Gallifreyan Math (by Loren Sherman)

Warning: This has been deemed even more time-consuming and inefficient than writing Gallifreyan sentences.

Disclaimer: My own education does not extend past calculus, so that is the extent of Gallifreyan math for now.

Numbers:
Numbers are covered in the main guide. To write numbers in different bases, add that many filled-in dots on the perimeter of the number.

Variables:
Variables don't have to be letters. They can be any design you can fit in a circle, so long as that design isn't also a mathematical symbol. In this guide, the variables are as follows (color-coded for ease of use):

Operations:
The basic operations are as follows:

Equality:
To express the relationship between two expressions, connect them with one of these:

Parentheses and Order of Operations:
Order of operations is determined purely by the Gallifreyan equivalent of parentheses, which is simply a larger circle, centered on the operation it contains. As an example, here’s a slightly modified Pythagorean Theorem, or \((\sqrt{A^2 + B^2}) = X\):
It would be simpler to write \((1/2)\) as 0.5, but it was necessary to demonstrate that parentheses do not have to entirely enclose the things they contain.

**Functions:**
These are rather similar to parentheses, except the containing circle has the symbol of the function on it. In Gallifreyan, \(A(X)\) (assuming for the moment that \(A\) is a function rather than a variable), looks something like the symbol to the right. Inverse functions are denoted by two dots, as shown on the far right.

**Trigonometric Functions:**
These are easy to remember if you keep this triangle in mind:

\[
\sin(x) \quad \cos(x) \quad \tan(x) \\
\csc(x) \quad \sec(x) \quad \cot(x)
\]

(for instance, sine is opposite over hypotenuse, or \(\cdot/\cdot\cdot\))

**Limits:**
The limit of \(B\) as \(X\) approaches \(A\) is written like this:

Here are the limits to the right:

and to the left:

**Calculus:**
The derivative of \(Y\) with respect to \(X\) at \(A\) is written like so (only fill in \(A\) if you’re taking the derivative at a certain point):

\[
\frac{dy}{dx}
\]

The integral of \(Y\) with respect to \(X\) from \(A\) to \(B\) is written like so (leave \(A\) and \(B\) blank for an indefinite integral):

\[
\int_{a}^{b} y\,dx
\]

**Summation:**

\[
\sum_{i=1}^{n} X
\]
Scientific Notation:
A \times 10^{B} is denoted as follows:

Common Variables and Constants
The X and Y used in this guide are standard, as they resemble the X and Y axes. Variables will also often resemble a letter of the Gallifreyan alphabet. Here are some other common variables and constants:

\begin{align*}
\text{angle} & \quad \text{radius} & \quad \text{area} & \quad \text{perimeter} \\
\text{length} & \quad \text{time} & \quad \text{volume} & \quad \text{diameter} & \quad \text{e} & \quad \text{\pi} & \quad \varphi & \quad i
\end{align*}

Of course, these are only a few. Recommendations are welcome. If there’s anything that needs clarifying or anything I should add, email me at lorenzosherman@gmail.com.