# MAYAN 🛕 MATH

name: _____   partner: _____

Introduction: The Mayans are known for many of their advanced technological, cultural and scientific innovations. The Mayan calendar, for instance, is thought to be one of the most advanced time-keeping systems ever invented. The Mayans also had their own written language and number system. They are known as the first civilization to consider the concept of "zero". In this lesson, we will explore the Mayan number system.

First of all, in order to explore number systems, it helps us to examine our own. The number system that we use today, the Hindu-Arabic number system, is used throughout the world. It is a base-10 number system, meaning that our place-values graduate by a degree of 10.

For example, let's dissect the number:

1,348

1,000 + 300 + 40 + 8

1 x 1,000   +   3 x 100   +   4 x 10   +   8 x 1
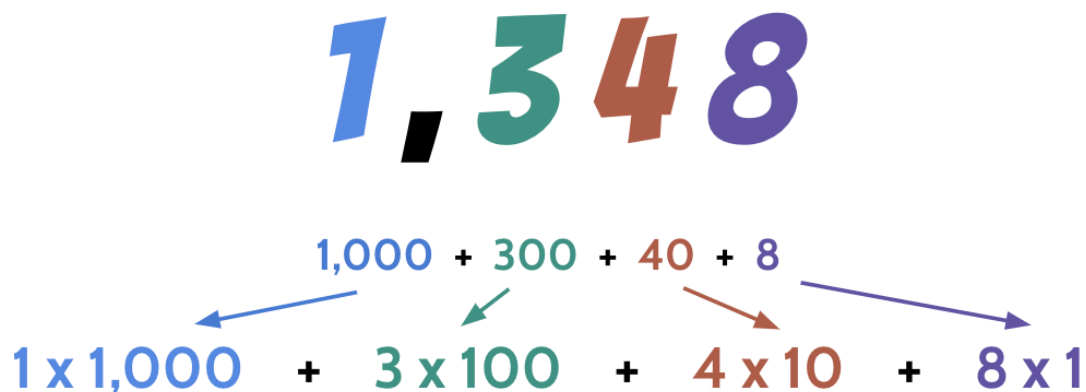
As we recall, each digit in 1,348 actually represents a different value. For 1,346 the **1** represents how many 1000s there are, the **3** represents how many 100s, the **4** is how many 10s and the **8** how many 1s. Keep this in mind as we try and understand the Mayan number system.

Part 1: Cracking the code (numbers 1-19)

Directions: you have been given only ten Mayan numbers and their corresponding values. Below are the first 5. Can you determine how the Mayans counted using the clues below?

0   1   4   6   19

What symbols do you see? What do you think each symbol represents?   The symbol that you see that might look like a canoe, is actually called a "cowry shell"

Is there a method for how these numbers are written? Write down your observations.

Think you've got it? What would the numbers 7, 11, and 18 be?

Part 2: Cracking the code (numbers 19 and beyond)

Now let's see the next 5 numbers. Hmm... things just got a little more interesting!
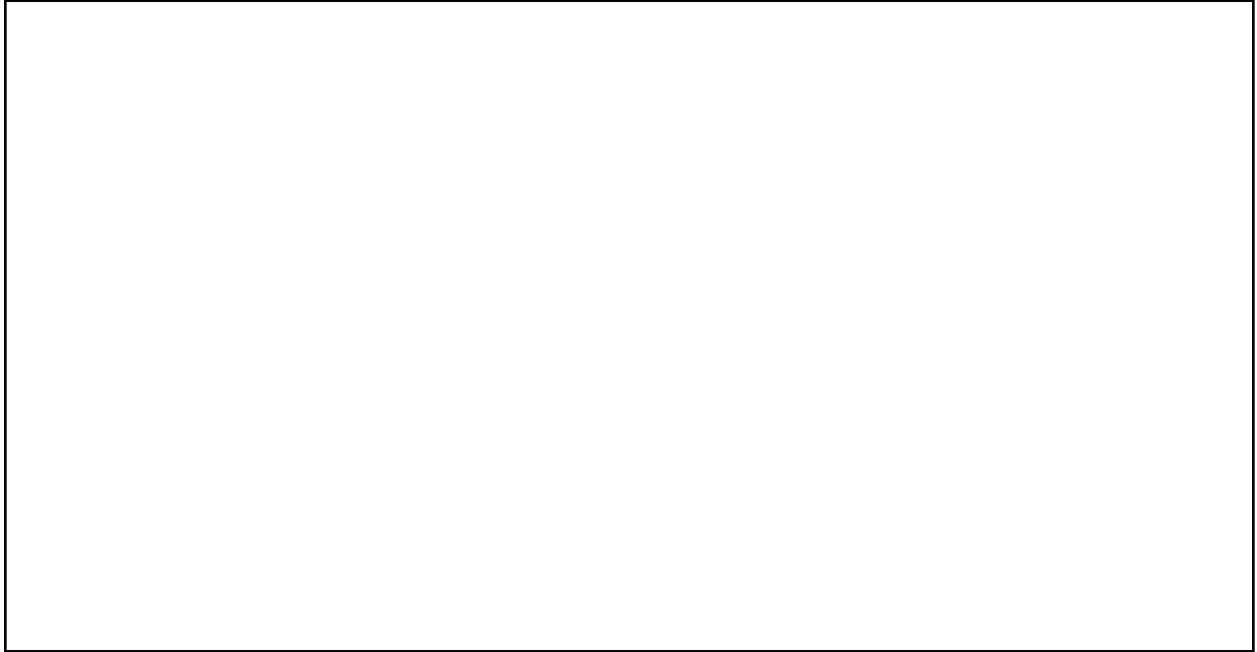

20   55   249   819   1212
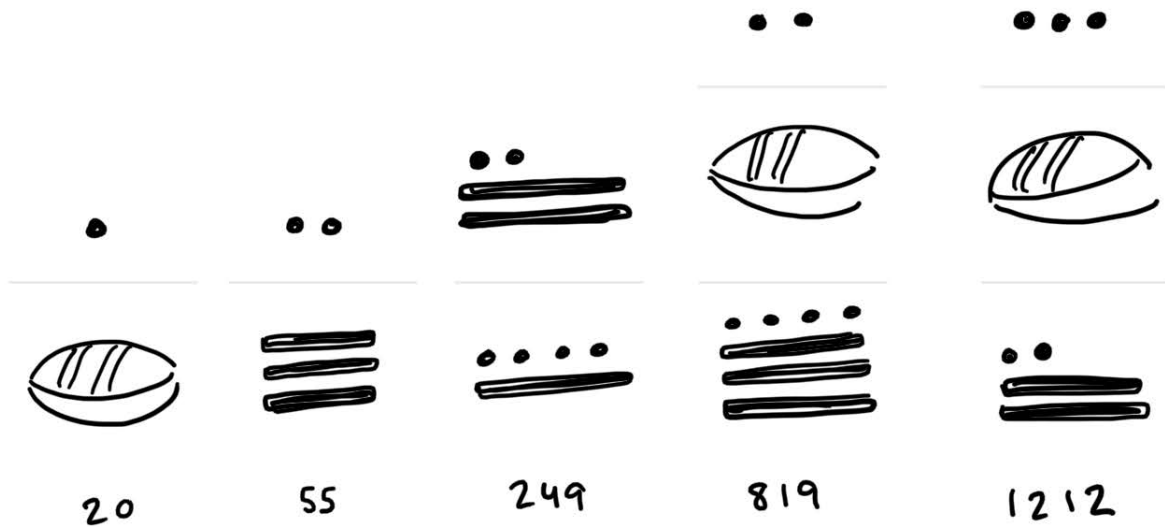
What element was added with the second set of numbers?

What do you think this additional element means for the value of each number?

Once you think you have cracked the code, move on to part 3...

Part 3: Write your own Mayan numbers!

First of all, can you write a brief description of how the Mayan number system works? Be sure to include your ideas on what each symbol represents and how place-value works.

Let's test it out! Create the following Mayan numbers:

= 5	= 11	= 30
= 35	= 300	= 335
= 401	= 1221	**Create your own!** =

What is the highest number you can write with just 2 levels or places? What about 3?

Part 4: Make up your very own number system!

Can you make your own, unique, numerical system? Use a different place-value system than the Mayans and a different place-value system than our own (base 10)! Be sure to explain what each symbol represents and how place-value works.

Extension: Can't stop thinking about number systems?

Computers have their very own number system called "binary numbers". Can you figure out how computers count? Option to do some research and create a 5-min presentation for your classmates on the binary number system for our next class!