LOG10

PURPOSE
Compute the base 10 logarithm of a number.

DESCRIPTION
The base 10 logarithm is the inverse of the function:

\[ y = 10^x \]  

(EQ 6-98)

That is, given the value of \( y \), the log is the value of the exponent. The input value must be greater than zero.

Logarithms are a commonly used transformation. The two primary reasons are to symmetrize a skewed data set or to reduce the magnitude of large scale numbers.

SYNTAX
\[
\text{LET } \langle y2 \rangle = \text{LOG10}(\langle y1 \rangle) \ \langle \text{SUBSET/EXCEPT/FOR qualification} \rangle
\]

where \( \langle y1 \rangle \) is a variable or a parameter containing decimal number(s);
\( \langle y2 \rangle \) is a variable or a parameter (depending on what \( \langle y1 \rangle \) is) where the computed base 10 logarithms are stored;
and where the \( \langle \text{SUBSET/EXCEPT/FOR qualification} \rangle \) is optional.

EXAMPLES
\[
\begin{align*}
\text{LET } A &= \text{LOG10}(14) \\
\text{LET } X2 &= \text{LOG10}(X1) \\
\text{LET } X2 &= \text{LOG10}(X1-4)
\end{align*}
\]

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
- LOG2 = Compute the base 2 logarithms of a number.
- LN = Compute the natural logarithm of a number.
- LOG = Specify logarithmic scales on either the X or Y axis.

APPLICATIONS
Data transformations

IMPLEMENTATION DATE
Pre-1987
PROGRAM

TITLE AUTOMATIC
PLOT LOG10(X) FOR X = .01 .01 9.9