 13. **homa:we** — M. *juniper leaves*
 14. **ma:k'yawe** — N. *salt water*
 15. **ma:k'ose** — S. *salt*
 16. **ma'le** — K. *granule, grain*
 17. **homayanne** — R. *juniper branch*
 18. **mi'le** — L. *ear of corn [corn cob]*
 19. **ade k'yawe** — Q. *blood*
- (c) 20. **be'le** — *blade of grass*
 21. **chikwa** — *sweet (adj.)*
 22. **datdanne** — *tree*
 23. **ade = ade k'yawe** — *blood*
 24. **mulo:we** — *bread*
 25. **hawe** — *leaves*
- (d) 26. *salty* — **k'ose**
 27. *juniper leaf* — **homanne**
 28. *piece of meat* — **shi'le**
 29. *water* — **k'yawe**
 30. *corn, maize* — **miwe**
 31. *fields of grass* — **beya:we**
- (e) *salt lake.*

Problem 3.

- Word order:
 - V(O)S (V = verb; O = object; S = subject)
 - QVX (Q = interrogative element)
 - (*which* | Qt)N(D)(A) (Qt = quantity, N = noun, D = demonstrative pronouns, A = adjective)
- verb:
 - **le-** past
 - **bi-** future
 - **-si** subject = plural (**-gisi-si** > **-gisesi**)

- noun:

	singular	plural
<i>man</i>	tau	tauwau
<i>child</i>	gwadi	gugwadi
<i>chief</i>	guyau	gweguyau
<i>old woman</i>	numwaya	nunumwaya
~	singular = plural	

- class (Cl):
 - men: **te-** (before Qt); **to-**
 - women/animals: **na-**
 - children: **gudi-**
 - canoes: **ke-**
 - things (for example stones): **kwe-**
- demonstrative pronouns: **(a-)ma-Cl(-si)(-we)-na**, **ma-to-** > **mto-**, **ma-na-** > **mina-**
- quantity: Cl-**vila** *how many?*, Cl-**tala** 1, Cl-**yu** 2, Cl-**vasi** 4

- (a) 14. **Navila vivila biyamata tomwaya mtona?**
How many women will this old man look after?
15. **Bikamkwamsi kweyu vivila minasina.**
These women will eat two things.
16. **Amagudina gwadi lekota?**
Which child arrived?
17. **Tevila tauwau bigisesi gugwadi gudigasisi?**
How many men will see the wild children?;
How many men will the wild children see?
18. **Legisesi ketala waga vivila minasiwena.**
Those women saw one canoe.
- (b) 19. *How many canoes did those old women see?*
Kevila waga legisesi nunumwaya minasiwena?
20. *These four white men will look after this clever child.*
Biyamatasi gwadi magudina gudikabitam tevasi dimdim mtosina.
21. *How many children will eat these pigs?*
Gudivila gugwadi bikamkwamsi bunukwa minasina?
22. *Which woman caught those beautiful fish?*
Aminana vivila lebani yena minasiwena namanabweta?
23. *Two wild dogs saw that old man.*
Legisesi tomwaya mtowena nayu ka'ukwa nagasisi.

Problem 4. tV- before CV₀:

	C = y	C ∉ {b, m, w, y}		C ∈ {b, m, w}
		V ₀ ∈ {e, ε, i, I}	V ₀ ∈ {o, o, u, u, a}	
V ₀ ∈ {e, i, o, u}		V = i		V = u
V ₀ ∈ {ε, o, I, u, a}		V = I		V = o

- $\tilde{V} \leftrightarrow \tilde{V}_0$

- $\overset{\curvearrowright}{\text{CV}_0} > \overset{\curvearrowright}{\text{tV-CV}_0}$; $\overset{\curvearrowright}{\text{CV}_0} > \overset{\curvearrowright}{\text{tV-CV}_0}$; $\overset{\curvearrowright}{\text{CV}_0} > \overset{\curvearrowright}{\text{tV-CV}_0}$

- N-CV₀ (N ∈ {m, n, ŋ, ŋ}) > n-tV-CV₀

(a) $\acute{t}\acute{i}\acute{m}\acute{i}\acute{t}\acute{i}\acute{n}\acute{i}$ (* $\acute{t}\acute{u}\acute{m}\acute{i}\acute{t}\acute{i}\acute{n}\acute{i}$)

- (b)
1. rôtô — tórótótò
 2. rèwǒ — tìrètǒwǒ
 3. bíkó — túbitúkó
 4. jýé riyǎ — n̄t̄íȳé tirit̄iȳǎ
 5. békʷǒ — tóbétǒkʷǒ
 6. ríyòrò — tíríȳòt̄ùrò
 7. hʷǒgà — tòhʷòtògà

Problem 5. Verb structure:

subject		tense	(object-)	root	(-subject)
\emptyset -	1st person sg	my ^{-C} p ^{-V}	ik - 1st person sg a - 2nd person sg		-naha 1st person pl
	3rd person sg _{future}				
tsi ^{-C} ts ^{-V}	2nd person sg	ik ^{-C} \emptyset ^{-V}	i - 3rd person sg my - 1st person pl aha - 2nd person pl si - 3rd person pl		
	1st person pl				
ni ^{-C} z ^{-V}		3rd person sg _{past}			

\emptyset -**p-ik**- = 3rd person sg_{future}:1st person sg (not *1st person sg_{future}:1st person sg)
^C = before a consonant, ^V = before a vowel

- (a) **aharapyryk** *I hugged you*
mymyboro *he will bite us* (not ??*I will bite us*)
uru *I slept*
tsiksiwynaha *we cut them up* (past)
ikwak *I hunted*
ziksi *he left*

- (b) *we will fall* **tsimynarahanaha**
I bathed **ikmoro**
you_{sg} bit us **tsikmyboro**
I will wait for them **mysipery**
he will wait for them
I will hug you_{pl} **pahaharapyryk**
he will hug you_{pl}
you_{sg} will leave **tsipiksi**
I killed it **ibeze**