

en(A)

Twenty-second International Linguistics Olympiad

Taipei (Taiwan), July 20–27, 2025

Individual Contest Problems

Rules for writing out the solutions

Do not copy the problems. Write down your solution to each problem on a separate sheet or sheets. On each sheet indicate the number of the problem, the number of your seat and your surname. If you do not do this, your work may be mislaid or misattributed.

Unless stated differently, you should describe any patterns or rules that you identified in the data. Otherwise your solution will not be awarded full marks.

Problem 1 (20 points). Here are some numbers in Dzongkha and their numerical values:

1 – ci 3 – sum 8 – ge 12 – cupi 17 – cupdyn 19 – cygu

For higher numbers, Dzongkha uses two different systems (referred to here as A and B).

Below are some numbers written in both systems, as well as their numerical values:

System A	System B	Value
ke ci da pi	tsapi	22
ke ci da ja	tsaja	25
ke pje-da pi	sumcu	30
ke ci da cyzi	sozi	34
ke pi da dyn	zedyn	47

System A	System B	Value
ke ko-da sum	ŋanja	55
ke sum da cuđu	dəndu	76
ke zi	gepcu	80
ke zi da gu	jagu	89
ke ceja	sumja	300

Finally, some equalities are given with left-hand side written in system A and right-hand side written in system B. Some numbers are missing.

	System A	System B
(1)	cusum + ke pje-da zi	= jasum
(2)	piču ji	= piču × zipcu
(3)	piču ci da ke sum da gu	= (ŋapcu × gu) + cygu
(4)	piču pje-da ji + ke pje-da qđu	= ŋapja + ŋija cutām
(5)	(pi × ko) + pje	= pi
(6)	(piču ko-da sum × pje) + ke pje-da sum	= dukja
(7)	piču ci da ke cuđu da cuđu	= (jazi × zi) + zipja
(8)	ji × piču ci da ke cutām da gu	= (___ × piču) + copge
(9)	___y + ke ci da zi	= jadu
(10)	___z + ke ko-da qđu	= dynja + sumja

- (a) Fill in the blanks X–Z with Dzongkha numbers.
(b) Write with digits the equalities (1–10).
(c) Write in Dzongkha in both systems:
75; 570.

△ The Dzongkha language belongs to the Sino-Tibetan family. It is spoken by approx. 171,000 people in Bhutan.

The words are given in a simplified transcription. d, j, p, ŋ, c and z are consonants. ã, ø and y are vowels.

—Vlad A. Neacșu