

Alien Counting

You need: a classmate

ACTIVITY ONE

The Cartoks are an alien race. They have three fingers on each hand, and they use these for counting.

1. Some Cartoks were travelling through space when they saw a planet with all its moons in view.



They recorded what they saw in their space log:

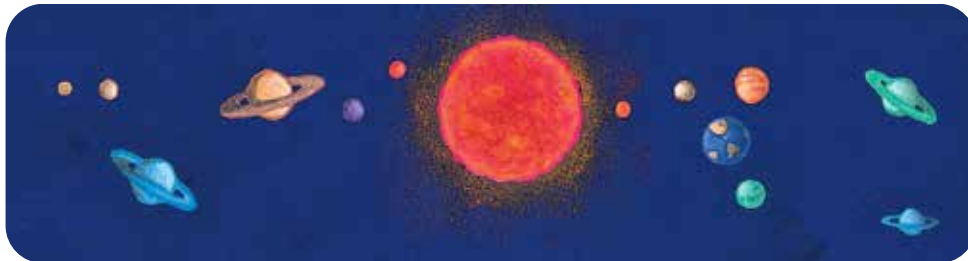
Planet	Number of moons
unknown	13

Earthlings have 10 fingers. Their record would read:

Planet	Number of moons
unknown	9

Discuss with a classmate how both records of the number of moons could be right. Explain your reasoning, using diagrams or numbers.

2. The Cartoks later passed a solar system of planets around a red sun.



This time, their record showed that there were 21 planets around the sun.

Red sun	Number of planets
unknown	21

How did the Cartoks get that when an Earthling would count 13?



A Cartok



3. 11 in Earthling numbers would be 15 in Cartok counting, one lot of 6 and five 1s. (This is usually written as 15_6 , to show the base structure.)
Change the following Earthling numbers into Cartok counting:
- a. 8 b. 17 c. 26 d. 30

4. The Earthling counting system uses the following place values:

1	10	100	1 000	10 000	100 000	1 000 000	...	
that is,	10^0	10^1	10^2	10^3	10^4	10^5	10^6	...

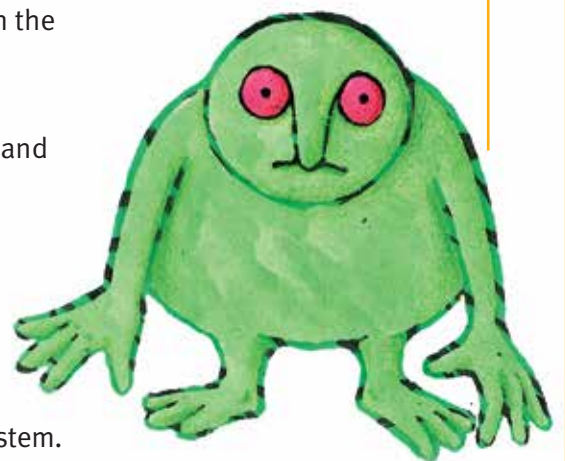
Complete the following table to show the Cartoks' place values in Earthling counting.

1	6	36					...
that is,	6^0	6^1	6^2				...

5. Change the following Cartok numbers into Earthling numbers:
- a. 43 b. 52 c. 124 d. 1 253

ACTIVITY TWO

- The Vanans are another alien race. They have four fingers on each hand and have developed their counting in the same way as Earthlings and Cartoks. If they saw the same systems as the Cartoks did in **Activity One**, questions 1 and 2, how many moons and planets would they have counted? Explain your answer.
- Translate the Earthling numbers in **Activity One**, question 3, into Vanan numbers.
- Invent another alien race and their alien counting system. Ask a classmate to use your system to describe some Earthling numbers.



A Vanan alien

ok alien

