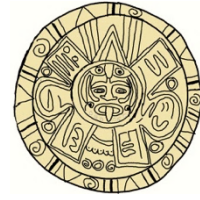












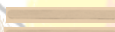



Counting the Mayan Way (Activity 1)



Did you know the Mayans invented the zero (0)? Yes, they did!

The Mayans were amazing mathematicians. This civilization used complicated systems to keep track of time and quantify things. While their systems might seem complicated to the untrained eye, they were easy to understand because they would use simple items that were common and available in their environment to represent everything. Look at the table below to learn how the Mayans represented numbers with beans, twigs, and shells.

Our numbers (Arabic numbers)	0	1	2	3	4	5
Mayan representation						
Our numbers (Arabic numbers)	6	7	8	9	10	11
Mayan representation						

Pre-activity preparation for the adult:

It is a good idea that you take a look at how the Mayan numbers are represented above before introducing it to the child. This will prevent confusion and will make the activity smoother and more fun.

What are we learning?

Objectives. Your child can:

- Learn to count and represent the numbers with objects. This will also support your child's ability to understand one-to-one correspondence.
- Understand that the grouping of objects represents bigger numbers.
- Learn to represent numbers in Base 10 up to 100 using home available materials.

Activity:

Practice counting and representing quantities with your child by using the Mayan representation of numbers. You do not even need to break the piggy bank buying expensive manipulatives for this hands-on activity, it may all be in your kitchen or backyard already!

Who will benefit from this activity?

Anyone can do this activity, it is particularly appropriate and fun for younger children (ages 3-6).

What do we need?

Materials. To do this activity you will need:

- Printout of Mayan numbers
- Uncooked shell pasta
- Dry uncooked Beans
- Twigs or craft (popsicles) sticks



How to do it?

Instructions:

1. Talk to your child about how the Mayans represented numbers. They had three items that would help them count. A shell that represents the “0” (zero), a bean that represents “1” (one), and a twig that represents “5” (five). On a piece of paper, you can draw a grid like the one below. Write the numbers from 0 to 11, with one number in each square of the grid.

2. You and your child will use the grid to represent each number up to 10 with the Mayan representation. The first step is to count the beans one by one up to 20, you may want to extend the activity by making groups of 5 while counting. This will help your child have an understanding that each number symbol corresponds to an exact quantity of beans.

3. Now that your child has done a one to one correspondence representation of each number symbol with the beans, you will talk about grouping. Talk to your child about how Mayans would count to 4 with beans and then switch to twigs to represent groups of 5. So, you would trade 5 beans for 1 twig/stick, then keep adding beans to represent a number bigger than 5, so the number six will be a stick and a bean, 7 will be a stick and two beans, and so on. Have fun counting and representing number the Mayan way!



0	1	2	3	4	5
6	7	8	9	10	11

For more math activities and other learning tips go to: dreme.stanford.edu/mathfest

Matching and Memory Game the Mayan Way

(Activity 2)

Pre-activity preparation for the adult:

Take a look at how the Mayan numbers are represented (see figure below) before introducing it to the child. This will prevent confusion and will make the activity smoother and more fun.

Activity: Practice recognizing numbers and matching figures with your child by using the Mayan representation of numbers. Keep in mind that Mayans had a way of representing quantities different than ours

Who will benefit from this activity?

Everyone can do this activity, it is particularly appropriate for children (ages 3 and up).

What do we need?

Materials: Print the pages below (materials to print) in cardstock paper (double sided, with the numbers and Mayan symbols in one side and the DREME logo in the back) and cut the squares. There are 8 extra cards with a drawing of the center of the Mayan calendar. You can add these to add color to the game.

Matching Game

Let's try a matching game! It's simple. Use the Mayan Memory Card deck to match the Arabic numerals (these are the numbers we use in a day to day basis: 1, 2, 3, 4, 5...) with the Mayan Symbols. You can line up the numbers and find the Mayan symbol that corresponds to it. You can also do the opposite, where you line up the Mayan symbols and bring the Arabic number in to match with the symbol. Use the color calendar faces to match those cards with the right color pair.

Memory Game

This memory game is a great way to practice number recognition remembering. Young children love to play this game because they have a great memory and some of them are often better at remembering the location of pictures than adults. You can also use the color calendar faces cards when playing this game. To make the game easier you can start using just the first 10 numbers (0-10 plus two color pairs), then move to the bigger numbers (11-19 plus two color pairs. Then step it up but doing all numbers, that would be a high difficulty round.

The rules are simple. The one to collect the most matching pairs wins!

1. First, lay the cards with the numbers and Mayan symbols facing down and scramble the cards. Then align them in rows and columns.
2. The person whose birthday is coming up sooner goes first, then the person that plays next will be the one to the right side of the person that went first, and so on.
3. On their turn, each player will turn two cards over (one at a time) and keep them if the cards match (for example the number 2 and two dots would make a pair, the 0 and the shell will match and make another pair).
4. Every time a player matches a pair, that player keeps the cards and gets to play another turn. If the player does not match the cards, those cards get turned over (face down) again and the next player takes a turn.
5. The goal is to remember where each card is. The winner with the most pairs when the cards are all gone.

Mayan Number System

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

The Mayans did not represent numbers the same way we do now. They represented quantities by symbols. Look at a simplified Mayan representation of numbers above and talk to your child about how their numbers were represented.

Adding the Mayan Way (Activity 3)

Pre-activity preparation for the adult:

It is a good idea that you take a look at how the Mayan numbers are represented above before introducing it to the child. This will prevent confusion and will make the activity smoother and more fun.

What are we learning?

Objectives. Your child can:

- Learn to count and represent the numbers with objects. This will also support your child's ability to understand one-to-one correspondence.
- Understand that the grouping of objects represents bigger numbers.
- Learn to represent numbers in Base 10 up to 100 using home available materials.

Activity: Practice addition with your child by using the Mayan representation of numbers. The Mayans represented quantities differently than we do. They used different symbols and had a base 20 system, not a base 10 system. We will use their counting methods but using our own base 10 system. To talk to your child about how Mayans represented their numbers, look at the guide at the end titled Mayan Numbers.

Who will benefit from this activity?

Anyone can do this activity, it is particularly fun for younger children (ages 5-7).

What do we need?

You can teach your child to add with simple materials that you may already have at home.

You will need:


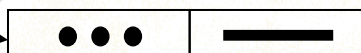
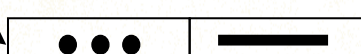
Materials. To do this activity you will need:

- A printout of the addition cards attached (in materials to print), or index cards where you can write simple additions (5 + 2, 3 + 4, etc.)
- A sheet of paper where you can draw a grid like the one in the instructions below.
- Uncooked shell pasta (or other items like bottle caps)
- Dry uncooked Beans (or other items such as cheerios)
- Twigs or craft (popsicles) sticks (or other straight and long items such as straws)



● = 1	— = 5	● = 0
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Instructions:

1. Take a piece of paper and divide it into two columns and pick an addition card (ex. 3 + 5).
2. Use the shells, beans, and sticks to represent the numbers on the card (see the guide to Mayan Symbols)
3. Place the number on the left of the addition on the left column (ex. 3). 
4. Place the number on the right of the addition (addend) on the right column (ex. 5). 
5. Now move the number on the lower right to the lower left. Rearrange the materials on the left side the Mayan way (see guide to Mayan symbols). 
6. Now count the combined symbols on the right to see the answer to the addition!

Memory Cards to print for Activity 2: print double sided

0	1	2
3	4	5
6	7	8
9	10	11

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

12

13

14

15

16

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D R E M E

D R E M E

D R E M E

D R E M E

D R E M E

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D R E M E

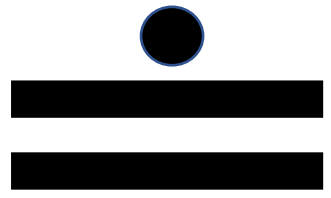
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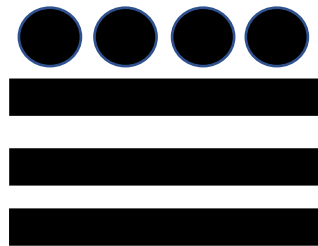
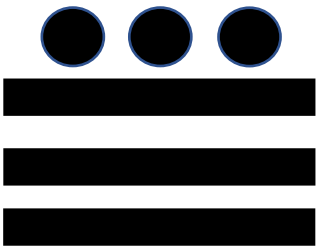
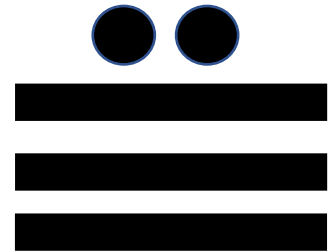
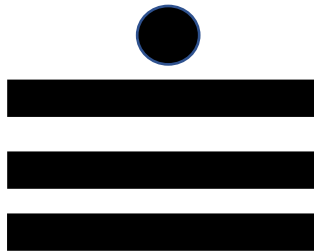
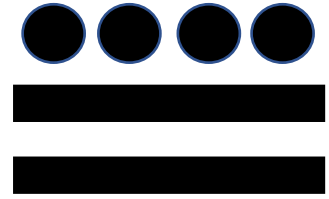
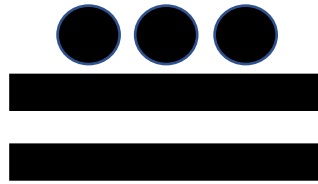
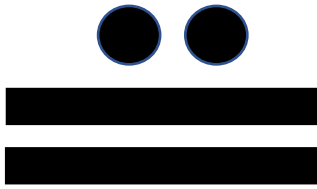
D R E M E

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D R E M E
























D R E M E

D R E M E

D R E M E

D R E M E

Guide to Mayan Symbols

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

Addition Cards



$$6 + 5$$



$$8 + 5$$



$$7 + 8$$



$$7 + 6$$



$$5 + 9$$



$$3 + 6$$



$$10 + 7$$



$$8 + 6$$