

# MAYA NUMBER SYSTEM

The Maya number system is very different from the system you use daily—the Maya used only three symbols to represent all numbers! They used a dot to represent 1, a line to represent 5, and a shell to represent 0. The Maya wrote their numbers vertically and used zero as a placeholder. Many believe that the Maya were the first people to use a symbol for zero.

The Maya used a place value system based on 20s, not 10s like the number system we use today. So the place values were multiples of 20s: 1s, 20s (20x1), 400s (20x20), 8,000s (20x400), and so on.



**HERE'S HOW IT WORKED:** Numbers 1 through 4 were written using a row of dots. The number 5 was written as a horizontal line. Numbers 6 through 19 were written using a combination of lines and dots, or 5s and 1s.


For example:

- 6 was written as one line with one dot above it: (5+1)
- 10 was written using two lines: (5+5)
- 19 was written as three stacked lines with a row of four dots on top of them: (5+5+5+1+1+1+1)

## MAYA NUMERALS









0	1	2	3	4	5	6	7	8	9	10
	•	••	•••	••••	—	—•	—••	—•••	—••••	==
11	12	13	14	15	16	17	18	19	20	21
—•	—••	—•••	—••••	===	===•	===••	===•••	===••••	• —••••	• •

For numbers greater than 19, the symbols were arranged vertically in place values, with the greatest value on top. Each place value was 20 times greater than the one that came before it. Look at the examples below.







Maya Place Values	8,000			
	400		•	=====
	20	=====	•	
	1	• • •		••• =====
Value of Number	303	420	4,008	

- 303 was written as three lines in the 20s place, and three dots in the 1s place:  $((5+5+5) \times 20) + (1+1+1)$
- 420 was written with one dot in the 400s place, one dot in the 20s place, and one shell in the 1s place:  $(1 \times 400) + (1 \times 20) + (0 \times 1)$
- 4,008 was written as two lines in the 400s place, one shell in the 20s place, and three dots above a line in the 1s place:  $(10 \times 400) + (0 \times 20) + (8 \times 1)$

**PART ONE:** Find the solution to each equation below. Write your answers using Maya numerals.

 +  =
 x  =
 +  =
 -  =

**PART TWO:** To find the value of greater Maya numbers, multiply the value of the Maya numeral by the value of its place. Then add the values together. Calculate the value of the Maya numbers presented below.

Maya Place Values	8,000	•			• •
	400		• • •		•
	20	• • •			=====
	1	• •			• • •
	Value of Number				