

en(A)

Thirteenth International Olympiad in Linguistics

Blagoevgrad (Bulgaria), 20–24 July 2015

Individual Contest Solutions

Problem 1. Nahuatl:

- 1: *cē*, 2: *ōme*, 3: *ēyi*, 4: *nāhui*;
- 5: *mäcuilli*, 10: *mahtlactli*, 15: *caxtölli*;

α		20^β
1:	<i>ceM</i>	
2:	<i>ōm</i>	20: <i>pōhualli</i>
3:	<i>yē</i>	400: <i>tzontli</i>
4:	<i>nāuh</i>	8000: <i>xiquipilli</i>
5:	<i>mäcuil</i>	

- 7: *chicōme*;
- $\gamma + \delta$, $\left\{ \begin{array}{l} \gamma \in \{10, 15\}, 1 \leq \delta \leq 4 \\ \gamma = \alpha \times 20^\beta, 1 \leq \delta < 20^\beta \end{array} \right\}$: $\boxed{\gamma}$ -*oM-* $\boxed{\delta}$,
- $M = \begin{cases} m & \text{before } m, p, \text{ or a vowel;} \\ n & \text{otherwise.} \end{cases}$

Arammba:

- 1: *ngámbi*, 2: *yànparo*, 3: *yenówe*, 4: *asàr*, 5: *tambaroy*, 6: *nimbo*;
- $\alpha \times 6$, $2 \leq \alpha \leq 5$: $\boxed{\alpha}$ *tàxwo*;
- $6^2 = 36$: *fete*, $6^3 = 216$: *tarumba*, $6^4 = 1296$: *ndamno*, $6^5 = 7776$: *weremeke*;
- $\alpha \times 6^\beta$, $2 \leq \beta$: $\boxed{\alpha}$ $\boxed{6^\beta}$;
- $\alpha \times 6^\beta + \delta$, $0 < \delta < 6^\beta$: $\boxed{\alpha \times 6^\beta}$ $\boxed{\delta}$.

$$\begin{array}{llll}
 \begin{array}{l}
 \begin{array}{rcl}
 11^{10+1} & \times 10 & = 110^{5 \times 20+10} \\
 1 \times 20 & &
 \end{array} \\
 (1) & &
 \end{array}
 &
 \begin{array}{rcl}
 1+1 & = & 1 \times 2 \\
 1+4 & = & 5
 \end{array} &
 (7) & (8)
 \end{array}$$

$$\begin{array}{llll}
 \begin{array}{l}
 \begin{array}{rcl}
 20^{1 \times 20} & \times 2 & = 40^{2 \times 20} \\
 3 \times 20+(5+2) & + 14 & = 81^{4 \times 20+1}
 \end{array} \\
 (2) & (3) &
 \end{array}
 &
 \begin{array}{rcl}
 12^{2 \times 6} & + 60^{36+4 \times 6} & = 72^{2 \times 36} \\
 3 \times 6 & & 36+3 \times 6
 \end{array} &
 (9) &
 \end{array}$$

$$\begin{array}{llll}
 \begin{array}{l}
 \begin{array}{rcl}
 67^{10+3} & \times 3 & = 39^{1 \times 20+(15+4)} \\
 5+2 & = & 7
 \end{array} \\
 (4) & (5) &
 \end{array}
 &
 \begin{array}{rcl}
 3 \times 18 & = & 54 \\
 6 \times 36 & = & 216
 \end{array} &
 (10) & (11)
 \end{array}$$

$$\begin{array}{llll}
 \begin{array}{l}
 \begin{array}{rcl}
 5 \times 3 & = & 15
 \end{array} \\
 (6)
 \end{array}
 &
 \begin{array}{rcl}
 6+12 & = & 18
 \end{array} &
 (12) &
 \end{array}$$