

# 2021 全國初選 — 台灣國手選拔賽



(TOL, INDIVIDUAL CONTEST, 1<sup>ST</sup> ROUND, 2021)

題 本



## 第一題 Problem #1 (20pt) 約魯巴語 Yoruba

以下為一些約魯巴語的算式，所有數字皆小於或等於 100：

Below are some mathematical equations written in Yoruba. All numbers are less than or equal to 100:

$$\text{maruun} + \text{metadinlogun} = \text{mejilelogun}$$

$$\text{merinlaa} \times \text{meta} = \text{mejilelogoji}$$

$$\text{metadinlogoji} \times \text{meji} = \text{merinlelaadorin}$$

$$\text{merin}^{\text{meji}} = \text{merindinlogun}$$

$$\text{meji} + \text{mokondinlaadota} = \text{mokonlelaadota}$$

$$\text{aadota} - \text{metalaa} = \text{metadinlogoji}$$

1. (8pt) 請以阿拉伯數字寫出以下數字 (每格 2 分)：

Write down the following numbers in Arabic numerals (2 pts each):

	ogota
	mokonlelogun
	maruundinlogorin
	merin

2. (12pt) 請以約魯巴語寫出以下數字 (每格 2.4 分)

Write down the following numbers in Yoruba (2.4 pts each)

4	
12	
80	
86	
95	

\* \* \* \*

註：約魯巴語屬於尼日-剛果語系大西洋-剛果語族，在奈及利亞、貝南、多哥等地區約有五千萬人使用。

NOTE: Yoruba belongs to the Atlantic-Congo languages in the Niger-Congo family. There are around fifty million speakers in Nigeria, Benin, Togo, and other regions.

資料來源 Reference

D. Huylebrouck (2016) Mathematics Africa.

O. Babarinde (2013) The Linguistic Analysis of the Structure of the Yoruba Numerals.

## 第二題 Problem #2 (20 pt) 庫孫達語 Kusunda

底下為 16 句庫孫達語的句子及其中文翻譯：

Below are 16 Kusunda sentences and their translations in English:

<b>Kusunda</b>	<b>中文</b>	<b>English</b>
nipdu	你會睡覺	You(sg.) will sleep.
toG <sup>h</sup> ən	我死了	I died.
bemənu	你會讓他墜落	You(sg.) will make him fall.
gwa təmdu	我會吃蛋	I will eat an egg.
ipda nudak	你們會為了睡覺而來	You(pl.) will come in order to sleep.
gipən tukdan	我們知道了語言	We knew a language.
qotuda habənn <sub>□</sub>	你烤了鳥	You(sg.) roasted a bird.
tsigimi bemədn <sub>□</sub>	我讓我的錢墜落了	I made my money fall.
wi ənda təmbədən	我們為了蓋房子而送出了他	We sent him in order to build a house.
huldi amba gəmən	他吃了煮過的肉	He ate cooked meat.
bemdi haq təmdak	我們會吃墜落的葉子	We will eat a fallen leaf.
ginayi aota habənən	你們開了他的門	You(pl.) opened his door.
borloqdi taṅ nidan	你們取得了沸騰的水	You(pl.) fetched boiling water.
amba huləda təmbədək	我們會為了煮肉而送出他	We will send him in order to cook meat.
tsigimtsida təmbəgu	他會送出我的朋友	He will send my friend.
hyoqdi agaida habəgək	他們會烤躲起來的狗	They will roast a hiding dog.

※ ə 是母音，g<sup>ɿ</sup> 是子音，n 底下加上一條直線(n)表示它自成一個音節，像英文 kitten 中 en 的音。

ə is a vowel, g<sup>ɿ</sup> is a consonant, the vertical line below n (n) indicates that it constitutes a syllable on its own, like the sound of *en* in *kitten*.

1. (10pt) 請寫出中文/英文：  
Give the Chinese/English for:

a. tsiagaida gəmdak	
b. ginayi gimi təmbəgən	

2. (10pt) 將底下的句子翻譯成庫孫達語：  
Translate the sentences into Kusunda:

- (1) 你為了死而睡覺了/You(sg.) slept in order to die.
- (2) 他會取得烤過的肉/He will fetch roasted meat.
- (3) 我會煮我的葉子/I will cook my leaf.
- (4) 你們會為了送出朋友而讓他墜落/You(pl.) will make him fall in order to send a friend.

\* \* \* \*

註：Kusunda 是個位在尼泊爾的孤立語言，曾在1985年隨著最後一位已知的母語者的逝世而被宣告滅絕，直到2004年發現幾位流利使用者，並接受語言學家的採訪後，這個語言才有較完整的記錄。目前Kusunda語的教育正積極推行中。

NOTE: Kusunda is a language isolate in Nepal; it was thought to become extinct when the last known speaker passed away in 1985. It was not until 2004, when several fluent speakers were found and interviewed by linguists, that this language got documented in depth. The revival and education of Kusunda has been carried out recently.

資料來源 Reference

Watters, David. Notes on Kusunda Grammar: A Language Isolate of Nepal, 2005.

### 第三題 Problem #3 (20pt) 毛利語 Māori

阿甘是位化學家，他買了座新冰箱放在實驗室，用來存放新訂購的十六樣化學藥品。沒想到，送來的化學藥品的包裝上頭只有毛利語標示。請你利用阿甘之前寫好的購物清單，協助確認各藥品罐的內容物。

Agham, a chemist, bought a new refrigerator in the lab to store 16 chemicals he ordered recently. To his surprise, the packages of chemicals delivered to him were only labeled in Maori. Please help identify the contents of every package with the product labels and Agham's shopping list he wrote earlier.

藥品標籤 Product labels	
	毛利語 Māori
A	hauwai rehu
B	hauota rehu
C	hauota hāora-tahi
D	haukōwhai rehu
E	konutea pūkōwhai
F	hauwai pūhaumāota
G	konurehu pūhaumāota
H	konutai waihā
I	konutai pūhaumāota
J	konupūmā waihā
K	konukura pākawa ota
L	konutea waihā
M	konutea pākawa ota
N	konupūmā pākawa waro
O	waro hāora-tahi
P	waro hāora-rua

購物清單 Shopping list		
	中文	English
1	氫氣	hydrogen gas
2	二氧化碳	carbon dioxide
3	碳酸鈣	calcium carbonate
4	氟氣	fluorine gas
5	氯化氫	hydrogen chloride
6	硝酸銅	copper nitrate
7	硝酸鋅	zinc nitrate
8	氫氧化鋅	zinc hydroxide
9	一氧化氮	nitrogen monoxide
10	氫氧化鈣	calcium hydroxide
11	氯化鈉	sodium chloride
12	氫氧化鈉	sodium hydroxide
13	一氧化碳	carbon monoxide
14	氯化鉀	potassium chloride
15	氮氣	nitrogen gas
16	氟化鋅	zinc fluoride

1. (8pt) 一一配對之 (在下表填入數字) :

Determine the correct correspondences (Fill in the numbers in the following table).

A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P

2. (4pt) 請寫出中文/英文 : Give the Chinese/English for:

a. konutea pūhaumāota	
b. hauota hāora-rua	
c. konurehu pākawa waro	
d. haumāota rehu	
e. konukura	

3. (4pt) 將底下的中文或英文翻譯成毛利語 :

Translate the following Chinese or English into Māori :

	中文	English	毛利語 Māori
1	鉀	potassium	
2	金屬	metal	
3	硝酸鈣	calcium nitrate	
4	灰色的	be grey in color	
5	黃色的	be yellow in color	



下方是一些新的語料：

Below are some new corpus data:

	毛利語 Māori
A	konu-kore
B	wai tai
C	haukura
D	mākura
E	hauhāuha

	中文	英文
21	氖	neon
22	氬	argon
23	淺紅色	pale red
24	海水	sea water
25	非金屬	non-metal

4. (4pt) 一一配對之（在下表填入數字）：

Determine the correct correspondences. (Fill in the numbers in the following table.)

A	B	C	D	E

\*\*\*\*

註1：毛利文屬於南島語系，是馬來-玻里尼西亞語族的一個語言，主要為紐西蘭原住民毛利人所使用，約有十五萬人通曉該語言。

NOTE 1: Māori, belonging to the Austronesian language family, is an Eastern Polynesian language spoken by around 150 thousand people in the world. It is mainly used by native people in New Zealand.

註2：下列是部分出現在題目中的物質的說明。

- 這些物質的化學式（意即這些物質具體是由多少數量的原子 / 離子組成）和作答無關。
- 氫氣、氮氣、氯氣及氟氣分別為無色、無色、淺綠色、黃色氣體，題目中其他物質的狀態則未知，即使其在常溫常壓下為氣體。
- 鈉、鉀、鋅、銅、鈣是金屬元素。海洋中含有大量的鈉（實際上為鈉離子，但與此題無關），鉀容易與水反應生成煙霧，鋅、銅、鈣則分別為白色、紅色、灰白色金屬。
- 一氧化氮由一個氧原子和一個氮原子組合而成，一氧化碳由一個氧原子和一個碳原子組合而成，二氧化碳由兩個氧原子和一個碳原子組合而成。
- 名字如「氫氧化+金屬」的物質帶有氫氧根，氫氧根雖然名字有氫，但性質與氫氣有很大的不同。
- 氖和氬在分類上性質相近。氖經常被使用於霓虹燈，發出紅光。氬則被填充於燈泡中，延長燈絲壽命。
- 若這些物質的特性於(a.)至(f.)未提及，則其與作答無關。

NOTE2: The following are some descriptions of the substances in this problem set.

- The chemical formula, i.e. the notation that shows how many atoms/ions make up the substances, is unrelated to problem-solving.

(b.) Hydrogen gas, nitrogen gas, chlorine gas, and fluorine gas are colorless, colorless, greenish, and yellow gases, respectively. The states of other substances in this problem set, though they might be gases under room pressure and temperature, are unspecified.

(c.) Sodium, potassium, zinc, copper, and calcium are metallic elements. There is a lot of sodium in the ocean. (Actually, it is sodium ion, but it is not related to this problem set.) Potassium reacts with water easily and produces smoke. Zinc, copper, and calcium are white, red, and grey metals, respectively.

(d.) Nitrogen monoxide consists of one oxygen atom and one nitrogen atom. Carbon monoxide consists of one oxygen atom and one carbon atom. Carbon dioxide consists of two oxygen atoms and one carbon atom.

(e.) Substances with the name “*METAL* hydroxide” carry a hydroxide ion. Hydroxide ion, though containing a hydrogen atom, behaves quite differently from hydrogen gas.

(f.) Neon and Argon are closely classified. Neon is often filled in neon lamps and produces red light. Light bulbs, on the other hand, are filled with Argon to prolong the life-span of filaments.

(g.) If the properties of these substances are not stated in (a.) to (f.), they are irrelevant to this problem set.

資料來源 Reference :

Māori Dictionary: <https://maoridictionary.co.nz/>

## 第四題 Problem #4 (20pt) 嘉克齊克爾語 Kaqchikel

以下是一些嘉克齊克爾語的句子和翻譯，其中粗體底線字表示該句強調的詞。  
The following are some Kaqchikel sentences and their translations. Note that the bold and underlined words in the translations are those emphasized.

嘉克齊克爾語	中文	English
xerumöl	他聚集了他們	It gathered them
yeqamöl	我們聚集他們	We gather them
xe'inmöl	我聚集了他們	I gathered them
yojmol iwoma	我們被你們聚集	We are gathered by y'all.
xe'intzu'	我注視了他們	I watched them.
yatzu' roma	你被他注視	You are watched by it.
xtz'et awoma	他被你看到了	It was seen by you.
xarutz'ët	他看到了你	It saw you.
yojato'	你幫我們	You help us.
xixto'	你們被幫了	Y'all are helped.
xixkito'	他們幫了你們	They helped y'all.
ye'alöq'	你買他們	You buy them.
xinatzu'	你注視了我	You watched me.
xiniti'	你們咬了我	Y'all bit me.
xeto'on wichin	<b>他們</b> 幫了我	<b><u>They</u></b> helped me.
yitz'eton richin	<b>我</b> 看到他	<b><u>I</u></b> see it.
naköl	你把他收起來	You put it away. (present)
nisa'	你們烤他	Y'all roast it.
nqasël	我們削他	We slice it.
nsel koma	他被他們削	It is sliced by them.

※x 似尸、j 似尸、ch 似彡；' 表示一喉嚨的阻塞子音(似英文中 uh-oh 中斷開兩音節的發音；有時和其他子音並用表示喉化)。

ä 似 ㄛ；ë、ï、ö、ü 則類似 e(ㄛ)、i(一)、o(ㄛ)、u(X) 發音，只是嘴型更開一些。一般而言 Kaqchikel 重音在最後一音節。

※x ≡ shoe; j ≡ hat; ch ≡ chat; ' ≡ the stop between uh-oh, or may represent a sound produced deep in the throat when used with another consonant.

ä ≡ lemon; ë, ï, ö, ü are like e(say), i(tea), o(mow), u(food) but with the mouth wider and more relaxed. Word stress generally falls on the final syllable in Kaqchikel.

1. (10pt) 請寫出中文/英文： Give the Chinese/English for:

若有強調的字詞，請將其圈出以表示。 If there are emphasized words, please circle them out.

a. xkito'	
b. xetzu' woma	
c. xtz'et	
d. ninköl	
e. nmolon qichin	

2. (10pt) 將底下錯誤句修正：

Correct the mistakes in the sentences:

錯誤句 Sentences with mistakes	修正 Correct sentences	中文翻譯	English Translation
ye'kitz'et		他們看到他們	They see them.
xixito'		我幫你們	I help y'all.
yaiti'		你咬我	You bite me.
xrub'al qoma		他被我們製作了	It was made by us.
yto' kichin		<b>他</b> 幫他們	<b>It</b> helps them.

\*\*\*\*

註：嘉克齊克爾語是一種馬雅語系的語言，傳統上在貝里斯、墨西哥以及瓜地馬拉被使用，約有 50 萬使用者。

NOTE: Kaqchikel is a Mayan language traditionally spoken in Belize, Mexico, and Guatemala. It has around half a million speakers.

資料來源 Reference

Brown, R., Maxwell, J., Little, W., & Bauer, A. (2006). *La ützwäch?: introduction to Kaqchikel Maya language* / R. McKenna Brown, Judith M. Maxwell, Walter E. Little; illustrations, Angelika Bauer. (1st ed.). University of Texas Press.

## 第五題 Problem #5 (20pt) 歐肯納根語 Okanagan

底下是 13 句 歐肯納根語的句子 (表層形式) 以及語言學家對其的語素分析 (底層形式)。

Below are thirteen Okanagan sentences (surface forms), and their morpheme analyses by a linguist (underlying forms).

編號 No.	表層形式 Surface form	底層形式 Underlying form
1	ktə̀rəqəntín	k-tàrəq-n-t-(i)n
2	kə̀wíkəntx <sup>w</sup>	k-wík-n-t-(i)x <sup>w</sup>
3	wəkəncút	wík-n-t-sút
4	q̣ <sup>w</sup> əctwílx	q̣ <sup>w</sup> úc-t-wílx
5	sə̀wəsíwəntx <sup>w</sup>	a.
6	k <sup>w</sup> tərəqəncút	b.
7	c.	χas-t-wílx
8	χást	χas-t
9	d.	pχ-pax-t
10	pχpχtwílx	e.
11	kən tərəqmímən	kn tàrəq-m-ímn
12	f.	k <sup>w</sup> síẉ-m-ímn
13	px <sup>w</sup> əntíx <sup>w</sup>	pu <sup>w</sup> x <sup>w</sup> -n-t-(i)x <sup>w</sup>

※ “ ”表示重音。a、i、u、ə 是母音，其他字母都是子音。子音字母上的逗點表示喉音化。c 的發音如 ʒ。l、r、m、n、w 是響音。

\* “ ” denotes stress. a, i, u, ə denote vowels, while all other letters denote consonants. A comma above a consonant letter denotes glottalization. c sounds like “zz” in “pizza”. l, r, m, n, w are resonants.

1. (6pt) 底下是 13 句中文的句子，請忽略他/它及時態的分別，將它們與以上的語料配對。  
(每格 1 分，對 5 格以下不計分)

Below are thirteen English sentences, determine the correct correspondences. The distinction between he/it and different tenses are to be ignored: (1pt per blank, no points if no more than 5 are correct)

中文/English	語料編號/Sentence No.
a. 他看到他自己/He sees himself	3
b. 你找到它/You find it out	2
c. 他變聰明/He got smart	
d. 他很聰明/He is smart	
e. 他變胖/He got fat	
f. 它很好/It is good	
g. 他痊癒/He is healing	
h. 你吹它/You blow it	
i. 我跳到它上面/I jump on it	
j. 你質疑他/You question him	
k. 你踢你自己/You kick yourself	
l. 我總是在跳舞/I dance all the time	
m. 你總是在問/You ask all the time	

2. (6pt) 請將正確的形式填入表格中的 a 到 f (每格 1 分)。

Fill the a-f in the table above with the correct forms (1pt per blank).

3. (4pt) 將底下的句子翻譯成歐肯納根語 (寫出表層形式即可) (每句1分)。

Translate the sentences into Okanagan (Only the surface form is needed) (1 pt per sentence).

(1) 你踢他/You kick him.

(2) 我問我自己/I ask myself.

(3) 你很胖/You are fat.

(4) 我總是在思考/I think all the time.

4. (4pt) 歐肯納根語是如何決定重音落在哪一個音節上的？請解釋。

Explain how Okanagan decides which syllable the stress falls on.

\* \* \* \*

註：Okanagan語屬於薩利希語系內陸語支。在加拿大的不列顛哥倫比亞省及美國的華盛頓州，約有150人能流利使用該語言。

NOTE: Okanagan is a language belonging to the Salishan language family under the Interior branch. In British Columbia and the State of Washington, about 150 people speak the language fluently.

資料來源 Reference

Mattina, Anthony. Colville Grammar Structure. University of Hawaii, 1973.

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