

en(A)

Twenty-second International Linguistics Olympiad

Taipei (Taiwan), July 20–27, 2025

Individual Contest Solutions

Problem 1.

		1	2	3	4	5	6	7	8	9
[k]	k	ci	pi	sum	zi	ŋa	du	dyn	ge	gu
	10(+k)	cu-	cu-	cu-	cy-	ce-	cu-	cup-	cop-	cy-
(k)	$k \times 10$	cutām	pi-	sum-	zip-	ŋap-	duk-	dyn-	gep-	(gup-)
(k)	$k \times 10 (+ \dots)$		tsa-	so-	ze-	ŋa-	(re-)	døn-	ja-	(go-)

- System A:

- $\beta \times 20 (+ \alpha) = \text{ke } \boxed{\beta} (\text{da } \boxed{\alpha})$
 - $\beta \times 20 + 10 \rightarrow \text{ke pje-da } \boxed{\beta + 1}$
 - $\beta \times 20 + 15 \rightarrow \text{ke ko-da } \boxed{\beta + 1}$
 - $\gamma \times 400 (+ \beta \times 20 + \alpha) = \text{piçu } \boxed{\gamma} (\text{da ke } \boxed{\beta} \text{ da } \boxed{\alpha})$
 - $\gamma \times 400 + 200 \rightarrow \text{piçu pje-da } \boxed{\gamma + 1}$
 - $\gamma \times 400 + 300 \rightarrow \text{piçu ko-da } \boxed{\gamma + 1}$

- System B:

- $\beta \times 10 = \textcircled{B}-\textbf{cu}$, $\beta > 2$;
 - $\beta \times 10 = \textcircled{B}-\textbf{çu}$, $\beta = 2$
 - $\beta \times 10 + \alpha = \textcircled{B}-\boxed{\alpha}$
 - $\gamma \times 100 (+ \omega) = \textcircled{Y}-\textbf{ja } \omega$

(a) $[X] = 60 = \text{dukcu}$
 $[Y] = 62 = \text{ke sum da pi}$
 $[Z] = 885 = \text{piçu pi da ke zi da ña}$

(b) (1) $13 + 70 = 83$
(2) $800 = 20 \times 40$
(3) $469 = 50 \times 9 + 19$
(4) $600 + 110 = 500 + 210$
(5) $2 \times \frac{3}{4} + \frac{1}{2} = 2$
(6) $1100 \times \frac{1}{2} + 50 = 600$
(7) $736 = 84 \times 4 + 400$
(8) $2 \times 609 = 60_X \times 20 + 18$
(9) $62_Y + 24 = 86$
(10) $885_Z + 115 = 700 + 300$

(c) • $75 = \text{ke ko-da zi} = \text{døn} \boxed{\text{ŋa}}$
• $570 = \text{piçu ci da ke pje-da gu} = \text{ŋap} \boxed{\text{ja}} \text{ dyn} \boxed{\text{nu}}$

Problem 2. Rules:

- Word order:
 - inalienable possession: possessor + noun
 - alienable possession: noun + possessor
- Possessive pronouns:

	inalienable possession		alienable possession	
	kinship term	body part	singular	plural
singular	́V*	́V	́V́n	́Vńg
plural	́Vg		́Výn	́Výg
person marking	V: 1/2/3 → a/ə/ɛ		V: 1/2/3 → a/u/i 3 → add a suffix -í	

* High tone is only applicable for first and second person.

- Noun plural formation:
 - -(VV)d for kinship terms, -(VV)g otherwise. VV is an unpredictable epenthetic vowel.
 - When an epenthetic vowel is added, the tone pattern may spread out or change slightly.
 - When a (plural) body part is possessed by a plural pronoun, the tone pattern of the noun is fully replaced by a ́(○)́ tone contour.

(a)

1	J	2	A	3	D	4	T	5	E	6	S	7	F	8	B	9	P	10	L
11	H	12	N	13	G	14	M	15	Q	16	K	17	O	18	I	19	C	20	R

(b) *his grandmother, his grandfather* – ε does not have high tone before kinship terms.

- (c)
21. ág bòràág – *our shoulders*
 22. dòréég éyàg – *our hammers*
 23. é bòrààg – *his shoulders*
 24. ò tündúlìg – *your_{sg} elbows*
 25. ó máàm – *your_{sg} aunt*
- (d)
26. *my grindstone* – gùùr áèn
 27. *their cheeks* – ég fèndèg
 28. *your_{pl} anchor* – téél úyùn
 29. *our uncle* – ág ábéé
 30. *your_{sg} dogs* – áðág únùg

Problem 3. Rules:

- Word order: verb (object).
- Verb:
 - ‘indeed’: **n-**
 - subject: **-n-** 1st person sg, **-to-** 1st person pl, **-a-** 3rd person sg, **-βa-** 3rd person pl
 - tense: **-ra-** ‘about to’, **-V-** past
 - stem
- **-n-V-** > **-naa-**, else **-V-** = preceding vowel; **nβ** > **mb**; **nr** > **nd**
- Tone contours:
 - ‘about to’: ጀጀጀጀ
 - past: ጀጀጀ
 - past + ‘indeed’, present: ጀ
- Tone assignment:
 1. All vowels are initially ጀ.
 2. Assign tones to vowels one-to-one starting from first vowel of stem, continuing on to object if it exists.
 3. If final vowel reached and more than one tone remains:
 - ጀጀ → assign ጀ to final vowel.
 - ...ጀጀጀ → assign ጀ to final vowel.
 4. All vowels following ጀ are assigned ጀ.
 5. Sentence-final ንጀ → ንጀ.
- (a) 20. **ahéétóka**
- (b) 21. **βaasukurá** – *They have rubbed (something).*
22. **toosya ifʃíimbéyo** – *We have ground the seeds.*
23. **ndóma** – *I bite (something).*
24. **naaβína** – *Indeed, he has sung (something).*
- (c) 25. *We are about to eat the seeds.* – **torarya ifʃíimbéyo**
26. *I sing (something).* – **mbína**
27. *Indeed, we have measured the secretary bird.* – **ntooβíímá írítáárákímúra**
28. *We are about to burn (something).* – **torasaambă**
29. *He has remembered (something).* – **aaheetóka**

Problem 4.

(a)

15	D.	16	N.	17	T.	18	L.	19	W.
20	O.	21	Y.	22	H.	23	I.	24	G.
25	A.	26	Q.	27	C.	28	V.	29	P.
30	K.	31	U.	32	F.	33	M.	34	E.
35	J.	36	X.	37	S.	38	R.	39	B.

- (b) 40. **reprena** – tree; fire
41. **agaa** – mouth; speech
42. **iri** – hair; grass
43. **yagaa** – jaw
44. **nida dia** – it is not me
45. **yaa-iri** – bird feathers
46. **nogo-naaki** – children

- (c) 47. **white man** – bali
48. **bone** – uni
49. **seed of a tree** – repena-ini
50. **hole** – boke
51. **very big** – ora adaa
52. **pandanus** – aga
53. **old woman's eye** – pamoagaena ini

Problem 5. Rules:

- Word order: VXY, XVY ($\{X, Y\} = \{S, O\}$; V = verb, S = subject, O = object)

- Noun: ri (pl: taq) N

- Verb: x- sg — ru — [stem]; before a vowel ru- > r-, ki- > k-
- | | | |
|----|----|----|
| | O | S |
| x- | sg | — |
| | pl | ru |

- | | | | |
|------------------------------|--------|----------------------------|-------|
| | | Auditory Cortex (activity) | |
| | | higher | lower |
| | | VXY | XVY |
| Frontal Cortex
(activity) | higher | VSO | OVS |
| | lower | VO | VOS |

Answers:

- (a)
1. Xerunüm ri taq säq ri xar
 2. Ri taq [q'ëq]_A xkich'äy [ri]_B käq
 3. [Xeroyoj]_C ri q'ëq ri taq käq
 4. Ri q'ëq xkoyoj [ri taq xar]_D
 5. [Xkinüm ri taq käq]_E ri säq
 6. Xkich'äy [ri xar ri taq säq]_F
 7. [Ri taq xar]_G xeroyoj [ri käq]_H
 8. [Ri säq xeruch'äy ri taq q'ëq]_I

- (b)
9. Ri taq säq xkinüm ri q'ëq
 10. Xekich'äy ri taq xar ri taq käq



- (c)
- Xroyoj ri säq ri xar
 - Xroyoj ri xar ri säq
 - Ri xar xroyoj ri säq
 - Ri säq xroyoj ri xar

- (d)

		Frontal Cortex (activity)	Auditory Cortex (activity)
11	Xeruq'etey ri käq ri taq q'ëq	higher	higher
12	Xerachik'aj ri taq säq ri xar	lower	higher
13	Ri taq q'ëq xekitz'ët ri taq säq	?	lower