

Eighteenth International Linguistics Olympiad

Ventspils (Latvia), July 19–23, 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** $10(\beta + 1) = \mathbf{ijema}$ 10β ($1 \leq \beta \leq 5$)
- γ **daemita moeto** $= 60 + \gamma$ ($1 \leq \gamma \leq 59$)
- **moeto** δ [**ma** γ **ka** $(\delta + 1)$] $= 60\delta$ [$+\gamma$] ($1 \leq \gamma \leq 59$, $2 \leq \delta \leq 5$)

- (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-** > **mt-**, **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, ɪ}	V ₀ ∈ {o, ɔ, u, ʊ, a}	
V ₀ ∈ {e, i, o, u}		V = i	V = u	
V ₀ ∈ {ε, ɔ, ɪ, ʊ, a}		V = ɪ	V = ʊ	

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

- $\overset{\curvearrowright}{\text{C}\tilde{\text{V}}_0} > \overset{\curvearrowright}{\text{t}\tilde{\text{V}}\text{-C}\tilde{\text{V}}_0}$; $\overset{\curvearrowright}{\text{C}\tilde{\text{V}}_0} > \overset{\curvearrowright}{\text{t}\tilde{\text{V}}\text{-C}\tilde{\text{V}}_0}$; $\overset{\curvearrowright}{\text{C}\tilde{\text{V}}_0} > \overset{\curvearrowright}{\text{t}\tilde{\text{V}}\text{-C}\tilde{\text{V}}_0}$

- N-CV₀ (N ∈ {m, n, ɲ, ŋ}) > n-tV-CV₀

(a) $\acute{\text{t}}\acute{\text{í}}\acute{\text{m}}\acute{\text{í}}\acute{\text{t}}\acute{\text{í}}\acute{\text{n}}\acute{\text{í}}$ (* $\acute{\text{t}}\acute{\text{ú}}\acute{\text{m}}\acute{\text{í}}\acute{\text{t}}\acute{\text{í}}\acute{\text{n}}\acute{\text{í}}$)

- (b)
1. $\text{ró}\text{t}\text{ô}$ — $\text{tór}\text{ót}\text{ót}\text{ò}$
 2. $\text{r}\text{è}\text{w}\acute{\text{ó}}$ — $\text{t}\text{ì}\text{r}\text{è}\text{t}\acute{\text{ó}}\text{w}\acute{\text{ó}}$
 3. $\text{bí}\text{kó}$ — $\text{tú}\text{bí}\text{tú}\text{kó}$
 4. $\text{jí}\text{y}\acute{\text{é}}\text{rì}\text{y}\grave{\text{à}}$ — $\text{ńtí}\text{y}\acute{\text{é}}\text{tì}\text{rì}\text{y}\grave{\text{à}}$
 5. $\text{bé}\text{k}^{\text{w}}\acute{\text{ó}}$ — $\text{tób}\acute{\text{é}}\text{t}\acute{\text{ó}}\text{k}^{\text{w}}\acute{\text{ó}}$
 6. $\text{rí}\text{y}\grave{\text{o}}\text{r}\grave{\text{o}}$ — $\text{tí}\text{rì}\text{tì}\text{y}\grave{\text{o}}\text{t}\grave{\text{ù}}\text{r}\grave{\text{o}}$
 7. $\text{h}^{\text{w}}\grave{\text{ò}}\text{g}\grave{\text{à}}$ — $\text{tò}\text{h}^{\text{w}}\grave{\text{ò}}\text{tò}\text{g}\grave{\text{à}}$

Problem 5. Verb structure:

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

$\emptyset\text{-p-ik-}$ = 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**