




















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


























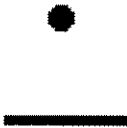
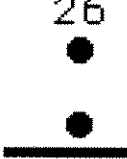
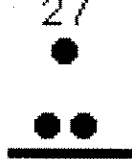
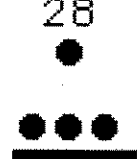
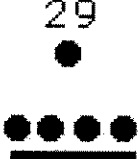
Mayan Math

The Mayans devised a counting system that was able to represent very large numbers by using *only* 3 symbols, a dot, a bar, and a symbol for zero, or completion, usually a shell. The chart above shows the first complete cycle of numbers. Like our numbering system, they used place values to expand this system to allow the expression of very large values. Their system has two significant differences from the system we use: 1) the place values are arranged vertically, and 2) they use a base 20, or *vigesimal*, system. This means that, instead of the number in the second position having a value 10 times that of the numeral (as in 11 - $1 \times 10 + 1 \times 1$), in the Mayan system, the number in the second place has a value 20 times the value of the numeral. The number in the third place has a value of $(20)^2$, or 400, times the value of the numeral. This principle is illustrated in the chart below.

$(20)^4$		=	3 x 160,000	=	480,000
$(20)^3$		=	10 x 8,000	=	80,000
$(20)^2$		=	6 x 400	=	2,400
$(20)^1$		=	13 x 20	=	260
$(20)^0$		=	17 x 1	=	17
					562,677

Maya Math!

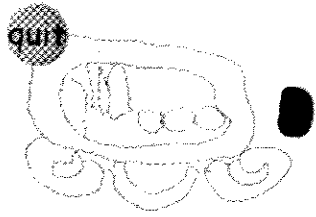
Name _____

0 	1 	2 	3 	4 
5 	6 	7 	8 	9 
10 	11 	12 	13 	14 
15 	16 	17 	18 	19 
20 	21 	22 	23 	24 
25 	26 	27 	28 	29 
Mayan positional number system				

FOLLOWING THESE PATTERNS,
HOW WOULD YOU WRITE THE NUMBERS

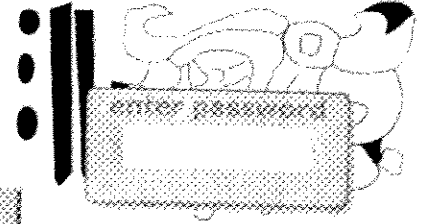
30 – 40?

(Show on the back of this sheet)

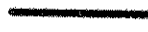


Mayan Numbers

numbers less than 120



name..... **change** **print**



Base Systems

4's ville = Base 4 system R=64 G=16 B=4 Y=1

$$(\quad \times 64) + (\quad \times 16) + (\quad \times 4) + (\quad \times 1)$$

$$250 = 3 (3 \times 64) \quad 3 (3 \times 16) \quad 2 (2 \times 4) \quad 2 (2 \times 1)$$

$$250 = 192 + 48 + 8 + 2$$

Maya = Base 20 system
written vertically

• = 1 — = 5 ⊖ = 0

$$_ \times 8000 +$$

$$_ \times 400 +$$

$$_ \times 20 +$$

$$_ \times 1$$



$$12 \times 20 = 240$$



$$10 \times 1 = 10$$

$$\underline{\underline{250}}$$

Base 10 = Base 10 system
written horizontally

$$(\quad \times 1000) + (\quad \times 100) + (\quad \times 10) + (\quad \times 1)$$

$$250 = (2 \times 100) + (5 \times 10) + (0 \times 1)$$

$$250 = 200 + 50 + 0$$