NACLO thanks the following for their generous contributions:

SOLUTIONS

The Sixteenth Annual

North American Computational Linguistics Open Competition

2022

www.nacloweb.org

Open Round
January 27, 2022

Serious language puzzles that are surprisingly fun!

-Will Shortz, crossword editor of The New York Times and Puzzlemaster for NPR
Like many texts written in Avoiuli, the sign follows a *boustrophedon* direction: the first line reads left-to-right, the second right-to-left, and so on, alternating horizontal direction. The lines of text on this sign are ordered top-down, although bottom-up vertical text direction is also common in Avoiuli.

**A1.**
- a. 9
- b. 4
- c. 3 or 6

**A2.**
- a. 14 (vilij)
- b. 2 (senta)
- c. 7 (tijim)
- d. 10 (teknoloji)
- e. 12 (hiumaniti)

**A3.** Melanesia (word number 5).

The full inscription reads: *sab senta blong melenisian institiut blong tijim saen filosofi hiumaniti mo teknoloji lisa vilij lolovini*

*Sap Centre of the Melanesian Institute for teaching science, philosophy, humanity and technology, Lisaa village, Central Pentecost*

Image credit (map):
https://commons.wikimedia.org/wiki/File:Oceania_UN_Geoscheme_Regions.svg — based on:
https://commons.wikimedia.org/wiki/File:Oceania_ISO_3166-1.svg
(B) Who Saw the Bear? (1/1) [Solution]

Answers:

<table>
<thead>
<tr>
<th>B1.</th>
<th>Turkish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Balık yüzdü.</td>
<td>The fish swam.</td>
</tr>
<tr>
<td></td>
<td>Zürafa atladı.</td>
<td>The giraffe jumped.</td>
</tr>
<tr>
<td></td>
<td>Fil koştu.</td>
<td>The elephant ran.</td>
</tr>
<tr>
<td></td>
<td>Kaplan kaplumbağa için atladı.</td>
<td>The tiger jumped for the turtle.</td>
</tr>
<tr>
<td></td>
<td>Balık Kaplan gibi yüzdü.</td>
<td>The fish swam like the tiger.</td>
</tr>
<tr>
<td></td>
<td>Fil ayı gibi yüzdü.</td>
<td>The elephant swam like the bear.</td>
</tr>
<tr>
<td></td>
<td>Fil atladı.</td>
<td>a. The elephant jumped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Kaplumbağa balık için koştu.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The turtle ran for the fish.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B2.</th>
<th>Turkish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kurbağa zürafayı gördü.</td>
<td>The frog saw the giraffe.</td>
</tr>
<tr>
<td></td>
<td>Zürafa martıyı gördü.</td>
<td>The giraffe saw the seagull.</td>
</tr>
<tr>
<td></td>
<td>Arı kurbağayı gördü.</td>
<td>The bee saw the frog.</td>
</tr>
<tr>
<td></td>
<td>Kim martıyı gördü?</td>
<td>Who saw the seagull?</td>
</tr>
<tr>
<td></td>
<td>Kim arıyı gördü?</td>
<td>Who saw the bee?</td>
</tr>
<tr>
<td></td>
<td>Arı kimi gördü?</td>
<td>Whom did the bee see?</td>
</tr>
<tr>
<td></td>
<td>Balina kimi gördü?</td>
<td>Whom did the whale see?</td>
</tr>
<tr>
<td></td>
<td>Martı kaplumbağayı gördü.</td>
<td>a. The seagull saw the turtle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Kim ayıyı gördü?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who saw the bear?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Aıyı kimi gördü?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Whom did the bear see?</td>
</tr>
</tbody>
</table>

Consultant: Asli Celikyilmaz
(C) To Make a Long Story Short (1/3) [Solution]

C1. Note that (d) and (e) can be swapped, and that (f) and (g) can be swapped.
a. italicized word
b. 10
c. number
d. adjective
e. common noun
f. first
g. last

Sticky Situation — unscrambled:

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Features</th>
<th>Sum of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
</tr>
<tr>
<td>SS1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>SS2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>SS3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>h. SS4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>i. SS5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>k. SS6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>j. SS7</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Sticky Situation — scrambled:

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Features</th>
<th>Sum of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
</tr>
<tr>
<td>h. SS4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SS1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>i. SS5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SS3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>j. SS7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>k. SS6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SS2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
(C) To Make a Long Story Short (2/3) [Solution]

C1. (continued) Filling in the blanks:
   h. SS4
   i. SS5
   j. SS7
   k. SS6

C2.

<table>
<thead>
<tr>
<th>Sentence</th>
<th>F1 (italics)</th>
<th>F2 (proper nouns)</th>
<th>F3 (sentence length - 10)</th>
<th>F4 (num)</th>
<th>F5 (shared N + ADJ)</th>
<th>F6 (first / last)</th>
<th>Sum of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a = HW5)</td>
<td>0</td>
<td>2</td>
<td>(b = 0)</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>HW4</td>
<td>(c = 0)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>(d = 0)</td>
<td>(e = 3)</td>
</tr>
<tr>
<td>(f = HW3)</td>
<td>0</td>
<td>0</td>
<td>(g = -1)</td>
<td>(h = 1)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>HW6</td>
<td>1</td>
<td>(i = 1)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>(j = 1)</td>
<td>(j = 4)</td>
</tr>
<tr>
<td>(k = HW1)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>(l = 1)</td>
<td>(m = 7)</td>
</tr>
<tr>
<td>(n = HW2)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>(o = 1)</td>
<td>4</td>
<td>0</td>
<td>(p = 7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sentence</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>Sum of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>(q = SSC5)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(r = SSC3)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>(s = SSC2)</td>
<td>0</td>
<td>0</td>
<td>-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>(t = SSC1)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(u = SSC4)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
(C) To Make a Long Story Short (3/3) [Solution]

C3. HW1, HW2, HW5

C4. SSC1, SSC4, SSC5

C5. 
   a. Vice 
   b. Made to Stick, Bigger Bubble 
   c. February should be replaced with January 

C6. SSC4. “He” (in the summary, it refers to Ronald McBubble, when in the original text it referred to Chicle “Colonel” Sanders)
(D) Real Numbers (1/2) [Solution]

D1.

(a) 

(b) 

(c) 

D2. (a) piŋasut  (b) qulit atausiq  (c) iñuiññaq malġuk

D3. (a) 1  (b) 5  (c) 19

D4. a. 2022-1-27  b. 4000

The writing is the date – in this version January 27, 2022 (date of the Open Round). The Kaktovik Iñupiaq numerals read 2022-1-27, with 2022 = (5*400 + 1*20 + 2); the Iñupiaq says “January twenty-seven, two thousand twenty-two”.

The suffix -agliaq (meaning *400), shown in the date, is applied to base qulit to form quliagliaq, 4000.

The word for “January” has nothing numeric in it; it refers to the appearance of the brightness of the new/returning sun. (This is not intended/possible to be deduced.)

The Kaktovik Iñupiaq numerals are formed with (relatively) vertical lines indicating ones, and (relatively) horizontal lines indicating fives, up to nineteen. After that, a base-20 positional notation begins (using zero as needed):
The Iñupiaq is similarly base-20 with a sub-base of 5:

1: atausiq  6: itchaksrat  11: qulit atausiq  16: akimiaq atausiq
2: malġuk   7: tallimat malġuk  12: qulit malġuk   17: akimiaq malġuk
3: piŋasut   8: tallimat piŋasut   13: qulit piŋasut   18: akimiaq piŋasut
4: sisamat   9: quḷiqunuŋtaiḷaq  14: akimiaŋtaiḷaq  19: iñuiñnaŋtaiḷaq
5: tallimat  10: qulit        15: akimiaq        20: iñuiñnaq

The sub-base and base words are formed from body part/position words: tallimat means hand/arm, qulit means top (upper body digits), akimiaq means (roughly) “it goes across”, and iñuiñnaq means “complete/entire person”, with the iñu- root (person) shared with Iñupiaq (mentioned in the footnote). (This root is cognate with those in “Inuit”, in which the -it is cognate with the -t in Iñupiat (i.e., a plural marker), inukshuk/inuksuk, and many others.)

Numbers words 20-38 are formed with the iñuiñnaq base, followed by the remainder; 40 is malġukipiaq and 39 is malġukipiaŋtaiḷaq; higher multiples of 20 are formed like malġukipiaq with -ipiaq. Multiples of 400 use the suffix -agliaq, as in tallimaagliaq (2000). Very large numbers can be formed by appending multiple suffixes.

In Arabic numerals, the equations on the blackboard are:

\[
\begin{align*}
4 - 3 & = 1 \\
2 \times (a) & = 8 \\
4 + 8 & = 12 \\
(b) - 1 & = 14 \\
20 - 4 & = 16 \\
56 \div 7 & = 8 \\
5 \times (c) & = 30
\end{align*}
\]

Sources:
Consultation from Edna Ahgeak MacLean, Kirk Miller, and Myles Creed.

https://en.wikipedia.org/wiki/I%C3%B1upiaq_language#Numerals
https://en.wikipedia.org/wiki/Kaktovik_numerals
http://www.ankn.uaf.edu/sop/SOPv2i1.pdf
https://library.alaska.gov/hist/hist_docs/docs/anlm/200078.pdf
https://www.uaf.edu/anlc/languages/inupiaq.php
(E) Sleeping in the Shade (1/2) [Solution]

**E1.** Match the Ik sentences and phrases to their English translations.

1 – P
2 – F
3 – J
4 – K
5 – R
6 – L
7 – Q
8 – A
9 – C
10 – N
11 – B
12 – S
13 – D
14 – O
15 – E
16 – H
17 – M
18 – G
19 – I

**E2.** You matched the two Ik sentences below to their well-formed English translations above in E1. Your new task is to translate them word-for-word into English in a way that reveals the meaning each Ik word, as we have started doing for S1.

S1. *Epa ŋoka kuruo na daḁ*  (Sleeps dog in-shade which nice/is-nice)
S2. *Epa ŋoka na bets’g*  (Sleeps dog which white/is-white)

**E3.** Translate into Ik.

a. these  
   dii
b. my huts  
   hoika ɲcię / hoika na ɲcię
c. I love my wife.  
   Mina cekia ɲcię. / Mina cekia na ɲcię.
d. Father is coming from the nice hut.  
   Atsa abaŋa hoo na daḁ.

**E4.** Translate into English.

a. *Zekwata oŋorika kuruo̥.*  
   The elephants are sitting in the shade.
b. *Mina ŋoka ɔkaka ntsiȩ.*  
   The dog loves his bone.
c. *Minima oŋorika ni epą.*  
   We love sleeping elephants. / We love elephants who sleep.
d. ŋoka na ɲcię  
   my dog
(E) Sleeping in the Shade (2/2) [Solution]

E5. Correct answer: (c) Both P1 and P2 are grammatical.


Credits:
Based on *The Ik Language: Dictionary and Grammar Sketch* by Terrill B. Schrock
Figure by Monica Feinen
(F) Splash to Save (1/2) [Solution]

Answers
F1.

E (7) It blew down and broke the tree.
(E) Llo de duduaibnegnän a dattkaemnegnän.

C (8) The wind tore Ant’s house and threw Ant into the river.
(C) Ankom bo ma de wel a dapisamän a ankom bom daspunän walle we.

F (9) When Small Fish saw, he moved closer to him.
(F) Tärko da angde ikop dägagän, obo dowae e guinggolän.

D (10) But some big fish were trying to kill him.
(D) Be ddob kollba ulleulle da gäz e de ada däganeyo.

A (11) A catfish was about to swallow him.
(A) Bunkuttang a mäse ngänygäny e dängkamän.

B (12) Small Fish quickly splashed with his tail, and with water threw Ant on top of the grass, and he was saved.
(B) Tärko da mängalae källa gokätaemän a ine peyang ankom bom towall toko we daspunän a ttam gogän.

F2. Please provide English translations for the following Ende words:
   a. tärko small fish
   b. walle river
   c. daspunän (it) threw (it) (other forms of the verb throw were also accepted)
   d. gongkamän (it) began (other forms of the verb begin were also accepted)
   e. yäbad (the) sun

F3. Please provide Ende translations for the following words:
   a. Ant ankom
   b. and a
   c. tree llo
   d. catfish bunkuttang
(F) Splash to Save (2/2) [Solution]

F4. The translation would include *toko* and *we* but none of the other words. “On top of” is translated as *toko me* when it refers to sitting still on top of something, as in (2), but it is translated as *toko we* when it means moving to the top of something, as in (12). Note that *me* means “in” while *we* means “into”: hence *toko me* is “on top of” while *toko we* is more like “onto top of.” The sentence says “got on top of,” which involves motion to the top of something, so the translation would use *toko we*. The other provided words mean “small fish” (*tärko*), “fish” (*kollba*), “tree” (*llo*), “grass” (*towall*), “big” (*ulleulle*), and “wind” (*wel*).

Other notes:
The problem does not test for these facts, but they help to explain the structure of the sentences:
- *da* and some instances of *a* are markers that follow the subject of a clause.
- *de* and *bom* are markers that follow the object of a clause.

Source for the story:
Kate L. Lindsey (collector), Kate L. Lindsey (editor), Tonny (Tonzah) Warama (editor), Jubli (Joe) Sowati (author), Mathias Dugal (participant), Warama Kurupuel (Suwede) (editor), 2016. *Tärko ankom bom ttam dägagän*. XML. LSNG08-WE_PN030-01_20200113.flextext at catalog.paradisec.org.au. https://dx.doi.org/10.26278/5e3c2baf833cc

https://catalog.paradisec.org.au/collections/LSNG08/items/WE_PN030

Consultants:
Jack Dipa, Mathias Dugal, Tonny Warama, Warama Kurupel

Source for introductory paragraph:

Image credits:
Ant: https://pixabay.com/vectors/ant-insect-animal-silhouette-6585114/
(G) Out of Order (1/1) [Solution]

G1. FORTYFIVE

G2. IVE MADE MY POSITION CLEAR

G3. BACKUP PLAN
(The positions are in reverse: You have to start with the highest-valued position, 10, and then count down to 1, instead of counting up from 1 to 10).

G4. BRANCHING OUT

G5. PAY ATTENTION TO YOUR SURROUNDINGS
From Soup to Nuts (1/2) [Solution]

H1. chili pepper (ʔich) is classified as a meat.

H2. la jtiʔ sk in wakax = I ate cow kidney.

H3. Translate the following sentences into Tseltal:
   a. We ate the peanuts. la jk’uxtik te kaxlan chenek’e
   b. You (pl.) ate cow stomach. la atiʔik stsukum wakax
   c. They ate meat. la stiʔik tiʔbal
   d. You (sg.) ate your (pl.) avocados. la aloʔ awonik
   e. I ate my honey. la jweʔ jchab
   f. She ate cooked greens. la sloʔ bok
   g. She ate bean soup. la xchik’ yaʔilel chenek’

H4. jloʔ (used with soft things)

H5. sk’ux (used with hard/individuated things)

H6. wheat (lit. “non-indigenous corn”, also parallel between kaxlan waj (bread) : kaxlan ixim (wheat) :: waj (tortilla) : ixim (corn))

For alternate answer to H2, H3b, and H3g, see the first “note” on the next page.

Explanation
• There are several different words for “eat”:
  • tiʔ for meats (meat, liver, kidney, chicken comb, heart, and also chili peppers — also mushrooms, although that’s not in the problem!)
  • loʔ for mushy things (boiled greens, avocado, banana, honey)
  • k’ux for hard, crunchy and/or individuated things (radish, panela chunks, nuts, toasted tortilla, corn, popcorn, beans)
  • weʔ for breads (tamale, tortilla, bread). It can also sometimes be used as a more general verb for eating, but that is not relevant to this problem.
  • chik’ for soups and things soaked and eaten (meat soup, bean soup, bread soaked in coffee)
  • and also buts’ for things that dissolve in your mouth and ts’uʔ for chewy things with pulp (only sugar cane and corn stalks), neither featured here
  • Some nouns, such as “greens” and “mango”, take loʔ when they are cooked/ripe, and therefore soft, and k’ux when they are raw/unripe, therefore hard/crunchy/individuated.
• la = perfective [cannot deduce]
• Inflection:
  • Verbs (specifically, transitive ones) and direct objects are given the same suffixes/affixes to denote the person/number of the subject or of the possessor, for the verb and direct object respectively.
  • 1st person: j-, with jʔ > k
  • 2nd person: a-, with aʔ > aw
  • 3rd person: s-, with sʔ > y, sch > xch
  • Number: 1st person plural is -tik, 2nd/3rd person plural is -ik, unpossessed plural is -etik
• Definiteness: te NP-e
Notes:

- The solution shown on the previous page follows the grammar of Tseltal, which includes a possessive prefix in the description of body parts (e.g., “cow kidney” = “sk’in wakax”, where the s- at the start is the 3rd person singular possessive prefix; this could be literally translated as “cow’s kidney”). While this is what Tseltal actually does, it is also consistent with the data to conclude that there is no possessive prefix in such cases. Answers that consistently applied either conclusion were given full points. Under this alternative solution, H2 should be “I ate her cow kidney”, H3b should be la atiʔik tsukum wakax, and H3g should be la schik’ yaʔlel chenek’.

- You may see a similarity in tiʔ eat meat > tiʔbal meat and loʔ eat mushy thing > loʔbal banana.

Sources:

Categories of Eating in Tzeltal and Navaho (uchicago.edu)

Tzeltal (Mayan) Noun and Verb Morphology | International Journal of American Linguistics: Vol 14, No 2 (uchicago.edu)

https://site.inali.gob.mx/publicaciones/diccionario_multidialectal_en_tseltal.pdf

Consultation with Gilles Polian.
(I) A Cornish Conundrum (1/2) [Solution]

I1. Answers:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Definite Singular</th>
<th>Plural</th>
<th>Definite Plural</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>dama</td>
<td>an dhama</td>
<td>damyow</td>
<td>a. an damyow</td>
<td>‘mother’</td>
</tr>
<tr>
<td>b. kasek</td>
<td>an gasek</td>
<td>c. kasegi</td>
<td>an kasegi</td>
<td>‘mare’ (female horse)</td>
</tr>
<tr>
<td>kulyek</td>
<td>an kulyek</td>
<td>kulyoges</td>
<td>d. an kulyoges</td>
<td>‘cockerel’ (young male chicken)</td>
</tr>
<tr>
<td>myghtern</td>
<td>e. an myghtern</td>
<td>myghternedh</td>
<td>an vyghternedh</td>
<td>‘king’</td>
</tr>
<tr>
<td>myghternes</td>
<td>f. an vyghternes</td>
<td>myghternesow</td>
<td>g. an myghternesow</td>
<td>‘queen’</td>
</tr>
<tr>
<td>tas</td>
<td>h. an tas</td>
<td>tasow</td>
<td>i. an dasow</td>
<td>‘father’</td>
</tr>
<tr>
<td>bogh</td>
<td>j. an bogh</td>
<td>boghes</td>
<td>k. an boghes</td>
<td>‘billy-goat’ (male goat)</td>
</tr>
<tr>
<td>banow</td>
<td>l. an banow</td>
<td>banowes</td>
<td>m. an banowes</td>
<td>‘sow’ (female pig)</td>
</tr>
<tr>
<td>badh</td>
<td>n. badhes</td>
<td>an badhes</td>
<td>r. mebyon</td>
<td>‘boar’ (male pig)</td>
</tr>
<tr>
<td>tevesik</td>
<td>o. an tevesik</td>
<td>p. tevesigyon</td>
<td>an devesigyon</td>
<td>‘adult man’</td>
</tr>
<tr>
<td>pons</td>
<td>an pons</td>
<td>ponyow</td>
<td>q. an ponsyow</td>
<td>‘bridge’</td>
</tr>
<tr>
<td>maw</td>
<td>an maw</td>
<td>r. mebyon</td>
<td>an vebyon</td>
<td>‘boy’</td>
</tr>
<tr>
<td>s. tesen</td>
<td>an desen</td>
<td>teessenow</td>
<td>an tesenow</td>
<td>‘cake’</td>
</tr>
<tr>
<td>t. tarow</td>
<td>an tarow</td>
<td>terewi</td>
<td>an terewi</td>
<td>‘bull’ (male cow)</td>
</tr>
</tbody>
</table>

I2. Answers:

<table>
<thead>
<tr>
<th>Cornish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>u. an bys</td>
<td>‘the finger’</td>
</tr>
<tr>
<td>v. war desen deg</td>
<td>‘on a beautiful cake’</td>
</tr>
<tr>
<td>w. war dharas</td>
<td>‘on a door’</td>
</tr>
<tr>
<td>an bal berfydh</td>
<td>x. the perfect spade</td>
</tr>
<tr>
<td>das</td>
<td>y. stack (or a stack)</td>
</tr>
<tr>
<td>war das</td>
<td>z. on a father</td>
</tr>
</tbody>
</table>
(I) A Cornish Conundrum (2/2) [Solution]

I3. Animal: penguin

Answering I3: If you gather all of the color terms in the problem you get glas = blue, glasrudh = purple, rudhvelyn = orange, melyn = yellow, gwynnrudh = pink. From this, you can infer that rudh = red and that gwynn = white. Thus, “white head” would be penn gwynn, giving the answer penguin.

Notes on Cornish:

Like in all Celtic languages, Cornish nouns undergo mutations, which is the change in the initial consonant depending on how the noun is used or what form it appears in.

This problem is about the so-called second mutation, or soft mutation, which means that in certain occurrences these consonants change as follows:

B → V
D → Dh
Gw → W
K → G
M → V
P → B
T → D

Rules for soft mutations:

- feminine nouns in the definite singular are mutated
- masculine nouns in the definite plural are mutated only when they refer to people
- all nouns are mutated following war (“on”), regardless of gender or whether they are singular/plural
- adjectives are mutated following feminine singular nouns or plural masculine human nouns

References:

