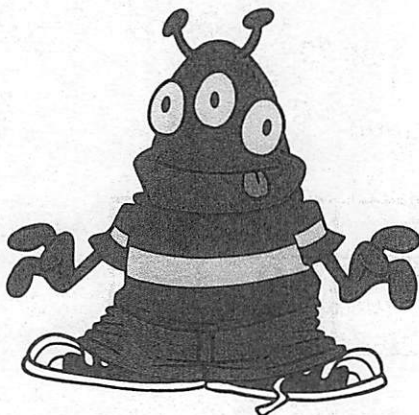


Level 1

1) A Septon said that he had 100 rocks. How many rocks does he have in base 10?

2) A Septon said that he has 3 eyes. Does that mean he really has 3 eyes in base 10?



3) A Septon who visited Earth used an Earth scale and found that he weighed 125 pounds. He is horrified that he lost so much weight. Translate 125 pounds base 10 into base 7.

4) How many fingers would you guess a Septon has?

5) What is the base 10 number 100 in base 7?

Level 2

1) Fill in the missing columns for base 2.

?	?	?	?	16	8	4	2	1

2) Change the base 10 number of 25 into base 2.

Computers use base 2. This is my favorite base so be very careful when you do these problems.

3) Change the base 2 number 1000 into base 10.



4) Write the first 9 columns for base 5.

?	?	?	?	?	?	?	?	?

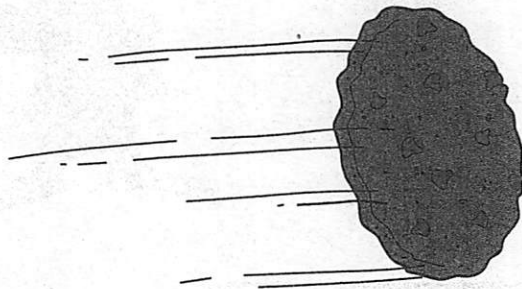
5) Change the base 10 number 100 into base 5.

Level 3

1) A Septon said that he has a collection of 1,000,000 stones in his house. How many stones is that in base 10?

2) If someone has \$1,000,000 in base 2, how much money does she have in base 10?

3) If a person from Septon ate .1 of their cookie, what fraction of the cookie did they eat using base 10?



4) In base 10 the number 25.12 actually means $20 + 5 + 1/10 + 2/100$. What does the base 7 number 25.12 mean?

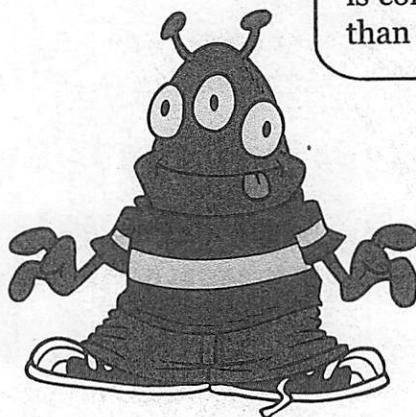
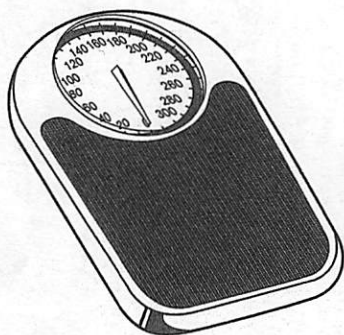
5) A Septonian said he had eaten .5 of his cookie while an American said he had eaten .5 of his cookie. Who ate more? Why?

Einstein Level

1) In base 10, the number $.11111\dots$ approaches $1/9$.
What does $.1111111$ base 2 approach in base 10?

2) A Septonian won the lottery in the United States and won \$1,000,000. How many dollars is that in base 7?

3) A Septonian said that his exact weight is 250.346 pounds (base 7). Translate this into base 10.



There is no way that this scale is correct. I weigh a lot more than what it is reading!!

Use the following story for problems 4 and 5:

A visitor from the planet Badluckton needs to learn the counting system that is used on Earth. He is having a problem because Badlucktonians use a base 13 counting system while people on Earth use a base 10 counting system. In addition, a number of people from Earth are going to visit Badluckton and need to learn how to work in a base 13 system.

We will need to design 3 new digits for base 13:

10.....#

11.....&

12.....*

4) If each Badlucktonian has 13 fingers, how would they express that number in base 13?

5) Change the base 10 number 1000 into base 13.