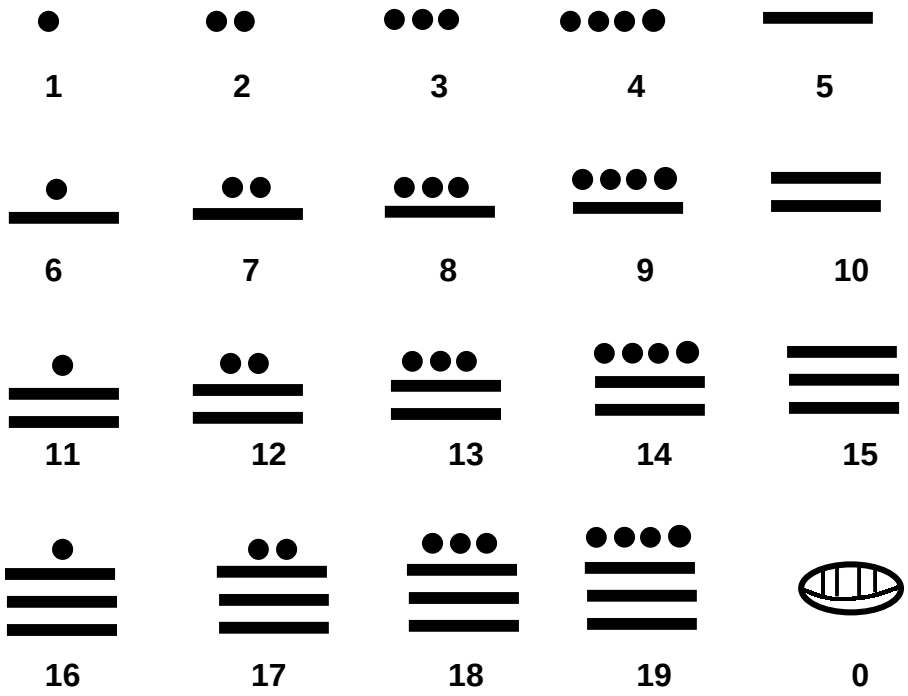
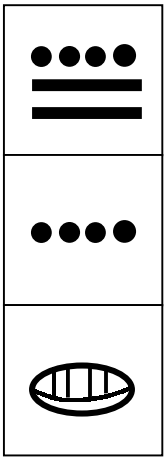
MAYA NUMBER SYSTEM

The Numbers:



How They Work:

The Mayan system is known as ***vigesimal*** (powers of 20), as opposed to our ***decimal*** system based on powers of 10. Below are two numbers expressed in powers of 20: $20^2 = 400$; $20^1 = 20$; $20^0 = 1$. Unlike our number system, Mayan numbers are arranged vertically. Each box represents a different power of 20, with the lowest place ($20^0 = 1$) at the bottom.

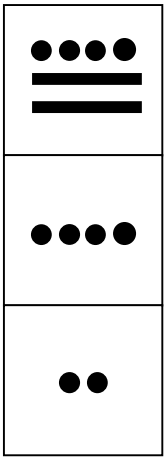


= 14 x 20^2 (400) = 5600

= 4 x 20^1(20) = 80

= 0 x 20^0(1) = 0

5680



= 14 x 20^2(400) = 5600

= 4 x 20^1(20) = 80

= 2 x 20^0(1) = 0

5682

For *normal* counting, the Maya used the following system:

 $11 \times 20^3 = 11 \times 8000 = 88{,}000$

 $5 \times 20^2 = \quad 5 \times 400 = 2000$

 $0 \times 20^1 = \quad 0 \times 20 = 0$

 $8 \times 20^0 = \quad 8 \times 1 = 8$

Sum = 90,008

Any number can be constructed this way. For larger numbers, just keep going with powers of 20. For example, anything larger than 19 X 8000 you can go to another place mark, $20^4 = 160{,}000$.

Note how we do it in powers of 10:

$9 \times 10^4 = 9 \times 10{,}000 = 90{,}000$
$0 \times 10^3 = \quad 0 \times 1000 = 0$
$0 \times 10^2 = \quad 0 \times 100 = 0$
$0 \times 10 = \quad 0 \times 10 = 0$
$8 \times 10^0 = \quad 8 \times 1 = 8$

Sum = 90,008

When counting ***time***, the system was slightly different. In this case the third place, instead of being ***400*** (20^2) became ***360*** . Clearly this was to make it easier to incorporate the solar cycle. Thus to write a date like 2000 (the Maya obviously didn't use our calendar, but let's pretend), they would write,

 5 X 360 = 1800 (Note: this would be 5 x 400 in the normal counting system)

 10 X 20 = 200

 0 X 1 = 0

Sum = 2,000