



# AILO

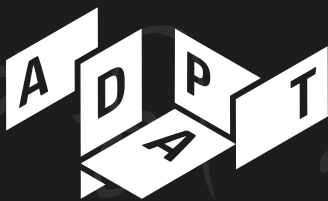
All Ireland Linguistics Olympiad  
*The Problem Solvers' Challenge*

## National Final 2022

Wednesday 9th March 2022, 10.00-12.30

Dublin City University

Answer as many of the questions as you can.  
Write your answers in the answer-book provided.



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## Question A: **Counting the words for 'snow'?** Daniel Lovsted

In 1994, the students of a middle-school maths class in Kaktovik, Alaska noticed that Arabic numerals (that is, the digits 0 to 9) were badly suited to counting in their language, Iñupiaq (a language spoken by about 3,000 people, most of them living in northern Alaska, and closely related to several other Inuit languages, spoken in Canada and Greenland). They decided to come up with a new numeral system that would better reflect the Iñupiaq number system.

The Kaktovik Iñupiaq numerals (as they have come to be known) made it much easier for students to do maths in Iñupiaq, and are easy to use and remember, since each symbol has an intuitive relationship with the number it represents. Within a few years, schools and colleges across northern Alaska were using the numerals, and they were recommended for use in Canada. If you walked into a maths classroom in northern Alaska today, you might well see a blackboard (or maybe a whiteboard) that looks like the one below, which features Kaktovik Iñupiaq numerals, Iñupiaq words, and a few places intentionally left blank.

$\neg \quad \vee - \mathcal{W} - \overline{\mathcal{W}}$   
 chunausiviik quliṅṅuḡtaiḷaq, tallimaagliaq iñuiññaq malḡuk

$\mathcal{W} - \mathcal{W} = \neg$	<i>atausiq</i>
$\vee \times (a) = \mathcal{W}$	<i>tallimat piṅasut</i>
$\mathcal{W} + \mathcal{W} = \overline{\vee}$	<i>qulit malḡuk</i>
$(b) - \neg = \overline{\mathcal{W}}$	<i>akimiaḡutaiḷaq</i>
$\neg \times - \mathcal{W} = \mathcal{W}$	<i>akimiaq atausiq</i>
$\vee \mathcal{W} \div \overline{\vee} = \mathcal{W}$	<i>tallimat piṅasut</i>
$\neg \times (c) = \neg \mathcal{W}$	<i>iñuiññaq qulit</i>

A1. Fill in the blanks (a), (b), and (c) with Kaktovik Iñupiaq numerals.

A2. Give the Iñupiaq words for

- (a) three      (b) eleven      (c) twenty-two.

A3. Write in Arabic numerals (i.e. using digits 0-9):

- (a) *atausiq*      (b) *tallimat*      (c) *iñuiññaġutaiġaq*

A4. What does the writing (Kaktovik Iñupiaq numerals and Iñupiaq words) at the top of the blackboard say?

By the way, the title of this problem is an in-joke for linguists: contrary to common belief, Inuit languages do NOT have hundreds of words for ‘snow’.

### Question B: **The spirit is willing but the flesh is Wik**

Ethan Chi

Wik-Mungkan (literally: “to swallow one’s words”) is a Paman language spoken in Queensland, Australia by around 1,650 Wik-Mungkan people. During the dry season, fresh water is often in short supply and is considered valuable.

Below are 23 Wik-Mungkan words with their English meanings, but in a scrambled order.

1. <i>ma' ek</i>	13. <i>ngangk</i>	A. alcohol	M. heart
2. <i>ma' puk pi'an</i>	14. <i>ngangk ek</i>	B. awake	N. law
3. <i>ma' puuy</i>	15. <i>ngangk min</i>	C. brave	O. sad
4. <i>ma' thayan</i>	16. <i>ngangk thayan</i>	D. crab	P. shoulder blade
5. <i>mee'</i>	17. <i>ngangk way</i>	E. crab shell	Q. sound asleep
6. <i>mee' thayan</i>	18. <i>puuy</i>	F. English language	R. spring (water source)
7. <i>mee' weep</i>	19. <i>puuy ek</i>	G. eye	S. strong / firm
8. <i>min</i>	20. <i>thayan</i>	H. fingernail	T. thumb
9. <i>ngak</i>	21. <i>weep thayan</i>	I. fresh water	U. tired
10. <i>ngak mee'</i>	22. <i>wik kiith</i>	J. good	V. trustworthy with things
11. <i>ngak min</i>	23. <i>wik thayan</i>	K. handcuffs	W. water
12. <i>ngak way</i>		L. happy	

B1. Determine the correct correspondences.

B2. Translate into Wik-Mungkan: (a) hand (b) bad

## Question C: **Scott's Mewwy Gikhmakh** Harold Somers

As you probably know, as a child learns to talk, they “acquire” the sound system of their language bit by bit, with some speech sounds appearing later than others. And unfortunately some children have difficulties during this process, and may be referred to a speech therapist. One of the first things a therapist does is try to assess the state of the child’s phonological “system”, and they sometimes do this by administering an “articulation test” in which the child is asked to name pictures and in this way pronounce a set of words specifically chosen to profile the child’s sound system.

Here are some transcriptions slightly adapted from a genuine case: Scott, a 4-year-old (British) boy, with delayed phonological development, with the target word and Scott’s pronunciation (see below for an explanation of the unfamiliar symbols). Note that in this particular case, we are not interested in the vowels, which you can assume are all “correctly” pronounced.

<i>monkey</i>	<b>munʔi</b>	<i>Christmas</i>	<b>gixməx</b>	<i>(aero)plane</i>	<b>bein</b>
<i>tent</i>	<b>den</b>	<i>bridge</i>	<b>biɣ</b>	<i>spoon</i>	<b>pu:n</b>
<i>fish</i>	<b>pix</b>	<i>flower</i>	<b>bauwə</b>	<i>toothbrush</i>	<b>du:xbux</b>
<i>train</i>	<b>dein</b>	<i>church</i>	<b>dɜ:x</b>	<i>bottle</i>	<b>boʔu</b>
<i>yellow</i>	<b>jewou</b>	<i>smoke</i>	<b>hmouk</b>	<i>birthday</i>	<b>bɜ:xdei</b>
<i>stamps</i>	<b>danx</b>	<i>sneeze</i>	<b>hni:ɣ</b>	<i>loose</i>	<b>wu:x</b>
<i>queen</i>	<b>gi:n</b>	<i>wings</i>	<b>wiŋɣ</b>	<i>feather</i>	<b>peɣə</b>
<i>clouds</i>	<b>gauɣ</b>	<i>very</i>	<b>bewi</b>	<i>elephant</i>	<b>ewipənt</b>
<i>soldier</i>	<b>douɣə</b>	<i>glove</i>	<b>duɣ</b>	<i>finger</i>	<b>piŋgə</b>
<i>thumb</i>	<b>dum</b>	<i>watch</i>	<b>wɒx</b>	<i>string</i>	<b>diŋ</b>
<i>three</i>	<b>di:</b>	<i>teeth</i>	<b>di:x</b>	<i>pencil</i>	<b>penduw</b>
<i>sugar</i>	<b>dugə</b>	<i>matches</i>	<b>maxiɣ</b>	<i>scissors</i>	<b>diɣəɣ</b>

Phonetic symbols:

**ʔ** glottal stop, like the sound in ‘uh-oh’

**x** like the ‘ch’ in German, Scots, Welsh, Irish, ‘j’ in Spanish.

**ɣ** the “voiced” equivalent of **x**: a fricativised ‘g’ sound, Irish broad ‘dh’, ‘gh’ in *dhom*, *ghasúr*, Spanish ‘g’ in *higo*

**j** like the ‘y’ in ‘yellow’

**ŋ** like the ‘n(g)’ in ‘sing’

All transcriptions of vowel sounds match the adult target. : indicates a long vowel, ə is the neutral vowel eg the first vowel in *asleep*. Note that the data come from a British child, so no **r** sound is expected in words ending in ‘r’ (*soldier*, *sugar*, *flower*, *feather*, *finger*) or where an ‘r’ occurs before a consonant (*church*, *birthday*).

All other symbols have their expected pronunciation.

C1. How would you predict that Scott would pronounce the following words? (Your transcription of the vowel sounds is not important, but remember to concentrate on the *pronunciation* of the adult words as targets, not the spelling).

- |            |             |                |              |
|------------|-------------|----------------|--------------|
| (a) little | (b) friends | (c) cleaning   | (d) chipshop |
| (e) please | (f) smash   | (g) quiz       | (h) thing    |
| (i) chunky | (j) sticks  | (k) television | (l) shrimps  |

C2. What do you think Scott is saying here?

- (a) **danʔju bewi mux**
- (b) **wox jo: hany an gi:n jo di:x**
- (c) **dei wiy mi:**

Source: These data were collected in 1979 for the author's Masters thesis. Scott underwent speech therapy and was soon pronouncing sounds much as expected.

### Question D: **Don't bite the hand ...**

Pyotr Arkadiev, translated by Harold Somers

The table below shows a number of Adyghe verbs in the third person singular of the present and future tenses ('he hits', 'he will hit', etc.), together with their meaning.

present	future	translation
jewe	jeweš't	<i>hit</i>
jeλə	əλəš't	<i>strangle</i>
ješxə	əšxəš't	<i>eat</i>
jewəceʔwə	əwəceʔwəš't	<i>chew</i>
jefəte	əfəteš't	<i>smash</i>
jedəsə	jedəsəš't	<i>push</i>
jecaqe	jeceqeš't	<i>taste</i>
jebzaje	jebzeješ't	<i>lick</i>
jeq <sup>w</sup> əte	əq <sup>w</sup> əteš't	<i>break</i>
jewəleg <sup>w</sup> ə	əwəleg <sup>w</sup> əš't	<i>trample</i>
jewəpč'ate	əwəpč'eteš't	<i>hack to death</i>
ječ'əbawe	ječ'əbeweš't	<i>pat (on the back)</i>
jebewə	jebewəš't	<i>kiss</i>
jedə	ədəš't	<i>sew</i>
jeq <sup>w</sup> əsəwe	əq <sup>w</sup> əsəwe	<i>switch off</i>

The following symbols all represent different consonants:

č', g<sup>w</sup>, ʋ, λ, λ', p, q, q<sup>w</sup>, š, š', š̂, t, x, x<sup>w</sup>, ʔ, ʔ<sup>w</sup>.

The symbol ə represents a vowel, like the first sound in 'asleep'.

D1. Supply the missing forms in the table below.

present	future	translation
(a)	əvexəš't	<i>swallow</i>
jewəʔwə	(b)	<i>bite</i>
jetxə	(c)	<i>write (i.e. compose)</i>
(d)	əwəbeteš't	<i>smash</i>
jeʔe	(e)	<i>touch</i>
jewəç'ə	(f)	<i>kill</i>
jepšedaʔe	(g)	<i>take by the collar</i>
jeʔexwə	(h)	<i>scratch (e.g. an itch)</i>
jebze	(i)	<i>cut</i>

D2. Explain your solution. Do NOT describe how you went about solving the problem, but say what you have discovered, in other words what are the “rules” for forming these two tense forms?

Adyghe, also known as West Circassian, is a Caucasian language spoken mainly in southwestern Russia, but also in Turkey, Jordan, Syria and Israel, where significant numbers fled in the aftermath of a brutal campaign of genocide and ethnic cleansing in the 1860s. There are around 128,000 speakers of Adyghe in Russia, almost all of them native speakers. In total, some 300,000 speak it worldwide.

## Question E: **What's new in Niuean?** Simi Hellsten

Niuean is a Polynesian language spoken by nearly 8,000 people around the world. It is the official language of Niue, although most of its speakers live in other countries, such as New Zealand.

On the next page are some sentences in Niuean with their translation into English.

Niuean	English
<b>Kua kai noa a au.</b>	<i>I have only eaten.</i>
<b>Kua fai fakatino foki ne tā e ia.</b>	<i>There have also been pictures that he drew.</i>
<b>Muhu moa tūmau.</b>	<i>There are always plenty of birds.</i>
<b>Ne fai faiaoga e kāmuta.</b>	<i>The carpenter had teachers.</i>
<b>Kua kitia e ia a au.</b>	<i>He has seen me.</i>
<b>To kai he moa ka holoholo e au e ika.</b>	<i>The bird that I will wash will eat the fish.</i>
<b>Ne totou a Sione.</b>	<i>Sione read.</i>
<b>Tā tūmau e Mele e fakatino.</b>	<i>Mele is always drawing the picture.</i>
<b>Ne kai e ika ne takafaga he tama</b>	<i>The fish that the child caught ate</i>
<b>To holoholo foki he tama e vaka ne tā he kāmuta.</b>	<i>The child will also wash the canoe that the carpenter built.</i>
<b>To muhu ika a Mele.</b>	<i>Mele will have plenty of fish.</i>
<b>Muhu tama foki e faiaoga ka kitia he moa.</b>	<i>The teacher also has plenty of children that the bird will see.</i>

E1. Translate the following sentences into English.

- (a) **Fai moa noa.**
- (b) **Kua holoholo foki he faiaoga ne takafaga e au a ia.**
- (c) **To muhu vaka e tama ne kitia he moa ka holoholo e Sione.**

E2. Translate the following sentences into Niuean.

- (a) *He will also read.*
- (b) *Sione has only had fish that the teacher will eat.*
- (c) *The teacher that Mele saw built the canoe.*
- (d) *There have always been plenty of carpenters.*

E3. Explain what you have found out about Niuean grammar in as much detail as you can. Do NOT describe how you went about solving the problem, but say what you have discovered. Try to organise your answer in a general systematic way, rather than disconnected observations.

**END OF PAPER**