

en(B)

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
- $\alpha\text{-ma}$ $10\beta = 10\beta + \alpha$ ($1 \leq \alpha \leq 9$, $1 \leq \beta \leq 5$)
- **ije** $10(\beta + 1) = \text{ijema}$ 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-** > **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:

- | | | | |
|---|---------|---|--|
| | $C = y$ | $C \notin \{b, m, w, y\}$ | $C \in \{b, m, w\}$ |
| | | $V_0 \in \{e, \varepsilon, i, \imath\}$ | $V_0 \in \{o, \circ, u, \upsilon, a\}$ |
| $V_0 \in \{e, i, o, u\}$ | | $V = i$ | $V = u$ |
| $V_0 \in \{\varepsilon, \circ, \imath, \upsilon, a\}$ | | $V = i$ | $V = \upsilon$ |

- $\tilde{V} \leftrightarrow \tilde{V}_0$
- $C\hat{V}_0 > t\tilde{V}-C\hat{V}_0 ; C\hat{V}_0 > t\tilde{V}-C\tilde{V}_0 ; C\hat{V}_0 > t\tilde{V}-C\tilde{V}_0$
- $N-CV_0 (N \in \{m, n, \eta\}) > n-tV-CV_0$

(a) **tímitíni** (*túmitíni)

- (b)
1. rótô — tórótótô
 2. r̄ew̄ô — t̄ir̄et̄ôw̄ô
 3. bíkó — túbítukó
 4. j̄iyé r̄iyâ — n̄tíyé t̄ir̄it̄iyâ
 5. békʷô — tóbétôkʷô
 6. ríyôrô — tíritiyôtûrô
 7. hʷògâ — tòhʷòtôgâ

Problem 5. Verb structure:

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

$\emptyset\text{-p-ik-}$ = 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* **tsimynarahahanaha**
I bathed **ikmoro**
you_{sg} bit us **tsikmyboro**
 $\left[\begin{array}{l} \text{i} \\ \text{I will wait for them} \\ \text{he will wait for them} \end{array} \right]$ **mysipery**
 $\left[\begin{array}{l} \text{i} \\ \text{I will hug you}_{pl} \\ \text{he will hug you}_{pl} \end{array} \right]$ **pahaharapyryk**
you_{sg} will leave **tsipaksi**
I killed it **ibeze**