Baseline document pset discussion

WRIT 0590: Module 1.2

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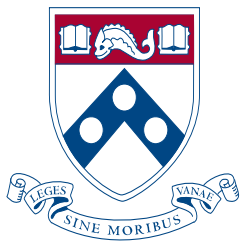


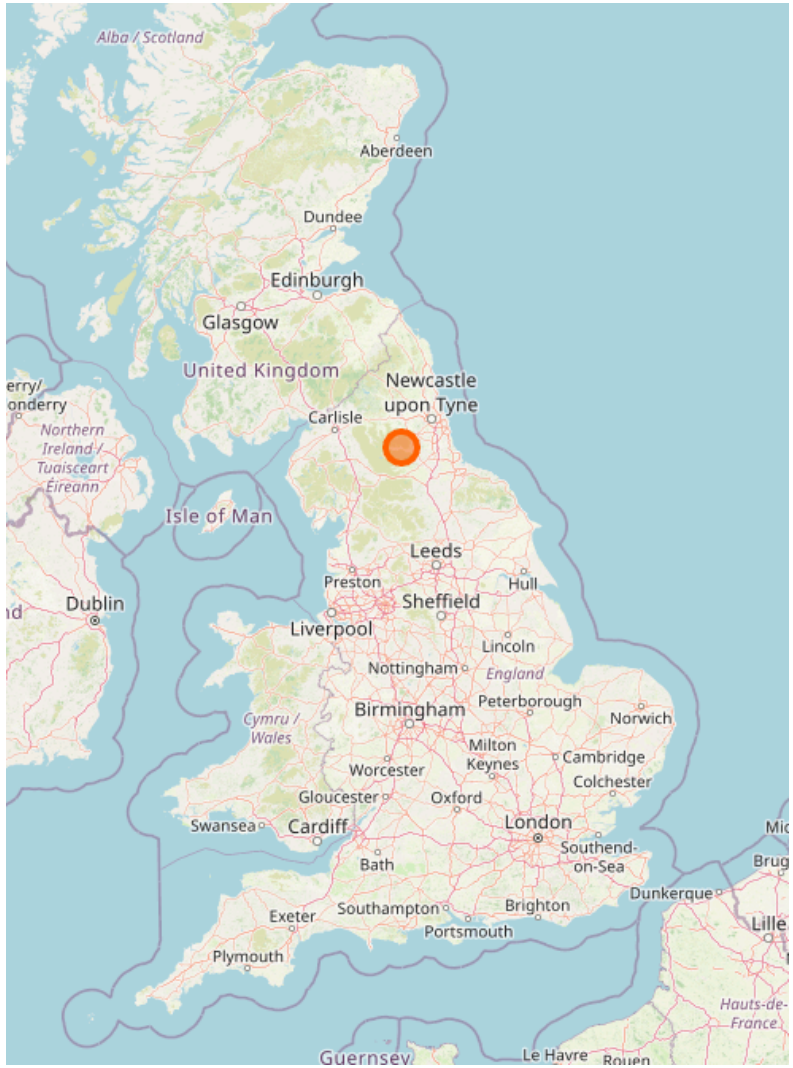
Contents

Assignment description

- Solve the puzzles
- Guide your audience through your reasoning
  - What is the problem about?
  - Clearly describe each step using full sentences
  - **Audience awareness:** Write for a professor/TA who is unfamiliar with your reasoning

Problem 1: Basic facts

- **Yan tan tethera** is a traditional sheep-counting system from Northern England.
- Based on the Weardale/Durham version, derived from Brythonic Celtic[a] languages.
- The original numerals have been substituted with gibberish to uphold academic integrity.



[a] Pronounced as /kɛltɪk/.

Problem 1: Data set

Prime numbers

(1)
a. 2
b. 3
c. 5
d. 7
e. 11
f. 13
g. 17
h. 19

Durham numerals

(2)
a. scathera-clen-a-spil
b. brithera
c. brithera-spil
d. tarn
e. tarn-a-clen
f. tarn-a-clen-a-spil
g. clen
h. bin-a-spil

Problem 1: Overall logic

- There are three types of Durham numerals:
  - **Simplex**, i.e, brithera, tarn, clen,
  - **Complex**, i.e, brithera-spil, tarn-a-clen, bin-a-spil,
  - **Even more complex**, i.e., scathera-clen-a-spil, tarn-a-clen-a-spil.
- A safe assumption is that simplex numerals represent the lowest numbers, while the supercomplex ones represent the highest.
- Let's reorder the numerals.

Problem 1: Overall logic (reordering)

(3)
a. 2
b. 3
c. 5
d. 7
e. **11**
f. **13**
g. **17**
h. **19**

(4)
a. brithera
b. tarn
c. clen
d. tarn-a-clen
e. brithera-**spil**
f. bin-a-**spil**
g. scathera-clen-a-**spil**
h. tarn-a-clen-a-**spil**

Idea A: "spil" is found exactly four times, and there are four numbers above ten, so spil probably means 'ten.'

Problem 1: First matching

Idea B: 3 is included in 13, and 7 is included in 17, and there are two pairs of matching numerals

(5)
a. 2
b. **3**
c. 5
d. **7**
e. **11**
f. **13**
g. **17**
h. **19**

(6)
a. tarn
b. **brithera**
c. clen
d. **tarn-a-clen**
e. bin-a-**spil**
f. **brithera-spil**
g. **tarn-a-clen-a-spil**
h. scathera-clen-a-**spil**

Problem 1: Decomposition

Idea C: The remaining simplex numbers are 2 and 5, with 7 formed as tarn-a-clen (2+5 or 5+2, order unclear), possibly like Roman numerals where 5 is an intermediate base (I, II, III, IV, V, VI, VII etc).

(7)
a. 2
b. **3**
c. 5
d. **7**
e. **11**
f. **13**
g. **17**
h. **19**

(8)
a. tarn
b. **brithera**
c. clen
d. **tarn-a-clen**
e. bin-a-**spil**
f. **brithera-spil**
g. **tarn-a-clen-a-spil**
h. scathera-clen-a-**spil**

Problem 1: Decomposition

Idea D: In 19, 9 is "scathera-clen," By hypothesis, 5+4=9 yields "clen" as 5 (the intermediate base) and "scathera" as 4.

(9)
a. **2**
b. **3**
c. **5**
d. **7**
e. **11**
f. **13**
g. **17**
h. **19**

(10)
a. **tarn**
b. **brithera**
c. **clen**
d. **tarn-a-clen**
e. bin-a-**spil**
f. **brithera-spil**
g. **tarn-a-clen-a-spil**
h. **scathera-clen-a-spil**

Problem 1: One

Idea E: The only number left is 11, with “bin” as 1.

(11)
a. **2**
b. **3**
c. **5**
d. **7**
e. **11**
f. **13**
g. **17**
h. **19**

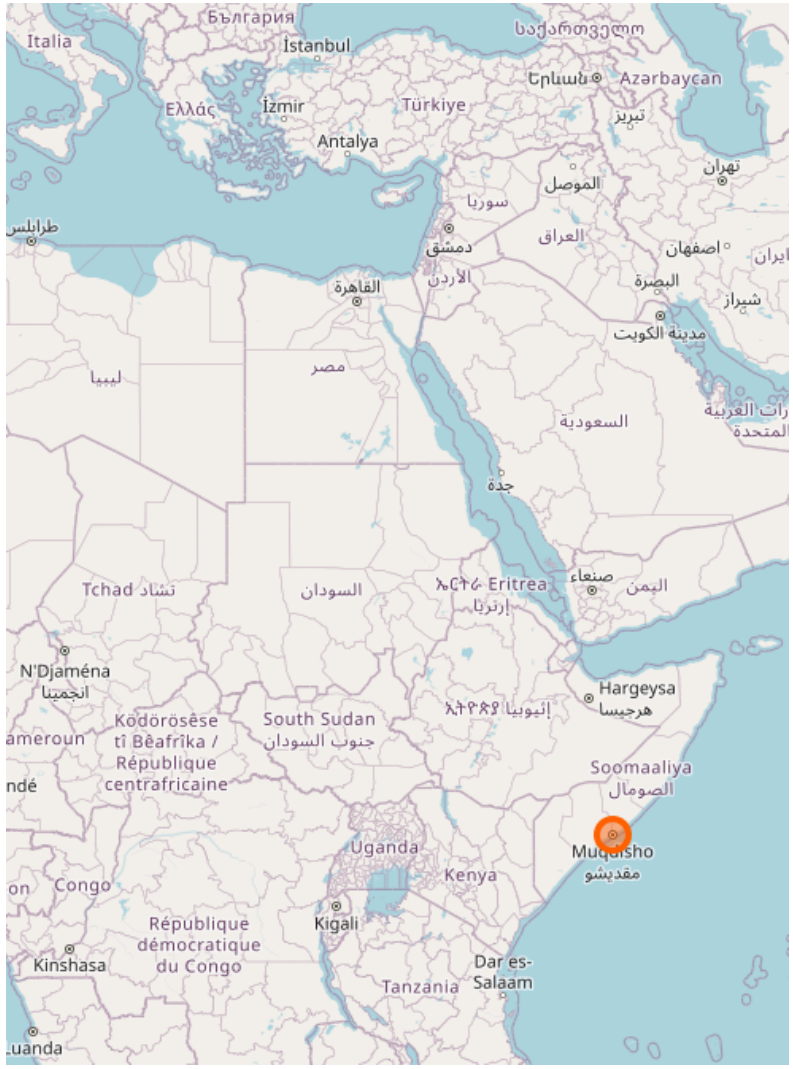
(12)
a. **tarn**
b. **brithera**
c. **clen**
d. **tarn-a-clen**
e. **bin-a-spil**
f. **brithera-spil**
g. **tarn-a-clen-a-spil**
h. **scathera-clen-a-spil**

Problem 1: Remaining questions

- Question 2
  - “brithera-clen” is 8
  - “scathera-spil” is 14
  - “clen-a-spil” is 15
- Question 3
  - 1 is “bin”
  - 4 is “scathera”
  - 9 is “scathera-clen”
  - 16 is “bin-a-clen-a-spil”

Problem 2: Basic facts

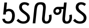
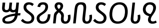
- **Osmanya** was developed between 1920 and 1922 by Somali scholar Osman Yusuf Kenadid to represent Somali phonetics accurately.
- Although it gained some use, the Somali government adopted the Latin script in 1972, leading to a decline in Osmanya's prevalence.



Problem 2: Data set

Country list (superset): Bangladesh, Estonia, Fiji, Gabon, Kazakhstan, Laos, Latvia, Madagascar, Malaysia, Malta, Moldova, Nepal, Panama, Peru, (El) Salvador, Togo, and Uzbekistan.

(13)

a. 
b. 
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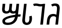
d. 
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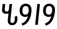
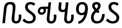
f. 

(14)

a. 
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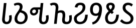
c. 
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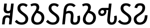
e. 
f. 

Problem 2: Key Observation

Idea A: There are four four-letter country names on the list, namely, Fiji, Laos, Peru, and Togo. Three of them are represented in Osmanya. Crucially, Togo is not represented because the repeating character 𐒐, a feasible candidate for "o," is not found in any pre-final position in other four-letter words.

(15)
a. 𐒃𐒔𐒏𐒆𐒔
b. 𐒊𐒔𐒉𐒍𐒏𐒔𐒐𐒌𐒖
c. 𐒍𐒔𐒊𐒃𐒉
d. 𐒊𐒌𐒇𐒋
e. 𐒉𐒌𐒊𐒔𐒏
f. 𐒖𐒐𐒇𐒐

(16)
a. 𐒏𐒔𐒆𐒖𐒐𐒕𐒔
b. 𐒃𐒃𐒏𐒐𐒃𐒖𐒖𐒔
c. 𐒌𐒉𐒆𐒃𐒃𐒐𐒕𐒔
d. 𐒏𐒔𐒃𐒉
e. 𐒋𐒔𐒉𐒔𐒍𐒉𐒆𐒔𐒉
f. 𐒃𐒔𐒏𐒔𐒕𐒉𐒉𐒐𐒕𐒔

Problem 2: Key Observation

Idea A (cont.): Thus, ϟϑIϑ is Fiji, and ϟ = F, ϑ = I, *I* = J.

(17)
a. ϧSՈϟS
b. ϿSƧՋՈSOIϞ
c. ՋSϿհƧ
d. ϿIԼՅ
e. ƧIϿSՈ
f. [fiji]

(18)
a. ՈSϟ[fi]ȣS
b. ϧհՈOհ[f]S
c. IƷϟհƧ[i]ȣS
d. ՈSհƷ
e. ՀSƷSհƷϟSƧ
f. ϧSՈSȣƷ[i]ȣS

Problem 2: Matching the "i"s

Idea B: There aren't many words that contain an "i" to begin with. 3 of them end in "ia," and based on the pattern in the data these must be Estonia, Latvia, and Malaysia. However, the status of the last two symbols remains open.

(19)
a. ƽSՌ٩S
b. ሧSՁጰՌSOსዩ
c. ጰSሧኪՁ
d. ሧსገላ
e. ՁსሧSՌ
f. [fiji]

(20)
a. ՌS٩[fi]ℰS
b. ƽኪՌOኪ[f]S
c. სბ٩ኪՁ[i]ℰS
d. ՌSኪბ
e. ዡSბSჩბ٩SՁ
f. ƽSՌSℰბ[i]ℰS

Problem 2: Matching the “i”s

Idea B (cont.): One way to move forward is to notice that Latvia has 6 letters in English, Estonia has 7, and Malaysia has 8. In Osmanya, the three words are of the n+1 length, namely, 7, 8, 9. Also, note the repeating S symbol.

(21)
a. 𐒆𐒔𐒏𐒛𐒔
b. 𐒊𐒔𐒉𐒁𐒏𐒔𐒐𐒍𐒘
c. 𐒁𐒔𐒊𐒂𐒉
d. 𐒊𐒍𐒊𐒋
e. 𐒉𐒍𐒊𐒔𐒏
f. [fiji]

(22)
a. 𐒏𐒔𐒛[fi]𐒘𐒔
b. 𐒆𐒂𐒏𐒐𐒂[f]𐒔
c. 𐒍𐒃𐒛𐒂𐒉[i]𐒘𐒔
d. 𐒏𐒔𐒂𐒃
e. 𐒄𐒔𐒃𐒔𐒁𐒃𐒛𐒔𐒉
f. 𐒆𐒔𐒏𐒔𐒘𐒃[i]𐒘𐒔

Problem 2: Final results

(23)
a. [malta]
b. [bangladesh]
c. [gabon]
d. [peru]
e. [nepal]
f. [fiji]

(24)
a. [latfiya]
b. [moldofa]
c. [estoniya]
d. [laos]
e. [kasakhstan]
f. [malaysiya]

Problem 2: Matching the "i"s

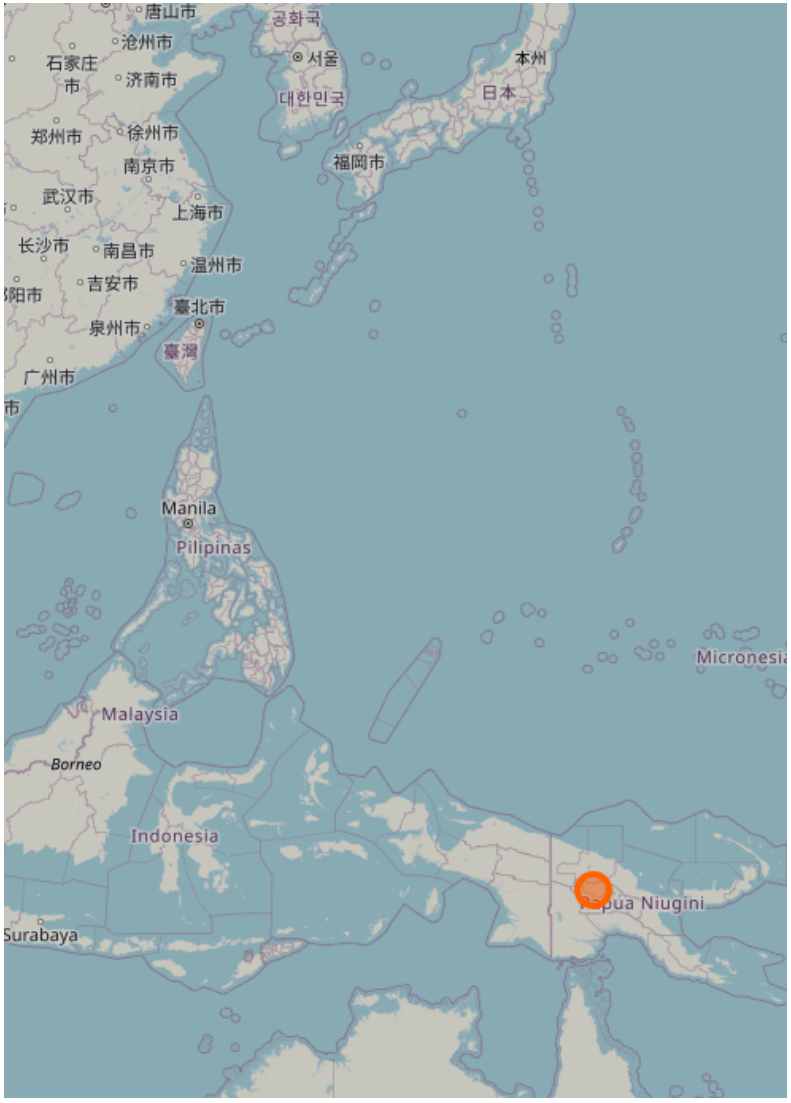
Idea C: This largely deciphers it. It's easy to see now that ꕥ corresponds to both "b" and "p." The rest is just easily recognizable.

(25)
a. [malta]
b. ꕥ[an]ꕯ[la]O[e]ꖜ
c. ꕯ[a]ꕥ[on]
d. ꕥ[e]ᒣꓤ
e. [ne]ꕥ[al]
f. [fiji]

(26)
a. [latfiya]
b. [mol]O[ofa]
c. [estoniya]
d. [laos]
e. ꕤ[asa]ꕢ[stan]
f. [malaysiya]

Problem 3: Basic facts

- Sepik languages are primarily spoken in the Sepik River region of Papua New Guinea, an area known for its linguistic diversity.
- Hewa, also known as Sisimin and Lagaip, is spoken by the Hewa people. It is a Sepik language of northern Papua New Guinea.



Problem 3: Basic facts

- Sepik languages use not only fingers for counting but also elbows, ears, nose, and other upper body points on both sides, totaling n points.
- Some points are easy to identify. I'll keep updating the picture on the right. Extrapolating the numbers assigned to fingers gives us the total $n = 27$.

Problem 3: Mirroring points

- We can mirror some points from left side to the right side and vice versa.
- That's about how much we can reach just by entering the points from the table and mirroring them.

Problem 3: Reconstructing some numbers

- Some of the xs are easily reconstructable based on the overall progression of numbers.

Problem 3: Reconstructing the face

- The nose is probably the axis of symmetry.

Problem 3: Back to the words

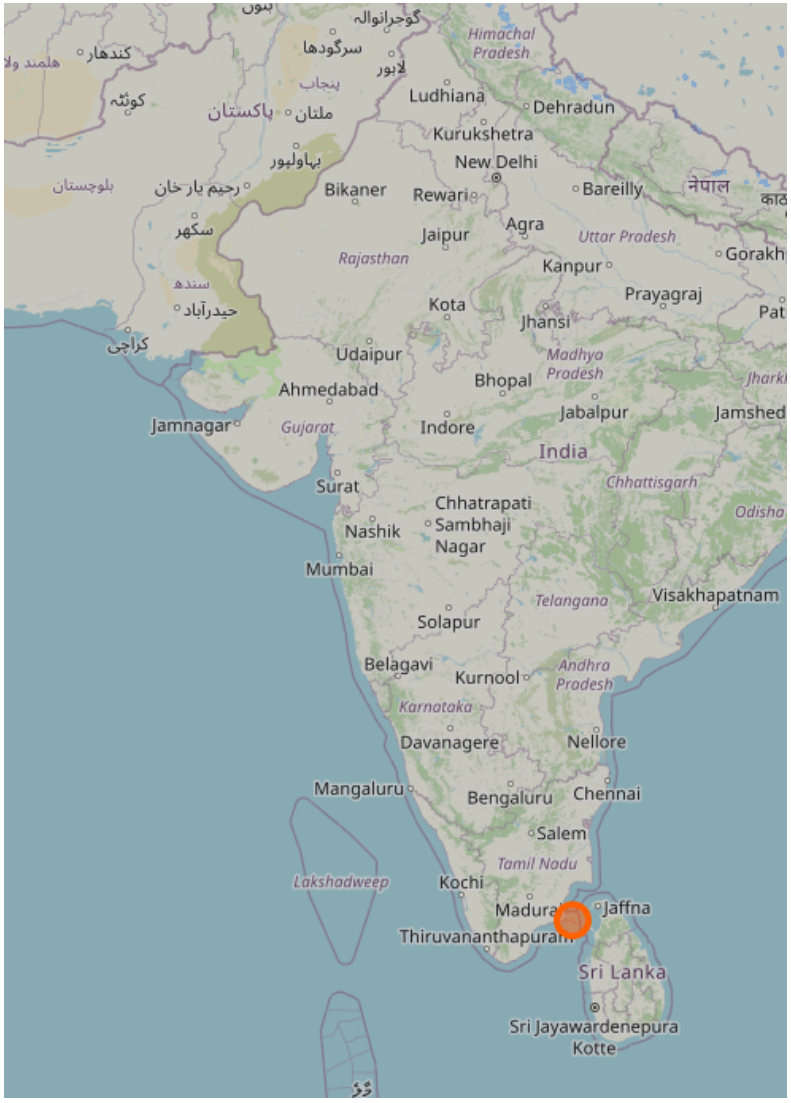
- Most words are easily mappable onto the points.
- YAK seems to mark the same body part but on the right side, cf. kile vs. yak-kile (righ-side pinky?).
- The rest is a matter of mapping between the sides of the body.

Problem 3: Back to the words

- 1 = mane
- 4 = oluk
- 6 = maluene
- 21 = yak-guat,
- 24 = yak-lumana,
- 27 = yak-kile.

Problem 4: Basic facts

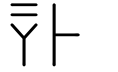
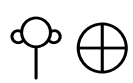
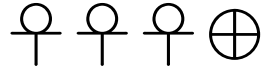
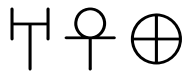
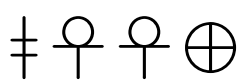
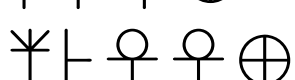
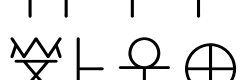
- Tamil is a member of the Dravidian language family, predominantly spoken in Tamil Nadu, India, and parts of Sri Lanka.
- Tamil is an official language in Tamil Nadu, Sri Lanka, and Singapore.
- The original numerals have been substituted with gibberish to uphold academic integrity.



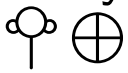
Problem 4: Main reordering

Idea A: In English, numbers (esp. above a thousand) follow a predictable pattern: ninety, eight hundred, seven thousand, but after that these are mostly combinations of the same words. So we want to identify the simplex ones and hypothesize that these are 90, 800, and 7,000 (we don't know which ones are which).

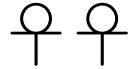
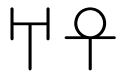
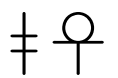
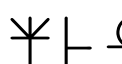
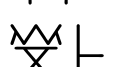
(27)

Arabic Numeral	**Pseudo-Tamil Numeral**
90	
800	
7,000	
60,000	
500,000	
4,000,000	
30,000,000	
200,000,000	
1,000,000,000	

Problem 4: Repetitions

Idea B: The first symbol is never the same. However, the attribution of  to 7,000 seems to be correct because all numbers above 7,000 have this symbol (all the numbers on the list above 7,000 can be represented as multiplied by 1,000). Thus,  is "$\times 1,000$"

(28)

Arabic Numeral	**Pseudo-Tamil Numeral**
90	
800	
7,000	$7 \times 1,000$
60,000	 $\times 1,000$
500,000	 $\times 1,000$
4,000,000	 $\times 1,000$
30,000,000	 $\times 1,000$
200,000,000	 $\times 1,000$
1,000,000,000	 $\times 1,000$

Problem 4: Repetitions

Idea C: Now we're looking for "$\times 10$" and "$\times 100$." In that respect, 𒐜𒐜𒐜$\times 1,000$ is either $10^3 \times 1,000$ or $100^3 \times 1,000$, of which we have the latter on the list. Thus, 𒐜 represents "$\times 100$."

(29)

Arabic Numeral	**Pseudo-Tamil Numeral**
90	𒐝𒐐
800	8×100
7,000	$7 \times 1,000$
60,000	𒐚𒐐$\times 1,000$
500,000	𒐞𒐐$\times 100 \times 1,000$
4,000,000	𒐕$\times 100 \times 1,000$
30,000,000	𒐖$\times 100 \times 100 \times 1,000$
200,000,000	𒐗𒐐$\times 100 \times 100 \times 1,000$
1,000,000,000	$100 \times 100 \times 100 \times 1,000$

Problem 4: Repetitions

Idea D: Following the same logic, $\vdash$ represents $\times 10$. Now we can reorder everything

(30)

Arabic Numeral	**Pseudo-Tamil Numeral**
90	9×10
800	8×100
7,000	$7 \times 1,000$
60,000	$6 \times 10 \times 1,000$
500,000	$5 \times 100 \times 1,000$
4,000,000	$4 \times 10 \times 100 \times 1,000$
30,000,000	$3 \times 100 \times 100 \times 1,000$
200,000,000	$2 \times 10 \times 100 \times 100 \times 1,000$
1,000,000,000	$100 \times 100 \times 100 \times 1,000$

Problem 4: Question 2

Since we know the values of each symbol, we can now easily convert the equation into Arabic numbers:

$$7 \times (10 + \text{𓎆}) \times 13 = (1000 + \text{𓎆})$$

The problem is that we don't know the value of the last symbol but this is not a big deal because (a) we can solve the equation, (b) the only digit missing so far is 1.

$$7 \times (10 + 1) \times 13 = (1000 + 1)$$