

Babylonian Numeration System

This is a base-60 place value system: $60^0 = 1, 60^1, 60^2, 60^3, \dots$

Numerals are represented horizontally in decreasing place value order with the smallest place value (the ones) on the right and a space separating the place values.

There are two symbols: $\blacktriangledown = 1$ $\blacktriangleleft = 10$

To convert a Babylonian numeral to base-10 (Hindu-Arabic): sum the value of the symbols in each place and then multiply by the place value.

For example: The Babylonian numeral $\blacktriangledown\blacktriangledown \blacktriangleleft\blacktriangleleft\blacktriangleleft \blacktriangleleft\blacktriangledown\blacktriangledown\blacktriangledown$ is equivalent to the base-10 number

$$(1+1)*60^2 + (10+10+10+1)*60^1 + (10+10+1+1+1)*60^0 = 2 * 3600 + 31 * 60 + 23 * 1 = 7,200 + 1,860 + 23 = 9,083$$

They used the symbol \blacktriangleright for subtraction. For example, the numeral $\blacktriangleleft\blacktriangleleft\blacktriangleright\blacktriangledown\blacktriangledown\blacktriangledown$ represents $20 - 3 = 17$.

To convert a base-10 number to Babylonian we need to divide by powers of 60.

For example: Convert 7,573 to Babylonian:

Powers of 60		Face Value
$60^3 = 21,600$	Larger than 7,573 so not possible	
$60^2 = 3,600$	$7573 \div 3600 = 2$ with remainder 373	2
$60^1 = 60$	$373 \div 60 = 6$ with remainder 13	6
$60^0 = 1$	$13 \div 1 = 13$ with no remainder	13

Babylonian Numeral is $\blacktriangledown\blacktriangledown \blacktriangledown\blacktriangledown\blacktriangledown\blacktriangledown\blacktriangledown \blacktriangleleft\blacktriangledown\blacktriangledown\blacktriangledown$