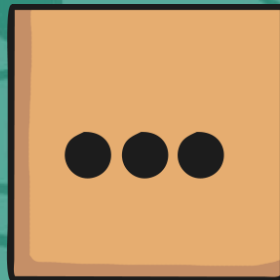


# Maya Number System



# Aim

- I can understand how the Maya number system works.

# Success Criteria

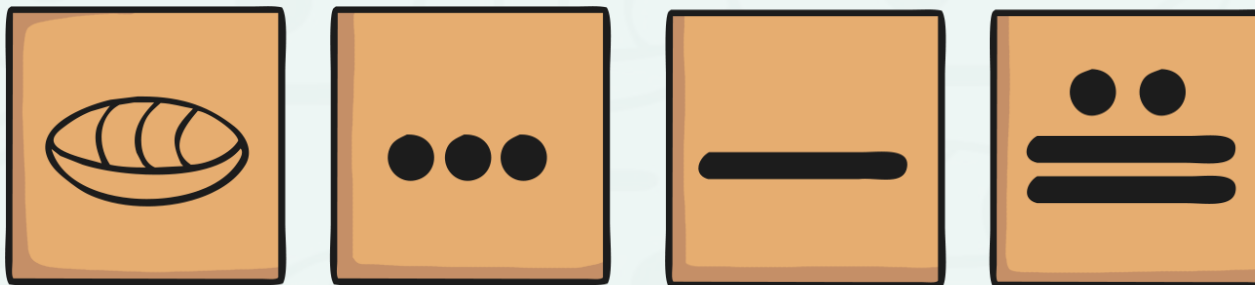
- I can read numbers using the Maya symbols for 0, 1 and 5.
- I can solve problems and write numbers using the Maya symbols for 0, 1 and 5.

# The Maya and Numbers

The Maya had a good understanding of numbers and they developed a complex number and counting system which was advanced for their time.

They were one of only two cultures in the world to develop the concept of zero and this allowed them to develop a place value system where a zero could act as a place holder in large numbers. This enabled the Maya people to distinguish between numbers like 23 and 203, where the placement of the zero determines the value of the digit 2 as 200. This is a very important concept which many civilisations did not understand until much later than the Maya.

The Maya people used symbols to represent their numbers. Let's have a look at how it worked.



# Number Symbols



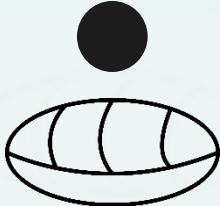
The Maya people used just three symbols in their number system. These are thought to represent items that the Maya people might have first used to count with such as pebbles, sticks and shells.

Look at the following Maya numbers. Can you work out what numbers the symbols represent and how the system works?

 $= 7$

 $= 18$

 $= 11$

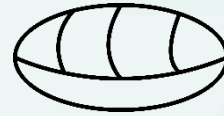
 $= 20$

# Shells, Sticks and Pebbles



## Questions

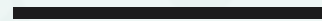
1. Did you figure it out?
2. What have you learnt about the way the numbers are written?
3. What other Maya numbers can you write?
4. How is the Maya number system similar and different to our own?



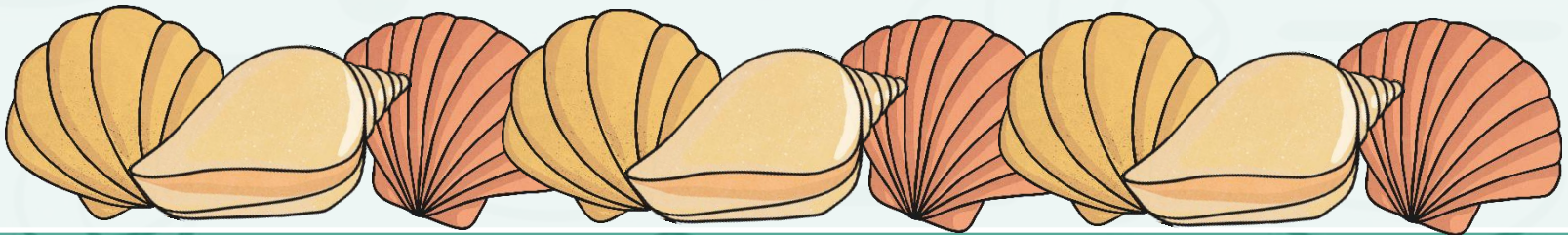
= 0



= 1



= 5























# Maya Numbers

1	●
2	●●
3	●●●
4	●●●●
5	—
6	● —
7	●● —
8	●●● —
9	●●●● —
10	==

11	● ==
12	●● ==
13	●●● ==
14	●●●● ==
15	===
16	● ===
17	●● ===
18	●●● ===
19	●●●● ===

# Maya Numbers

20		30	
21		31	
22		32	
23		33	
24		34	
25		35	
26		36	
27		37	
28		38	
29		39	

The Maya people used a base 20 number system, so after number 19 multiples of 20 were written above the bottom number. This is called a vigesimal positional number system.



# Working it Out

Here are a couple of examples of how the system works.

$$\bullet \bullet = 2 \times 20$$

$$40 + 8 = 48$$

$$\underline{\bullet \bullet \bullet} = 8$$




Number of 20s		$8 \times 20 = 160$	<b>167</b>
Number of 1s and 5s		$= 7$	

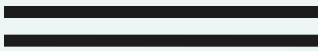





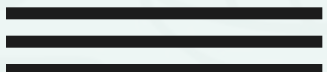


# Larger Numbers



Using the information you have learnt, can you work out what these larger numbers are?

	40
	$= 58$
	18

	200
	$= 218$
	18

	
	320
	$= 338$
	18

# Maya Calculations



Now you know all about Maya numbers are you able to solve this calculation?

Write down the answer and show me. Remember to use the Maya symbols!

The image shows a Maya calculation within an orange border. On the left, there are three black dots arranged horizontally above three parallel horizontal bars. To the right of this is a plus sign. Further right is a single black dot above a single horizontal bar. To the right of this is an equals sign. On the far right is the number 24 in a large, bold, orange font.

Now write 3 calculations of your own and challenge your partner to solve them.

The calculations can be addition, subtraction, or a mixture.

Use the numbers from your activity sheet to help you write the calculations.