

**Problem #2.**

|    | Umbu-Ungu        |  | Umbu-Ungu                   |
|----|------------------|--|-----------------------------|
| 1  | <i>telu</i>      | 24   | <i>tokapu</i>               |
| 2  | <i>talu</i>      | $48 = 24 \times 2$                           | <i>tokapu talu</i>          |
| 3  | <i>yepoko</i>    | $72 = 24 \times 3$                           | <i>tokapu yepoko</i>        |
| 12 | <i>rurepo</i>    | $\alpha \neg \beta := (\alpha - 4) + \beta,$ | $\alpha\text{-}nga \ \beta$ |
| 16 | <i>malapu</i>    | $\alpha \in \{12, 16, 20, 24, 28, 32\},$     |                             |
| 20 | <i>supu</i>      | $\beta \in \{1, 2, 3\}$                      |                             |
| 24 | <i>tokapu</i>    | $\gamma + \delta,$                           | $\gamma \ \delta$           |
| 28 | <i>alapu</i>     | $\gamma = 24k, k \in \{1, 2, 3\},$           |                             |
| 32 | <i>polangipu</i> | $9 \leq \delta \leq 32, \delta \neq 24$      |                             |

- (a)  $tokapu \ polangipu = 24 + 32 = 56,$   
 $tokapu \ talu \ rureponga \ telu = 24 \times 2 + 12 \neg 3 = 57,$   
 $tokapu \ yepoko \ malapunga \ talu = 24 \times 3 + 16 \neg 2 = 86,$   
 $tokapu \ yepoko \ polangipunga \ telu = 24 \times 3 + 32 \neg 1 = 101.$
- (b)  $13 = 16 \neg 1 = malapunga \ telu,$   
 $66 = 24 \times 2 + 20 \neg 2 = tokapu \ talu \ supunga \ talu,$   
 $72 = 24 \times 3 = tokapu \ yepoko,$   
 $76 = 24 \times 2 + 28 = tokapu \ talu \ alapu,$   
 $95 = 24 \times 3 + 24 \neg 3 = tokapu \ yepoko \ tokapunga \ yepoko.$

**Problem #3.**

|   | 1st person sg  | 1st person pl     | 2nd person sg | 2nd person pl | 3rd person sg | 3rd person pl  |
|---|----------------|-------------------|---------------|---------------|---------------|----------------|
| A | <i>nau-</i>    |                   |               |               | <i>du-</i>    | <i>ditu-</i>   |
| B | <i>natzai-</i> | <i>gatzaiyki-</i> |               |               | <i>zai-</i>   | <i>zaizki-</i> |
| Z | <i>-t</i>      | <i>-gu</i>        | <i>-zu</i>    | <i>-zue</i>   |               | <i>-te</i>     |

  

|                 | A              | B   | Z       |            |
|-----------------|----------------|-----|---------|------------|
| <i>ahaztu</i>   | — about whom — |     | who     | forgot     |
| <i>hurbildu</i> |                | who | whom    | approached |
| <i>lagundu</i>  | whom           |     | who     | helped     |
| <i>mintzatu</i> |                | who | to whom | talked     |
| <i>ukitu</i>    | whom           |     | who     | touched    |

- (a)
- |                           |   |                      |                              |                      |
|---------------------------|---|----------------------|------------------------------|----------------------|
| <i>ahaztu ditut</i>       | } | I forgot them        | <i>lagundu dute</i>          | they helped him      |
| <i>ahaztu zaizkit</i>     |   |                      | <i>lagundu nauzue</i>        | you(pl) helped me    |
| <i>ahaztu zaizu</i>       |   | you(sg) forgot him   | <i>mintzatu natzaizu</i>     | I talked to you(sg)  |
| <i>hurbildu natzaizue</i> |   | I approached you(pl) | <i>mintzatu gatzaiykizue</i> | we talked to you(pl) |
| <i>hurbildu zait</i>      |   | he approached me     | <i>mintzatu zaizkigu</i>     | they talked to us    |
| <i>lagundu ditugu</i>     |   | we helped them       | <i>ukitu ditugu</i>          | we touched them      |
| <i>lagundu dituzu</i>     |   | you(sg) helped them  | <i>ukitu naute</i>           | they touched me      |
- (b) you(sg) touched me — *ukitu nauzu*, they approached me — *hurbildu zaizkit*.
- (c) *lagundu dut* — I helped him, *hurbildu gatzaiykizu* — we approached you(sg).
- (d) you(sg) forgot him (*ahaztu zaizu*) — *ahaztu duzu*.