Power-based number system for toki pona

个 ♯ 冂 L ☼

V 0.14 α
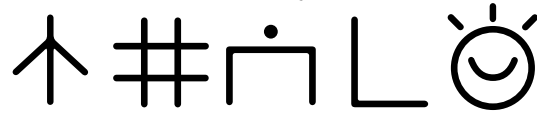
jan loje, jan Tamalu

March 10, 2024

1 Toki pona power-based number system

With the help of jan Tamalu (mistakes are mine only)

This system should be:

1. based on the common decimal system and digits,

2. unambiguous,

3. easy to understand, learn, and use for all common non-scientific and non-mathematical purposes,

4. suitable for *toki pona*.

2 Vocabulary

The ideas for the choice of the names are indicated between square brackets [ ]

1	wan	⼃	one
2	tu	‖	two
3	sin	⼃⼃⼃	three [3 lines]
4	lipu	□	four [4 sides]
5	luka	⌒	five
6	pipi	♯	six [6 elements]
7	len	🗒	seven [4 sides + 3 lines]
8	musi	℅	eight; two circles look a kind of 8
9	suli	∨	nine [the "big" digit]
10	sewi	冂	10 (base) followed by integer powers (1 is implicit): 2, 3, 4,... [raise]
20	tu sewi	‖冂	two × ten
30	sin sewi	⼃⼃⼃冂	three × ten
100	sewi tu	冂‖	10^2
300	sin sewi tu	⼃⼃⼃冂‖	three × ten^2
1000	sewi sin	冂⼃⼃⼃	10^3
+	en	+	addition
-	weka	✕	negative [subtract]
.	sike	◎	separator for decimal part
№	nanpa	♯	number prefix (ordinal)*
#	mute	‖‖	number prefix (cardinal)

*NOTE: compare Philipino ika- or pang-, Malay and Indonesian ke-

3 Use

3.1 Prefixes (when needed)

Ordinal and cardinal numbers.
  nanpa #: ordinal number
  mute |||: cardinal number

  Ex. 1:
  ona li nanpa luka = it's the 5th (ordinal)
  ona li mute luka = it's 5 (cardinal)

3.2 Non-additive numbers

Numbers are *non-additive*.

  120 = *wan tu ala*
  2024 = *tu ala tu lipu*

3.3 Numbers as powers of 10

***sewi* is the base 10 for all powers.**

  $1000 = 10^3$ = *sewi sin*
  $10\ 000 = 10^4$ = *sewi lipu*
  ...
  $1\ 000\ 000\ 000 = 10^9$ = *sewi suli*

  Ex. 2: *jan li jo e $1,000,000,000*
  jan li jo e mani Mewika pi mute sewi suli

3.4 Very large (or small) numbers

Very large (or small) numbers can be expressed easily.

  a googol = 10^{100} = sewi wan ala ala
  or
  10^{10^2} = sewi sewi tu

3.5 Composed numbers

Numbers with multiplicative and additive values.

  The number to the left of *sewi* has multiplicative value.
  The additive value of a number (sequence) is stated explicitly with *en*.

  $4\ 000\ 000\ 012 = 4 \times 10^9 + 12$ = *lipu sewi suli en wan tu*

3.6 Numbers with fractional parts

Number with a fractional part separated by a decimal point.
  3.14 = *sin sike wan lipu*
  $3.14 = 314 \times 10^{-2}$ = *sin wan lipu sewi weka tu*

3.7 Numbers with negative exponents

Negative exponents are prefixed by *weka*.
  6.62×10^{-34} = *pipi sike pipi tu sewi weka sin lipu*

3.8 Dates

ISO 8601 system

2024-05-12 = *tenpo sike tu ala tu lipu en tenpo mun luka en tenpo suno wan tu*
Ex. 2: *05-12 ona li kama lon* = His birthday is May 12th
tenpo mun luka en tenpo suno wan tu la ona li kama lon

🕒🌒∩✛🕒◇⼅⼁⼁)🝢⟩ⴷ∹