

Fifteenth International Linguistics Olympiad

Dublin (Ireland), 31 July – 4 August 2017

Individual Contest Solutions

Problem 1. The number system is duodecimal.

- **gwīnìṅ** — 1, **bà** — 2, **tàt** — 3, **nààs** — 4, **tùṅūn** — 5, **tīmìn** — 6, **tāāmà** — 7, **rwīt** — 8
- **ḡāā- α** = $12 - \alpha$ ($1 \leq \alpha \leq 3$): **ḡāātàt** — 9, **ḡāābà** — 10, **ḡāāgwīnìṅ** — 11
- **kūrū** — 12
- **bā-kūrū bī- γ** = $\gamma \cdot 12$ ($2 \leq \gamma \leq 8$), **bā-kūrū ḡāā-bī- γ** = $(12 - \gamma) \cdot 12$ ($1 \leq \gamma \leq 3$)
(the tone in the first syllable of γ becomes middle)
- β **ná** $\left\{ \begin{array}{l} \text{gwē gwīnìṅ} \ (\delta = 1) \\ \text{vē} \ \delta \ (2 \leq \delta \leq 11) \end{array} \right\} = \beta + \delta$ ($\beta = k \cdot 12$)

Answers:

- (a)
1. $5^2 + 3 + 4 = 32$
 2. $3^4 = 81$
 3. $7^2 + 9 + 1 = 59$
 4. $9^1 = 9$
 5. $8^2 + 2 + 5 = 71$
 6. $2^5 = 32$
 7. $9^2 + 4 + 3 = 88$
 8. $4^3 = 64$
 9. $16 + 21 = 18 + 2 + 17$
- (b) **bākūrū bītāt** — 36, **ḡāāgwīnìṅ** — 11, **kūrū** — 12.
- A. $108 - 3 - 13 = 92$
- B. $49 - 14 - 15 = 20$
- (c) 6 — **tīmìn**, 22 — **kūrū ná vē ḡāābà**, 97 — **bākūrū bīrwīt ná gwē gwīnìṅ**, 120 — **bākūrū ḡāābībā**.