

SOLUTIONS

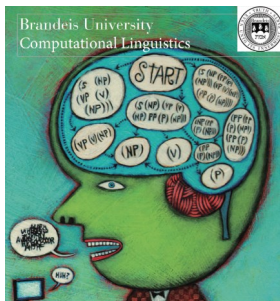


***The Thirteenth
Annual***

**North American
Computational
Linguistics
Olympiad
2019**



Carnegie Mellon University
Language Technologies Institute



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Yale University

**Open Round
January 24, 2019**

Serious language puzzles that are surprisingly fun!

-Will Shortz, Crossword editor of The New York Times and Puzzlemaster for NPR

(A) Malteaser (1/1) [10 Points]

The definite article is given by the following rules (in order of priority):

1. **ix** before alveolar consonants
2. **l** before vowels or silent letters
3. **li** before consonant clusters
4. **il** otherwise

Note that **j** is considered a vowel.

Out of interest, these rules apply in several Semitic languages, notably Arabic (Maltese's ancestor). The letters in group (1) are called 'sun' letters (the word for sun is *xemx*) while the other consonants are called 'moon' letters (moon is *qamar*).

A1. ktieb and **gobon**. You would expect *li ktieb*, because the noun begins with a consonant cluster, and you would expect *iġ gobon* because 'ġ' is a voiced 'ċ' and so should belong to the dental-alveolar set.

A2.

<i>ix xkora</i>	(sack)	<i>l ors</i>	(bear)
<i>iġ ġebbla</i>	(stone)	<i>il missier</i>	(father)
<i>li mniher</i>	(nose)	<i>il lura</i>	(back)
<i>ix xemx</i>	(the sun)	<i>l ilma</i>	(water)
<i>il kafè</i>	(coffee)	<i>il beraq</i>	(lightning)
<i>l hena</i>	(happiness)	<i>in nar</i>	(fire)
<i>l għajn</i>	(eye)	<i>in nifs</i>	(breath)
<i>it tama</i>	(hope)	<i>id dlam</i>	(darkness)



(B) Ndebele (1/1) [15 Points]

Ndebele verbs have prefixes to mark the subject:

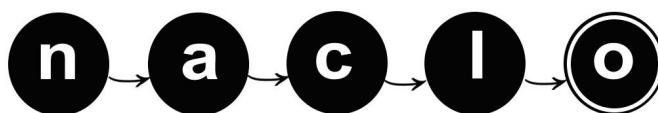
- ngi-** - 1st person singular
- u-** - 2nd person singular *or* 3rd person singular
- si-** - 1st person plural
- ba-** - 3rd person plural

There is also the prefix **uku-**, marking the infinitive, and the infix **-ya-**, which marks a verb with no “following” word, either an object or an adverb. It is still used when the verb is followed by the question particles **na** or **angithi** (marking a “tag” question).

The question-word adverbs **njani** and **ngaphi** can also act as verbs (“Where is she?” = “She wheres?”), in which case they take the subject prefixes above.

The Ndebele nouns given here are marked by the prefix **um-** in the singular and **aba-** in the plural.

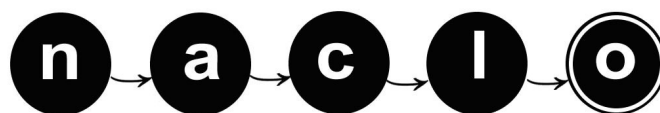
1. (a) Yes, they want to see. (b) How is the boy learning to sew? (c) Where are we? (d) I am cooking tea.
2. (a) **Unjani umntwana?** (b) **Sifunda ukupheka angithi?** (c) **Yebo, bayakhuluma.** (d) **Bafuna ukubona ubaba na?**



(C) Here is One Hand (1/1) [20 Points]

C1.

1. K	2. C	3. E	4. B	5. H	6. F
7. J	8. G	9. I	10. L	11. A	12. D



(D) Predicate Etiquette (1/1) [15 Points]

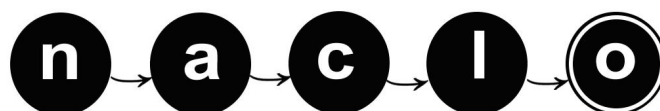
D1.

- A. phlebular
- B. luctious
- C. brastic
- D. molistic
- E. efrimious
- F. frungent
- G. stibbly

- 1. morkle
- 2. quexor
- 3. groob
- 4. thalf
- 5. vippage
- 6. humbrid
- 7. pladry

D2.

- A. ✓
- B. *
- C. ✓
- D. *



(E) Hate It or Lopit (1/1) [10 Points]

E1. The big men dance with the shovel in the kitchen.

eca haborok ho iromoit de leifuori

E2. The teacher sings.

eidolo haitayenani

E3. The cattle owners draw in the playground.

oguar habarak de leramitari



(F) Harmongolia (1/1) [10 Points]

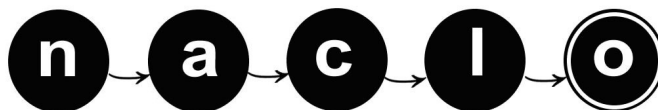
F1.

1. negruu
2. šülegüüd
3. šülegrüü
4. nökör nar
5. nökörlüü
6. dargachuud
7. dargaruu
8. [dárğa]

F2. kúnda (it violates vowel harmony)

F3.

Singular	Plural	Directive	Pronunciation (sing.)	Translation
haančlah	haančlah nar	haančlah	[xavčá:r]	'dog'
gürvel	gürvelčüüd	gürvelrüü	[gúrvel]	'household'
delgüür	delgüürüüd	delgüürlüü	[delgú:r]	'fool'
zuun	zuunuud	zuunruu	[zó:ŋ]	'century'
čanar	čanaruud	čanarluu	[čánar]	'quality'



(G) Venturing into the Unknown (1/1) [5 Points]

G1.

1. J

2. C

3. B

4. D

5. K

6. L

7. R

8. A

9. G

10. I

11. Q

12. N

13. E

14. P

15. S

16. F

17. T

18. H

19. M

20. U

21. O

G2.

A. bison

B. reached

C. inundating



(H) Can you know / Hanunó'o? (1/1) [15 Points]

Hanunó'o is an abugida that, unusually, reads bottom to top rather than top to bottom. By default, full letters represent consonants + *a*. Lines above or below the letter change the vowel to *i* or *u*. A curved line to the bottom right of the letter (*padmudpod*) represents the absence of a vowel. Note that *a* and *i* on their own have their own letters, *ɿ* and *ʷ*.

H1.

1. H
2. K
3. C
4. D
5. I
6. A
7. F
8. G
9. E

H2.

10. *kang*
11. *manimisu*
12. *mangyan*
13. *sibuyan*
14. *palawan*

H3.

15	16	17	18
		ɿ	
ɿ	ʷ	-	ʷ
ɿ	ʷ	ɿ	ʷ
ɿ	ɿ	ʷ	ɿ
	ɿ	ʷ	ɿ
		ɿ	

