

en

Fifteenth International Linguistics Olympiad

Dublin (Ireland), 31 July – 4 August 2017

Individual Contest Problems

Rules for writing out the solutions

Do not copy over the problems. Write down your solution to each problem on a separate sheet or sheets. On each sheet indicate the number of the problem, the number of your seat and your surname. Otherwise your work may be mislaid or misattributed.

Your answers must be well-supported by argument. Even a perfectly correct answer will be given a low score unless accompanied by an explanation.

Problem 1 (20 points). Here are some arithmetic equalities in Birom:

1. $tù\bar{y}ün^2 + t\bar{a}t + n\bar{a}\bar{s} = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}b\bar{a} \ n\á \ v\bar{e} \ r\bar{w}\bar{i}t$
2. $t\bar{a}t \ n\bar{a}\bar{s} = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{i}m\bar{m}n \ n\á \ v\bar{e} \ s\bar{a}\bar{a}t\bar{a}t$
3. $t\bar{a}\bar{a}m\bar{a}^2 + s\bar{a}\bar{a}t\bar{a}t + g\bar{w}\bar{i}n\bar{i}\bar{y} = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}n\bar{a}\bar{a}s \ n\á \ v\bar{e} \ s\bar{a}\bar{a}g\bar{w}\bar{i}n\bar{i}\bar{y}$
4. $s\bar{a}\bar{a}t\bar{a}t \ g\bar{w}\bar{i}n\bar{i}\bar{y} = s\bar{a}\bar{a}t\bar{a}t$
5. $r\bar{w}\bar{i}t^2 + b\bar{a} + t\bar{u}\bar{y}ün = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{u}\bar{y}ün \ n\á \ v\bar{e} \ s\bar{a}\bar{a}g\bar{w}\bar{i}n\bar{i}\bar{y}$
6. $b\bar{a} \ t\bar{u}\bar{y}ün = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}b\bar{a} \ n\á \ v\bar{e} \ r\bar{w}\bar{i}t$
7. $s\bar{a}\bar{a}t\bar{a}t^2 + n\bar{a}\bar{s} + t\bar{a}t = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{a}\bar{a}m\bar{a} \ n\á \ v\bar{e} \ n\bar{a}\bar{s}$
8. $n\bar{a}\bar{s} \ t\bar{a}t = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{u}\bar{y}ün \ n\á \ v\bar{e} \ n\bar{a}\bar{s}$
9. $k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ n\bar{a}\bar{s} + k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ s\bar{a}\bar{a}t\bar{a}t = k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ t\bar{i}m\bar{m}n + b\bar{a} + k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ t\bar{u}\bar{y}ün$

All numbers in this problem are greater than 0 and less than 125.

- (a) Write the equalities (1–9) in numerals.
- (b) Write the numbers $b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{a}t$, $s\bar{a}\bar{a}g\bar{w}\bar{i}n\bar{i}\bar{y}$, $k\bar{u}r\bar{u}$ and the equalities (A) and (B) in numerals.
 - A. $b\bar{a}k\bar{u}r\bar{u} \ s\bar{a}\bar{a}b\bar{i}t\bar{a}t - t\bar{a}t - k\bar{u}r\bar{u} \ n\á \ g\bar{w}\bar{e} \ g\bar{w}\bar{i}n\bar{i}\bar{y} = b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}t\bar{a}\bar{a}m\bar{a} \ n\á \ v\bar{e} \ r\bar{w}\bar{i}t$
 - B. $b\bar{a}k\bar{u}r\bar{u} \ b\bar{i}n\bar{a}\bar{a}s \ n\á \ g\bar{w}\bar{e} \ g\bar{w}\bar{i}n\bar{i}\bar{y} - k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ b\bar{a} - k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ t\bar{a}t = k\bar{u}r\bar{u} \ n\á \ v\bar{e} \ r\bar{w}\bar{i}t$
- (c) Write out in Birom: 6, 22, 97, 120.

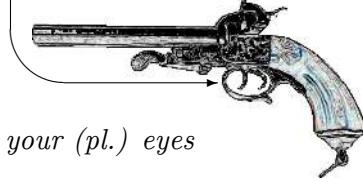
⚠ Birom belongs to the Plateau group of the Benue-Congo branch of the Atlantic-Congo family. It is spoken by approx. 1,000,000 people in Nigeria.

ε is a vowel. ŋ and ſ are consonants. The doubling of a vowel denotes length. The marks ' , - and ` indicate high, middle, and low tone, respectively.

$$a^k = \underbrace{a \times a \times \cdots \times a}_{k \text{ times}}; a^1 = a.$$

—Milena Veneva

Problem 2 (20 points). Here are some words and word combinations in Abui and their English translations in arbitrary order:

- | | |
|---------------------|---|
| 1. abang | a. his fingertip |
| 2. atáng heya | b. your (sg.) branch |
| 3. bataa hawata | c. my face |
| 4. dekafi | d. one's own rope |
| 5. ebataa hatáng | e. your (sg.) shoulder |
| 6. ekuda hawata | f. your (pl.) mother's hand |
| 7. falepak hawei | g. our pigs' ears
(the ear of the pig of each of us) |
| 8. hatáng hamín | h. father's pistol |
| 9. helui | i. your (sg.) horse's neck |
| 10. maama hefalepak | j. trigger |
| 11. napong |  |
| 12. rièng | k. your (pl.) eyes |
| 13. ritama | l. our noses
(the nose of each of us) |
| 14. riya hatáng | m. his knife |
| 15. tama habang | n. seashore |
| 16. tamin | o. upper part of a tree |
| 17. tefe hawei | p. your (sg.) thumb |
| | q. your (pl.) sea |

- (a) Determine the correct correspondences.
(b) Translate into English: 1. amin; 2. deya hebataa.
(c) Translate into Abui:

1. pig
2. your (pl.) knife
3. your (sg.) mother's father
4. my father's face
5. one's own ear
6. my sea

⚠ Abui belongs to the Timor-Alor-Pantar family. It is spoken by approx. 16,000 people in Indonesia.

The marks ' and ` denote tones.

—Aleksejs Peguševs

Problem 3 (20 points). Here are some sentences in Kimbundu and their English translations:

1. **ŋámónà dìhóngzò mùdilóngà**
I saw the banana on the plate.
2. **àlózí ásáŋgá djálà mùdikúŋgù**
The sorcerers met the man in the cave.
3. **ŋádjà dihóngzó djámì**
I ate my banana.
4. **mùdjúlù mwálà zítéténbwà**
There are stars in the sky.
5. **díkámbá djámí djásíkà nì djákínà**
My friend sang and danced.
6. **ŋámónà díkúŋgú djámí**
Did I see my cave?
7. **ŋámóná málà mùkitándà**
I saw the men in the square.
8. **ŋásáŋgá múlózí mwámì mülwándà**
I met my sorcerer in Luanda.
9. **mùkitándà mwálá djálá djámì**
My man (husband) is in the square.
10. **mùdikúŋgù ŋámónà màkólombóló**
Did I see the roosters in the cave?
11. **àtú ádjà dihóngzò mülwándá**
Did the people eat the banana in Luanda?

(a) Translate into English (one of the sentences is very similar in meaning to one of the sentences above):

12. **múlózí mwámónà zítéténbwá**
13. **zítéténbwá ɔjálà mùdjúlù**
14. **ŋákínà**
15. **djálá djámónà màhóngzò mülwándá**

(b) Translate into Kimbundu (one of the sentences may have more than one translation):

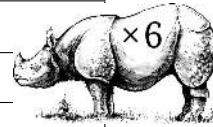
16. *Did I sing?*
17. *The person met the sorcerer and the friend in the square.*
18. *My man (husband) saw the cave.*
19. *There are sorcerers in Luanda.*

⚠ Kimbundu (North Mbundu) belongs to the Bantu group of the Benue-Congo branch of the Atlantic-Congo family. It is spoken by approx. 50,000 people in Angola.

w = *w* in *win*. **j** = *y* in *yum*. **ʃ** and **ʒ** are consonants. The marks ' and ` indicate high and low tone, respectively.

—Bruno L'Astorina

Problem 4 (20 points). Here are some word combinations in Laven written in the Khom script and in phonetic transcription and their English translations:

1	ນາຈີ້ ສັບ ແຕ	praj trie	to wake up the wife
2	ຫົກ່າວ ຫົກ່າວ	ca:k caj	from the heart/mind/soul
3	?	taw be:	to see the raft
4	ຄົກຸຍ ນູ້	kri:t flaw	to scratch the thigh
5		plaj pri:t	banana
6	?	?	three bananas
7	ຫຼາລົກ ລົກ ໄສ	?	six rhinoceros 
8	ເຟ ໄຕ ດູກ	?	four hands of bananas
9	ເຟ ມົມ ດູກ	?	?
10	?	cie pah la:	seven sheets of paper
11	ຫຼາ ດູກ ໄສ	?	aubergine/eggplant leaf
12		?	two aubergines/eggplants
13	ຫຼາ ທຸກ ດູກ ໄສ	plaj hnac pah plaj	seven pineapples
14	ຄູາ ເຟ ມົມ ໄສ	kruat pe: to:	three bees
15		la: pri:t traw la:	?
16	?	kær bær to:	two doves
17		bla:k puan ka:	four carp 
18	ເຟ ສັບ ລົກ ດູກ	piet traw pla:	six knives
19	ດູກ ສິດ ດູກ	bær ka:	?
20	ເຟ ໄຕ ດູກ	?	four blades

Fill in the cells with the question marks (you don't have to fill in the shaded ones).

▲ Laven (Jru') belongs to the Austroasiatic family. It is spoken by approx. 28,000 people in Laos. The Khom script was used for this language from 1924 to 1936. —Tae Hun Lee

Problem 5 (20 points). Here are some words in Madak and their English translations:

lavatbungmenemen	<i>the whole world</i>	loxongkao	<i>hot coal (ember)</i>
laxangkatli	<i>many eyes</i>	loxontaamang	<i>part of a garden</i>
laxanoos	<i>many vines</i>	lualeng	<i>two days</i>
laxao	<i>fire</i>	lubungtadi	<i>group of men</i>
lemparoos	<i>big vines</i>	luneton	<i>two brothers; two sisters</i>
lengkompixan	<i>songs</i>	lurubuno	<i>grandchild</i>
levempeve	<i>hearts</i>	luuna	<i>tree</i>
levenaleng	<i>days</i>	luvanga	<i>two things</i>
levengkot	<i>places</i>	luvatpeve	<i>two big hearts</i>
levenmenemen	<i>villages</i>	luvutneton	<i>brothers; sisters</i>
livixan	<i>singing (noun)</i>	luvuttadi	<i>men</i>
loroonan	<i>spirit</i>	luxavus	<i>two white men</i>

(a) Give a literal translation of the word **lavatbungmenemen**.

(b) Translate into English:

1. laradi
2. lavatkonuna
3. laxantoonan
4. levengkatli
5. loxot
6. lubungkavus
7. luvaroos

(c) Translate into Madak:

8. *heart*
9. *gardens*
10. *many things*
11. *grandchildren*
12. *two parts of day (two moments)*
13. *branches*
14. *big branches*

⚠ Madak belongs to the Meso-Melanesian group of the Malayo-Polynesian branch of the Austronesian family. It is spoken by approx. 3,000 people in Papua New Guinea (New Ireland).

ng = *ng* in *hang*. **x** is the voiced counterpart of *ch* in Scottish *loch* or German *Bach*.

—Ivan Derzhanski

Editors: Bozhidar Bozhanov, Qitong Cao, Jeong Yeon Choi,
Ivan Derzhanski (technical editor), Hugh Dobbs (editor-in-chief), Dmitry Gerasimov,
Ksenia Gilyarova, Stanislav Gurevich, Gabrijela Hladnik, Boris Iomdin, Bruno L'Astorina,
Tae Hun Lee, Danylo Mysak, Miina Norvik, Aleksejs Peguševs, Alexander Piperski,
Maria Rubinstein, Daniel Rucki, Artūrs Semeņuks, Pavel Sofroniev, Milena Veneva.

English text: Ivan Derzhanski, Bruno L'Astorina, Tae Hun Lee, Aleksejs Peguševs, Milena Veneva.

Good luck!