

Rat pow college essay



**ASSIGN
BUSTER**

Ian deGrouchy Mrs. Psitos Math IMP 2H 18 December 2007 Growth of Rat Populations This POW is about the growth of a rat population over a year. Two rats, one male and one female, are put on an island that has ideal conditions for rats.

The female rat has a litter of six rats the first day, and will have a litter every forty days after that. There are three important things to remember, and they are that the number of rats in every litter is six, three females and three males. Secondly, every female born on the island will have her first litter 120 days after she is born, and she will have a litter every forty days thereafter. Lastly, no rats will die in the first year. I first decided to make a chart because I knew that I needed to keep track of the number of female rats having litters, the number of total rats born, and the number of female rats born that can have litters before the end of the year.

This is what the chart looked like:

Day	Number of rats having litters	Total number of rats	Number of female rats born that can have litters before the end of the year
1	1	6	1
41	1	16	1
81	1	26	1
121	4	42	4
161	7	63	7
201	10	90	10
241	13	126	13
281	17	186	17
321	21	258	21
361	28	380	28
401	36	540	36

The days in the chart go up by forty because those are the only days that rats are being born. The lines represent when the numbers of females born 120 days earlier are able to have their own litters. For example, 120 days after the first litter is born, on day 121, the number of females able to have litters goes from one to four. This is because in the first litter, there were three females born. Another example is, on day 361 the females that were born on day 241 are able to have their own litters. This means that the amount of females able to have litters goes from 73 to 139 because I added the new 66 females.

The last three dates have zeros in the last column because the females that were born on those days would not have litters by the end of the year. To get the numbers in the third column, I multiplied the second column number by six. I did this because since those are the number of females having litters, and each female has six rats in each litter, then I would multiply the total number of females having litters by six. For example, on day 241 there are 22 females having litters.

So, I multiplied 22 by 6 and got that total number of rats born that day was 132. Then, to find out the number of females, I divided the total number of rats born by two because half of the litters are females. So, on day 241, there are 66 females born that day because half of 132 is 66. After I wrote the chart, I was able to come to a solution for the POW. I added the number of rats born each day and got 1, 806.

Then, I added 2, for the original rats, and got an answer of 1, 808 rats will be on the island. To evaluate this, I thought about a few questions, which are:

- Did I consider this educational, and what did I learn from it?
- How would I change the problem to improve it? Did I enjoy the problem?
- Was the problem too hard or too easy? I did not think this POW was very educational because it really did not have much to do with the math that I have learned in this unit so far. This POW only reinforced my organizational skills, as well as my table skills. To change this problem, I would change up the days. This means that I would make each rat have a litter on different days. I did enjoy working on this problem because it was fairly easy once I made a chart.

However, I do think that this is a good POW because it is relatively hard to write.