en(A)

Thirteenth International Olympiad in Linguistics

Blagoevgrad (Bulgaria), 20–24 July 2015

Individual Contest Solutions

Problem 1. Nahuatl:

- 1: *cë*, 2: *öme*, 3: *ëyi*, 4: *nähui*;
- 5: *mäcuïlli*, 10: *mahtlactli*, 15: *caxtölli*;
- $\alpha \times 20^\beta, 1 \le \alpha \le 5, 1 \le \beta \le 3$:

α	
1:	*ceM*
2:	*öm*
3:	*yë*
4:	*näuh*
5:	*mäcuïl*

-

20^β	
20:	*pöhualli*
400:	*tzontli*
8000:	*xiquipilli*

;

- 7: *chicöme*;
- $\gamma + \delta$, $\left\{ \begin{array}{l} \gamma \in \{10, 15\}, 1 \le \delta \le 4 \\ \gamma = \alpha \times 20^\beta, 1 \le \delta < 20^\beta \end{array} \right\}$: $\boxed{\gamma}$-*oM*-$\boxed{\delta}$,

  $M = \left\{ \begin{array}{ll} m & \text{before } m, p, \text{ or a vowel;} \\ n & \text{otherwise.} \end{array} \right.$

Arammba:

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

(a)

$$11^{10+1} \times 10 = 110^{5 \times 20 + 10} \quad (1)$$

$$20^{1 \times 20} \times 2 = 40^{2 \times 20} \quad (2)$$

$$67^{3 \times 20 + (5+2)} + 14^{10+4} = 81^{4 \times 20 + 1} \quad (3)$$

$$5 + 2 = 7 \quad (4)$$

$$13^{10+3} \times 3 = 39^{1 \times 20 + (15+4)} \quad (5)$$

$$5 \times 3 = 15 \quad (6)$$

$$1 + 1 = 1 \times 2 \quad (7)$$

$$1 + 4 = 5 \quad (8)$$

$$12^{2 \times 6} + 60^{36 + 4 \times 6} = 72^{2 \times 36} \quad (9)$$

$$3 \times 18^{3 \times 6} = 54^{36 + 3 \times 6} \quad (10)$$

$$6 \times 36 = 216 \quad (11)$$

$$6 + 12^{2 \times 6} = 18^{3 \times 6} \quad (12)$$