



# Maya Number Stele

**Mission:** The king of Tikal needs numbers carved on a new stele, and only you know the Maya number system! Use dots, bars, and the shell for zero to carve each number. Discover why the Maya system counts by 20s.

**Big question:** How did the Maya number system work, and why was the concept of zero a major achievement?

## ★ Warm-up: Place value

Think about our base-10 system.

What is the 3 worth in 307? ✓ **300.**

What does the 0 do in 307? ✓ **Holds the tens place empty.**

### Key vocabulary

|                    |                                                 |
|--------------------|-------------------------------------------------|
| <b>Base 20</b>     | A number system that groups by twenties.        |
| <b>Place value</b> | A digit's value depends on its position.        |
| <b>Placeholder</b> | A symbol (like zero) that holds an empty place. |
| <b>Stele</b>       | A carved stone monument.                        |

## 1 Box 1

### Carve 8

In the simulator: Carve the number 8.

How did you make 8?

☐ One bar and three dots   ☐ Eight dots   ☐ Two bars

✓ **One bar and three dots**

### Carve 20

In the simulator: Carve the number 20.

How is 20 written in Maya numbers?

☐ One dot in the 20s level and a shell (zero) in the 1s level   ☐ Four bars   ☐ Twenty dots

✓ **One dot in the 20s level and a shell (zero) in the 1s level**

## 2 Box 2

### All missions

In the simulator: Carve all five numbers, including 365.

What did you notice?

## 3 Box 3

### Decode

A stele shows 2 dots in the 20s level and 1 bar + 1 dot in the 1s level. What number is it?

Answer: \_\_\_\_\_ ✓ **46**

Show your thinking:

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#### 4 Box 4

##### Why zero?

Why was a symbol for zero so important?

- ☐ It holds an empty place, so large numbers can be written clearly   ☐ It means "nothing happened"
- ☐ It was only decoration

✓ It holds an empty place, so large numbers can be written clearly

#### 5 Box 5

##### Explain the system

Teach the Maya number system to a younger student.

##### The symbols

Look for: Explains dots; Explains bars; Explains zero; at least 10 words

##### The levels

Look for: Explains base 20; at least 10 words

##### Why it mattered

Look for: Connects to Maya achievements; at least 10 words

#### 6 Box 6

##### Legend: the 400s Legend only

How would you find the value of 1 dot in the 400s level, 0 in the 20s, and 0 in the 1s? What number is it?

Answer: \_\_\_\_\_ ✓ 400

#### Exit ticket: answer the big question in your own words

How did the Maya number system work, and why was the concept of zero a major achievement?

Look for: Maya numbers used dots (1), bars (5), and a shell (0), stacked in levels worth 1, 20, and 400 (base 20). Using zero as a placeholder let them write very large numbers for calendars and astronomy, an idea many civilizations did not have.

#### # Completion codes

Students see a code like **ABC-I3** when they finish. The first part must match below. The letter is the level (E = Explorer, I = Investigator, L = Legend), and the number at the end is how many stars they earned.

| Level                                                                                            | Code starts with |
|--------------------------------------------------------------------------------------------------|------------------|
|  Explorer     | GAS-E            |
|  Investigator | 12P-I            |
|  Legend       | 1VR-L            |

#### Watch for these misconceptions

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- "The Maya, Aztec, and Inca lived at the same time and place." They were centuries and thousands of miles apart.
  - "The Maya disappeared." Millions of Maya people live in Mexico and Central America today.
  - "The Spanish won only because of weapons." Disease and alliances with other Native groups mattered most.