

Twenty-second International Linguistics Olympiad

Taipei (Taiwan), July 20–27, 2025

Individual Contest Solutions

Problem 1.

		1	2	3	4	5	6	7	8	9
\boxed{k}	k	ci	pi	sum	zi	ŋa	ɖu	dyn	ge	gu
	$10(+k)$	cu-	cu-	cu-	cy-	ce-	cu-	cup-	cop-	cy-
\textcircled{k}	$k \times 10$	cutām	pi-	sum-	zip-	ŋap-	ɖuk-	dyn-	gep-	(gup-)
$\textcircled{\textcircled{k}}$	$k \times 10(+\dots)$		tsa-	so-	ze-	ŋa-	(re-)	døn-	ja-	(go-)

• System A:

- $\beta \times 20 (+\alpha) = \mathbf{ke} \boxed{\beta} (\mathbf{da} \boxed{\alpha})$
 - * $\beta \times 20 + 10 \rightarrow \mathbf{ke} \mathbf{pje-da} \boxed{\beta + 1}$
 - * $\beta \times 20 + 15 \rightarrow \mathbf{ke} \mathbf{ko-da} \boxed{\beta + 1}$
- $\gamma \times 400 (+\beta \times 20 + \alpha) = \mathbf{pi\epsilon u} \boxed{\gamma} (\mathbf{da} \mathbf{ke} \boxed{\beta} \mathbf{da} \boxed{\alpha})$
 - * $\gamma \times 400 + 200 \rightarrow \mathbf{pi\epsilon u} \mathbf{pje-da} \boxed{\gamma + 1}$
 - * $\gamma \times 400 + 300 \rightarrow \mathbf{pi\epsilon u} \mathbf{ko-da} \boxed{\gamma + 1}$

• System B:

- $\beta \times 10 = \textcircled{\beta}\text{-cu}, \beta > 2;$
- $\beta \times 10 = \textcircled{\beta}\text{-}\mathfrak{cu}, \beta = 2$
- $\beta \times 10 + \alpha = \textcircled{\textcircled{\beta}}\text{-}\boxed{\alpha}$
- $\gamma \times 100 (+\omega) = \textcircled{\gamma}\text{-ja } \omega$

- (a) $[X] = 60 = \mathbf{ɖukcu}$
 $[Y] = 62 = \mathbf{ke} \mathbf{sum} \mathbf{da} \mathbf{pi}$
 $[Z] = 885 = \mathbf{pi\epsilon u} \mathbf{pi} \mathbf{da} \mathbf{ke} \mathbf{zi} \mathbf{da} \mathbf{ŋa}$

- (b) (1) $13 + 70 = 83$
(2) $800 = 20 \times 40$
(3) $469 = 50 \times 9 + 19$
(4) $600 + 110 = 500 + 210$
(5) $2 \times \frac{3}{4} + \frac{1}{2} = 2$
(6) $1100 \times \frac{1}{2} + 50 = 600$
(7) $736 = 84 \times 4 + 400$
(8) $2 \times 609 = 60_X \times 20 + 18$
(9) $62_Y + 24 = 86$
(10) $885_Z + 115 = 700 + 300$

- (c) • $75 = \mathbf{ke} \mathbf{ko-da} \mathbf{zi} = \mathbf{dønŋa}$
• $570 = \mathbf{pi\epsilon u} \mathbf{ci} \mathbf{da} \mathbf{ke} \mathbf{pje-da} \mathbf{gu} = \mathbf{ŋapja} \mathbf{dyncu}$