

Writing numbers with Tengwar

A practical guide

Per Lindberg

Tengwar numbers are written with the least significant digit first. This is "backwards" compared to Arabic numbers, but on the other hand there is no *a priori* rule on which digit should come first, so the Arabic numbers are just as "backwards" compared to the Tengwar numbers.

The numerals **0-9** are written:

o	τ	ϣ	ϣ	l	l	l	l	l	l
0	1	2	3	4	5	6	7	8	9

Example: the number **6930871** is written τ ϣ ϣ l l ϣ .

Duodecimal numbers

Sometimes the Eldar also used a *duodecimal* number system (with *twelve* symbols instead of *ten* as in Arabic numbers). The dwarves only used this system. Men of the West in the third age used the decimal system.

A duodecimal number is based on the number 12 instead of 10, and counts in ones, dozens, grosses etc, instead of ones, tens, hundreds, etc.

Example: The duodecimal number* **1B6A**₁₂ equals the decimal number **3394**₁₀ :

$$1 \times 12^3 + 11 \times 12^2 + 6 \times 12^1 + 10 \times 12^0 = 1728 + 1584 + 72 + 10 = 3394$$

The duodecimal numerals **A** and **B** are written:

o	o
10 ₁₀	11 ₁₀

* To distinguish numbers of different base, the base is written as a subscript after the number. Also, the letters **A**₁₂ and **B**₁₂ are often used as symbols for the values ten and eleven.

Markings

Numerals are normally easy to discern and thus need not be marked. If needed, special markings can be used. The following examples show how 3394 (1B6_{A12}) can be written with various markings:

- Decimal numbers can be marked with a dot above each tengwa: $\overset{\cdot}{\text{ل}}\overset{\cdot}{\text{ط}}\overset{\cdot}{\text{ا}}\overset{\cdot}{\text{ا}}$
- Long decimal numbers in the midst of words can be marked with a line above: $\overset{\text{—}}{\text{ل}}\overset{\text{—}}{\text{ط}}\overset{\text{—}}{\text{ا}}\overset{\text{—}}{\text{ا}}$
- Duodecimal numbers are marked with dots or a line below: $\underset{\cdot}{\text{ل}}\underset{\cdot}{\text{ط}}\underset{\cdot}{\text{ا}}\underset{\cdot}{\text{ا}}$
- When dots are used to mark duodecimal numbers, the duodecade (the digit for twelves) can be marked with a small circle: $\overset{\circ}{\text{ل}}\overset{\circ}{\text{ط}}\overset{\circ}{\text{ا}}\overset{\circ}{\text{ا}}$

Summary

٠	١	٢	٣	٤	٥	٦	٧	٨	٩
0	1	2	3	4	5	6	7	8	9

Exercises

1. Transcribe the number **1420**, both in decimal and in duodecimal.
2. What happened in the Second Age year طلر ااا ?
3. What is the decimal equivalent of $\text{ل ا ل ا ل ا ل ا ل ا}$?