

# First International Olympiad in Theoretical, Mathematical and Applied Linguistics

8–12 September 2003, Borovetz, Bulgaria

Solutions to the Problems of the Individual Contest

## Solution of Problem 1

### 1. Nouns:

- $\dot{\Lambda}$  ‘man’,  $\dot{\Delta}$  ‘woman’,  $i$  ‘boy’,  $\Delta$  ‘girl’,  $\boxtimes$  ‘letter’,  $\boxminus$  ‘work’.
    - Combinations:  $\dot{\Lambda}\dot{\Delta}$  ‘man + woman = husband + wife’,  $i\Delta$  ‘boy + girl = brother + sister’,  $\dot{\Lambda}\dot{\Delta}i\Delta$  ‘man + woman + boy + girl = family’.
    - Family members are singled out by division and cancellation:  $\frac{\dot{\Lambda}\dot{\Delta}i\Delta}{\Delta i\Delta}$  ‘family/(woman + kids) = father’,  $\frac{i\Delta}{\Delta}$  ‘kids/girl = brother’,  $\frac{\dot{\Lambda}\dot{\Delta}i\Delta}{i\Delta}$  ‘family/kids = parents’.
    - Missing (deceased) family members are preceded by a minus sign:  $\frac{i\Delta(-\dot{\Lambda}\dot{\Delta})}{(-\dot{\Lambda}\dot{\Delta})}$  ‘kids (–parents)/(–parents) = orphans’ (apparently orphaned children of one and the same family).
  - $\dot{I}$  ‘person’,  $(> \dot{I})$  ‘giant’.
2. Pronouns are composed of the character  $\dot{I}$  or  $\dot{\Delta}$  (for feminine gender) and the subscripts 1 to 3, which indicate the person.
  3. The plural of nouns and pronouns is expressed by the coefficient  $n$ . The plus sign plays the part of the conjunction ‘and’.
  4. Verbs:  $\leq$  ‘talk’,  $\boxminus$  ‘work’,  $t$  ‘hurry’,  $\diagup$  ‘write’,  $\heartsuit$  ‘like, love’,  $\bigodot$  ‘eat’. If what the verb denotes is absent or uncharacteristic, a minus sign expresses that:  $-\heartsuit$  ‘not inclined to affection = wicked’. (We can assume that a characteristic property is expressed by a plus sign, hence  $+\heartsuit$  ‘good’, a concept we need.)
  5. Sentence structure:
    - the subject is the base of the power;
    - the predicate is the exponent, whereby negation is expressed by a minus sign ( $-\heartsuit$  ‘not like’) and passive voice by a radical sign ( $\sqrt{\quad}$  ‘be written’); additional activities can be added or subtracted ( $\dot{I}_3^0 - t$  ‘he is working and doesn’t hurry = he is working without haste’);
    - past tense is marked by  $-t$  ( $\dot{I}_3^0 - t$  ‘he worked’), future tense by  $+t$ ;
    - the direct object, if there is one, follows an equals sign.

- Assignment 1.**
9. He loves with an unrequited love (*i. e.* loves without being loved).
  10. The taciturn (*or* mute) daughter will write about the father and the mother.
  11. You (sg. fem.) worked quickly (*or* hastily) and silently.
  12. The letter was eaten by the hungry sister.

- Assignment 2.**
13.  $(\dot{\Delta}_1 + \frac{\dot{\Lambda}\dot{\Delta}}{\Delta}) \leq -t = -n\dot{I}_3$
  14.  $(n\dot{I})^0 - \heartsuit$
  15.  $(\frac{\dot{\Delta}(-\dot{\Lambda})}{(-\dot{\Lambda})} + \heartsuit)\heartsuit = (< \dot{I}) - \boxminus$
  16.  $(n\dot{I}_2)^{\sqrt{\leq}} + t$