

Talented students in senior and junior secondary school who enjoy solving puzzles and who have a knack for logic and languages are invited to test their minds against fiendish and fun linguistic problems in the **twenty-seventh Australian Computational and Linguistics Olympiad (OzCLO)**.

Students who have a keen interest in English, languages, maths or computing are a good match for the competition.

OzCLO is an exciting team-based national competition which challenges students to solve puzzles fascinating in real languages. Students work together in teams of four on a range of analytical problems. The top three teams for each State and Territory in Round 1 will go through to Round 2. The winners of Round 2 are offered the opportunity to represent Australia at the International Linguistics Olympiad (IOL), which will be held in July 2024 in Brazil.

There is a **training package** and **past problems with solutions** available for

schools plus lots of other information on the OzCLO website: www.ozclo.org.au.

The **Australian Computational and Linguistics Olympiad (OzCLO)** has been held at universities around Australia since 2008, now with over 2500 students competing each year. The competition is coordinated by a team of linguists at several Universities in Australia.

Competition dates

Round 1: 6 March 2024 (online)

Round 2: 27 March 2024 (in person)

Registration

22 January – 1 March 2024

\$40 per team

<https://ozclo.org.au/registration/>

More details on the website:

www.ozclo.org.au

Students in years 11 and 12 will be eligible to enter the Senior competition, and students in years 7 to 10 will participate in the Junior competition. Registrations should be made and managed by the school. Individuals can contact us for assistance to find a team.

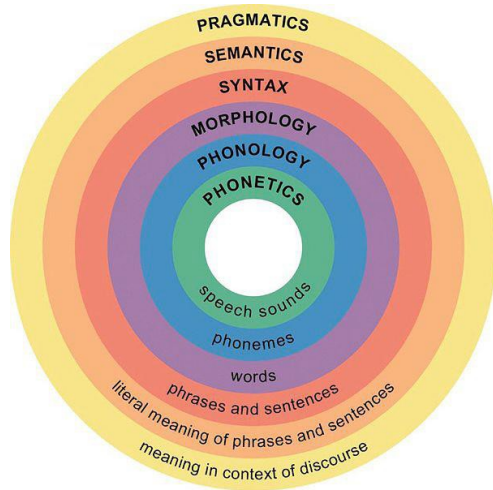
**Do your students enjoy
solving problems and
cracking codes?
Get involved in OzCLO**

2024!



Australian Computational
and Linguistics Olympiad

www.ozclo.org.au

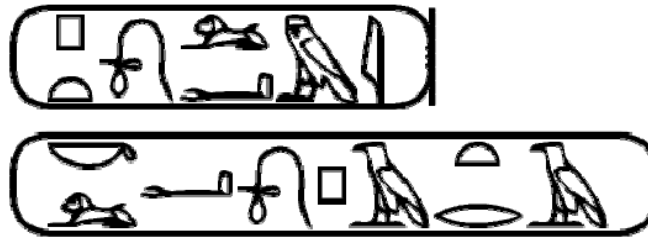


Try this problem!

Hieroglyphics

by Tom Payne, based on research by Jean-François Champollion¹ (<http://www.math.bas.bg/ml/iad/dremat/dmathen.html>)

The following are representations of two Egyptian "cartouches" from the Greco-Roman period. A cartouche is an oblong set of hieroglyphic characters that represents a name, a word or a phrase. One of these cartouches represents the name of the Queen "Cleopatra." Your task is to figure out which one means "Cleopatra," and what the other one probably means (Hint: the other cartouche is the name of another famous character from Ancient Egyptian history). This is exactly the kind of work that archeological linguists do when they attempt to interpret writings in ancient languages.



Be sure to explain your reasoning in detail. Good luck!

If you enjoyed this puzzle, talk to a teacher about getting involved in OzCLO or check out:

www.ozclo.org.au



Australian Computational and Linguistics Olympiad

THE INTERNATIONAL PHONETIC ALPHABET (2005)

CONSONANTS (PULMONIC)

	LABIAL				CORONAL				DORSAL				SAPICAL		GLOTTAL
	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Epi-glottal	Glottal			
Nasal	m	ɱ		n	ɲ	ɳ	ɲ	ŋ	ɴ			ɴ			
Plosive	p b	ɸ β	t d				k g	q ɢ							
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	ħ	ʕ	ħ	ʕ			
Approximant			ɹ				j	ɰ							
Trill	ʙ		ʀ												
Tap, Flap		ⱱ	ɾ												
Lateral fricative			ɬ ɮ												
Lateral approximant			l				ʎ	ʟ							
Lateral flap			ɺ												

Where symbols appear in pairs, the one to the right represents a voiced consonant, except for ɹ and ʎ. Shaded areas denote articulations judged to be impossible.

CONSONANTS (NON-PULMONIC)

Anterior click releases (require posterior stops)	Voiced implosives	Ejectives
ɠ Bilabial fricative	ɓ Bilabial	ʔ Ejective
ɠ Lateral alveolar fricative ("lateral")	ɗ Dental or alveolar	ɰ Bilabial
ɠ Apical (post)alveolar fricative ("retroflex")	ɗ Dental or alveolar	ɰ Dental or alveolar
ɠ Lateral postalveolar fricative ("palatal")	ɗ Velar	ɰ Velar
ɠ Lateral alveolar fricative ("lateral")	ɗ Uvular	ɰ Alveolar fricative

CONSONANTS (CO-ARTICULATED)

ɱ Voiceless labialized velar approximant
ɰ Voiced labialized velar approximant
ɰ Voiced labialized palatal approximant
ɰ Voiceless palatalized postalveolar (alveolo-palatal) fricative
ɰ Voiced palatalized postalveolar (alveolo-palatal) fricative
ɰ Simultaneous x and ʃ (disputed)
ɰ Affricates and double articulations may be joined by a tie bar

VOWELS

	Front	Near-front	Central	Near-back	Back
Close	i	y	ɨ	ɯ	u
Near-close	ɪ	ʏ	ɨ	ɯ	ʊ
Close-mid	e	ø	ɘ	ɤ	o
Mid	ɛ	ɞ	ɜ	ɝ	ɔ
Open-mid	ɛ	ɛ	ɜ	ɝ	ɔ
Near-open	æ	ɶ	ɛ	ɝ	ɔ
Open	a	ɶ	ɛ	ɝ	ɔ

Vowels at right & left of bullets are rounded & unrounded.

SUPRASEGMENTALS

Primary stress	Extra stress	Level tones	Contour-tone examples
ˈ	ˌ	˥ Top	˨˨˨ Rising
ˌ	ˈ	˥ High	˨˨˨ Falling
ˌ	ˌ	˥ Mid	˨˨˨ High rising
ˌ	ˌ	˥ Low	˨˨˨ Low rising
ˌ	ˌ	˥ Bottom	˨˨˨ High falling
ˌ	ˌ	˥ Tone raising	˨˨˨ Low falling
ˌ	ˌ	˥ Upstep	˨˨˨ Peaking
ˌ	ˌ	˥ Downstep	˨˨˨ Dipping

Diacritics may be placed above a symbol with a descender, or below. Other symbols may appear as diacritics to represent phonetic detail: ɸ (fricative release), ɸ (breathy voice), ʎ (glottal onset), ʎ (epiphetetic schwa), or (diphthongization).

SYLLABILITY & RELEASES	PHONATION	PRIMARY ARTICULATION	SECONDARY ARTICULATION
ɰ Syllabic	ɰ Voiceless or slack voice	ɰ Dental	ɰ Labialized
ɰ Non-syllabic	ɰ Modal voice or stiff voice	ɰ Apical	ɰ Palatalized
ɰh (Pre)nasalized	ɰh Breathy voice	ɰh Laminar	ɰh Velarized
ɰ Nasal release	ɰh Croaky voice	ɰh Advanced	ɰh Pharyngealized
ɰ Lateral release	ɰh Strident	ɰh Retracted	ɰh Velarized or pharyngealized
ɰ No audible release	ɰh Lingual-labial	ɰh Centralized	ɰh Advanced tongue root
ɰ Lowered	ɰh (ɸ is a labial approximant)	ɰh Raised	ɰh Retracted tongue root

Solution: The bottom one means "Cleopatra" and the top one means "Ptolemy." Each symbol refers to a sound (or "letter"). I guessed the bottom one was "Cleopatra" because there are nine symbols that could correspond to the nine letters in "Cleopatra." It might have been written right-to-left or left-to-right. So I tried both. It has to be left to right because there are two "a" symbols on the right side, and there are two "e" sounds toward the end of the name "Cleopatra." Then by comparing the sounds in the word and the symbols in the cartouche, this hypothesis is supported. The first two symbols (starting from the left), arranged vertically must represent "C" and "l". The next four represent "e" "o" "p" and then the first "a". Finally, the next two arranged vertically represent "t" and "r", and then comes the final "a". Applying this knowledge to the first hieroglyph, we get "p" with a "t" below, then an "o", then "l" then "e" and then two unknown sounds. However, the hint that this must be the name of another famous character from Ancient Egyptian history, helped me guess that the last two symbols must represent "m" and "y" to form the name "Ptolemy."