

## Thirteenth International Olympiad in Linguistics

Blagoevgrad (Bulgaria), 20–24 July 2015

## Individual Contest Problems

Do not copy the statements of 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).** Nahuatl:

$$\textit{mahtlactli-on-cē} \times \textit{mahtlactli} = \textit{mācuīl-pōhualli-om-mahtlactli} \quad (1)$$

$$\textit{cem-pōhualli} \times \textit{ōme} = \textit{ōm-pōhualli} \quad (2)$$

$$\textit{yē-pōhualli-on-chicōme} + \textit{mahtlactli-on-nāhui} = \textit{nāuh-pōhualli-on-cē} \quad (3)$$

$$\textit{mācuīlli} + \textit{ōme} = \textit{chicōme} \quad (4)$$

$$\textit{mahtlactli-om-ēyi} \times \textit{ēyi} = \textit{cem-pōhualli-on-caxtōlli-on-nāhui} \quad (5)$$

$$\textit{mācuīlli} \times \textit{ēyi} = \textit{caxtōlli} \quad (6)$$

Arammba:

$$\textit{ngámbi} + \textit{ngámbi} = \textit{ngámbi} \times \textit{yànpa} \quad (7)$$

$$\textit{ngámbi} + \textit{asàr} = \textit{tambaroy} \quad (8)$$

$$\textit{yànpa} \textit{tàxwo} + \textit{fete asàr tàxwo} = \textit{yànpa} \textit{fete} \quad (9)$$

$$\textit{yenówe} \times \textit{yenówe} \textit{tàxwo} = \textit{fete yenówe} \textit{tàxwo} \quad (10)$$

$$\textit{nimbo} \times \textit{fete} = \textit{tarumba} \quad (11)$$

$$\textit{nimbo} + \textit{yànpa} \textit{tàxwo} = \textit{yenówe} \textit{tàxwo} \quad (12)$$

Nahuatl:Arammba:

$$\textit{yē-tzontli-on-nāuh-pōhualli-on-caxtōlli-on-cē} = \textit{ndamno} \quad (13)$$

$$\textit{cen-tzontli-on-cem-pōhualli-om-mahtlactli-om-ōme} = \textit{yànpa} \textit{tarumba} \quad (14)$$

$$\textit{cen-tzontli} = \textit{tarumba} \textit{tambaroy} \textit{fete asàr} \quad (15)$$

$$\textit{cen-xiquipilli} = \textit{weremeke} \textit{tarumba} \textit{nimbo} \textit{yànpa} \quad (16)$$

(a) Write the equalities (1–12) and the numbers (13–16) in numerals.

(b) Write out in Nahuatl: 42; 494.

(c) Write out in Arammba: 43; 569.

⚠ Classical Nahuatl, of the Uto–Aztecan family, was the language of the Aztec Empire in Mexico.

The Arammba language (also called Serki, Serkisetavi, or Upper Morehead) belongs to the South-Central Papuan family. It is spoken by approx. 970 people in Papua New Guinea.

—Milena Veneva

**Problem 2 (20 points).** Here are some verb forms of the Beslenei dialect of Kabardian (subdialect of Ulyap village, Republic of Adygea) in Roman transcription with stress marked and their English translations:

<b>defón</b>	<i>to be able to sew</i>
<b>g<sup>w</sup>əš'əʔén</b>	<i>to speak</i>
<b>máde</b>	<i>(he/she) is sewing</i>
<b>mášxe</b>	<i>(he/she) is eating</i>
<b>meçántx<sup>w</sup>e</b>	<i>(he/she) is sliding</i>
<b>meg<sup>w</sup>əš'əʔéf</b>	<i>(he/she) is able to speak</i>
<b>mes</b>	<i>(he/she) is burning</i>
<b>mebábəpe</b>	<i>(he/she) really is flying</i>
<b>mešxápe</b>	<i>(he/she) really is eating</i>
<b>mezeqáfe</b>	<i>(he/she) is pretending to bite</i>
<b>sən</b>	<i>to burn</i>
<b>ʔəg<sup>w</sup>ərəg<sup>w</sup>ən</b>	<i>to tremble</i>

(a) Translate into English:

**zeqén, medéf, medáfe, səfón, meg<sup>w</sup>əš'əʔe, mebáb.**

Here are several more Beslenei words:

<b>çántx<sup>w</sup>eçəm</b>	<i>(he/she) isn't sliding</i>
<b>çántx<sup>w</sup>et</b>	<i>(he/she) was sliding</i>
<b>çəntx<sup>w</sup>éft</b>	<i>(he/she) was able to slide</i>
<b>dápet</b>	<i>(he/she) really was sewing</i>
<b>défxeme</b>	<i>if (they) are able to sew</i>
<b>çántx<sup>w</sup>exeme</b>	<i>if (they) are sliding</i>
<b>meʔəg<sup>w</sup>ərəg<sup>w</sup>xə</b>	<i>(they) are trembling</i>
<b>səfçəm</b>	<i>(he/she) isn't able to burn</i>
<b>bábme</b>	<i>if (he/she) is flying</i>
<b>bábxet</b>	<i>(they) were flying</i>
<b>šxéme</b>	<i>if (he/she) is eating</i>
<b>ʔəg<sup>w</sup>ərəg<sup>w</sup>çəm</b>	<i>(he/she) isn't trembling</i>

(b) Translate into English:

**çəntx<sup>w</sup>éfmə, šxáfexəçəm, bəbáft, šxet, ʔəg<sup>w</sup>ərəg<sup>w</sup>əpeme.**

(c) Translate into Beslenei:

*(they) are sewing; (they) are pretending to fly; (he/she) really was burning;  
(he/she) isn't able to eat; if (they) are speaking; (they) are biting.*

Be sure to mark the stresses.

⚠ Kabardian belongs to the Abkhaz–Adyghe group of the North Caucasian family. It is spoken in the Russian Federation (516,000 people), as well as in Turkey and other countries in the Middle East.

ç, g<sup>w</sup>, ç, š, š', ʔ, x, x<sup>w</sup>, ʒ, ʔ are consonants; ə is a vowel. The mark “˘” indicates stress.

—Peter Arkadiev

**Problem 3 (20 points).** Soundex is an algorithm for coding names. It was developed in the USA in 1918–1922 by Robert C. Russell and Margaret King Odell in order to facilitate searching for similar-sounding surnames. In the middle of the 20th century, Soundex was extensively used in the USA to analyse results of 1890–1920 censuses.

Below is a sample card with data from the 1910 census. You can see the Soundex code for *Wilson*, which is W425.

LOUISIANA			
W425		HEAD OF FAMILY	
Wilson, Alce		E. D.	SHEET
118	17		
COLOR	AGE	BIRTHPLACE	
B	42		
COUNTY	St. Landry		CITY
OTHER MEMBERS OF FAMILY			
NAME	RELATIONSHIP	AGE	BIRTHPLACE
Eugene	W	46	
Regina	D	15	
Walter	S	13	
Louisa	D	12	
Camila	D	7	
Conell	S	7	
Hudson	S	4	

FORM 10-636 (4-20-61)  
1910 CENSUS INDEX - FAMILY

U.S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

Source: <https://familysearch.org/learn/wiki/en/Soundex>

Here is a list of surnames, with the corresponding Soundex codes in arbitrary order. Some characters are missing:

<i>Allaway, Anderson, Ashcombe, Buckingham,</i>	S312, T□6□, □5□3, C42□, T520,
<i>Chapman, Colquhoun, Evans, Fairwright,</i>	L□42, A536, C155, □623, S356,
<i>Kingscott, Lewis, Littlejohns, Stanmore,</i>	□252, □152, □330, A251, A400,
<i>Stubbs, Tocher, Tonks, Whytehead</i>	L2□0

- Describe how a Soundex code is produced, step by step.
- Match the surnames with the corresponding Soundex codes and restore the omitted characters.
- Generate Soundex codes for the following surnames:

*Ferguson, Fitzgerald, Hamnett, Keefe, Maxwell, Razey, Shaw, Upfield.*

—Alexander Piperski

**Problem 4 (20 points).** Here are some sentences in Wambaya and their English translations:

- |  |   |
|--|---|
| 1. <i>Ngarlu nya.</i>                          | You (sg.) danced.                         |
| 2. <i>Gulugba ngu.</i>                         | I will sleep.                             |
| 3. <i>Bardbi ga bungmanya.</i>                 | The old woman ran (away).                 |
| 4. <i>Ngunybulugi barrawunguji.</i>            | The doctor has a house.                   |
| 5. <i>Ngajbi nginya.</i>                       | I saw you (sg.).                          |
| 6. <i>Dagumajba nguyu ngunybulugi.</i>         | She will strike the doctor.               |
| 7. <i>Alanga gu ngarlujba janjingunya.</i>     | The girl will dance with the dog.         |
| 8. <i>Ngajba gununyu.</i>                      | He will see you (sg.).                    |
| 9. <i>Ngirra nga gijiluku.</i>                 | I stole the money.                        |
| 10. <i>Yagujba nyu barrawuwaji.</i>            | You (sg.) will leave him without a house. |
| 11. <i>Daguma ngiyinga bungmanyani.</i>        | The old woman struck me.                  |
| 12. <i>Bardbi ga darranggunguji.</i>           | He ran (away) with the stick.             |
| 13. <i>Alayuku ngiya juwa.</i>                 | She found the man.                        |
| 14. <i>Juwani gina ngajbi gijilungunya.</i>    | The man saw her with the money.           |
| 15. <i>Yagu gininga.</i>                       | He left me.                               |
| 16. <i>Bungmaji gina ngajbi balamurruwaji.</i> | He saw the old man without a spear.       |
| 17. <i>Dirragba ga bungmaji.</i>               | The old man will jump.                    |

(a) Translate into English:

18. *Alayulujba nguyunyu bungmanyani.*
19. *Yagu gininya.*
20. *Janji darranguwaji.*
21. *Ngirra nya alanga.*
22. *Daguma nyinga.*
23. *Dirragbi ga balamurrungunya.*

(b) Translate into Wambaya:

24. You (sg.) will leave me.
25. The doctor slept.
26. The man will run (away) with the money.
27. He will steal the dog.
28. The girl saw you (sg.).

⚠ The Wambaya language belongs to the West Barkly family. It is spoken by approx. 50 people in the Northern Territory, Australia.

—Ksenia Gilyarova

**Problem 5 (20 points).** Here are 25 half-lines of Somali poetry written in a metre known as masafó:

- |                            |                               |
|----------------------------|-------------------------------|
| 1. ogaadeen ha ii dirin    | 14. daliilkii ku siiyaye      |
| 2. duul haad amxaaraa      | 15. miyaad iigu duurxuli      |
| 3. kaa dooni maayee        | 16. dorraad adigu kama dhigin |
| 4. amba waa ku daba geli   | 17. ma deldelin raggoodii     |
| 5. dakanka iyo qaankee     | 18. deelqaadkan aad tiri      |
| 6. anaa been dabaadee      | 19. diigaanyo ciidana         |
| 7. galbeed uga dareershaan | 20. wax ma kala dillaallaa    |
| 8. dalkaad adigu joogtiyo  | 21. duunyada ka qaadoo        |
| 9. dar alliyo heshiis iyo  | 22. diinkiyo dugaaggiyo       |
| 10. mase waa dayoobeen     | 23. dildillaaca waaberi       |
| 11. dacalkaaga kuma shuban | 24. dibnahaaga kama qiran     |
| 12. miyaan duudsiyaayaa    | 25. hobyó wixii ka soo degey  |
| 13. doodaye maxaad oran    |                               |

To help you understand the structure of masafó, here are 10 half-lines which were constructed from genuine masafó half-lines by random rearrangement of words within the half-line. Some of them might conform to the rules of the versification, but the majority do not:

- |                             |                              |
|-----------------------------|------------------------------|
| 26. u anigaa lehe diin      | 31. kuu miyuu tari wax dafir |
| 27. waad nimankaad ma diidi | 32. kuu daalasaayee nin      |
| 28. qoran daftarkaaga kuma  | 33. shareecada dikrigiyo     |
| 29. fuushaan kaama dusha    | 34. dumarkii furayaan ma     |
| 30. helo dabacayuun kulaan  | 35. ogaadee diyaar kuu       |

(a) Describe the structure of a masafó half-line.

(b) Here are 10 more masafó half-lines. Five of them are genuine, and five are obtained by random rearrangement. Which is which?

- |                           |                           |
|---------------------------|---------------------------|
| 36. war ismaaciil daarood | 41. digaxaarka mariyoo    |
| 37. dir miyaad wadaagtaan | 42. ciid iyo doolo diraac |
| 38. labadaad ka duudiye   | 43. nooma keeneen darka   |
| 39. ka jannadaad daahiye  | 44. kala deyaayaa miyaan  |
| 40. adiga iyo deriskaa    | 45. wuxuun kaa danqaabaan |

—Alexander Piperski

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Good luck!