Name:

Date:

Student Handout 2:
Estimating the Carrying Capacity

For this exercise, you will be using beans and a "habitat" (the box with the grid in it) to estimate the carrying capacity of rabbits in a given environment. You will be working in groups. You will need to graph your results in order to determine the carrying capacity. Follow the directions below.

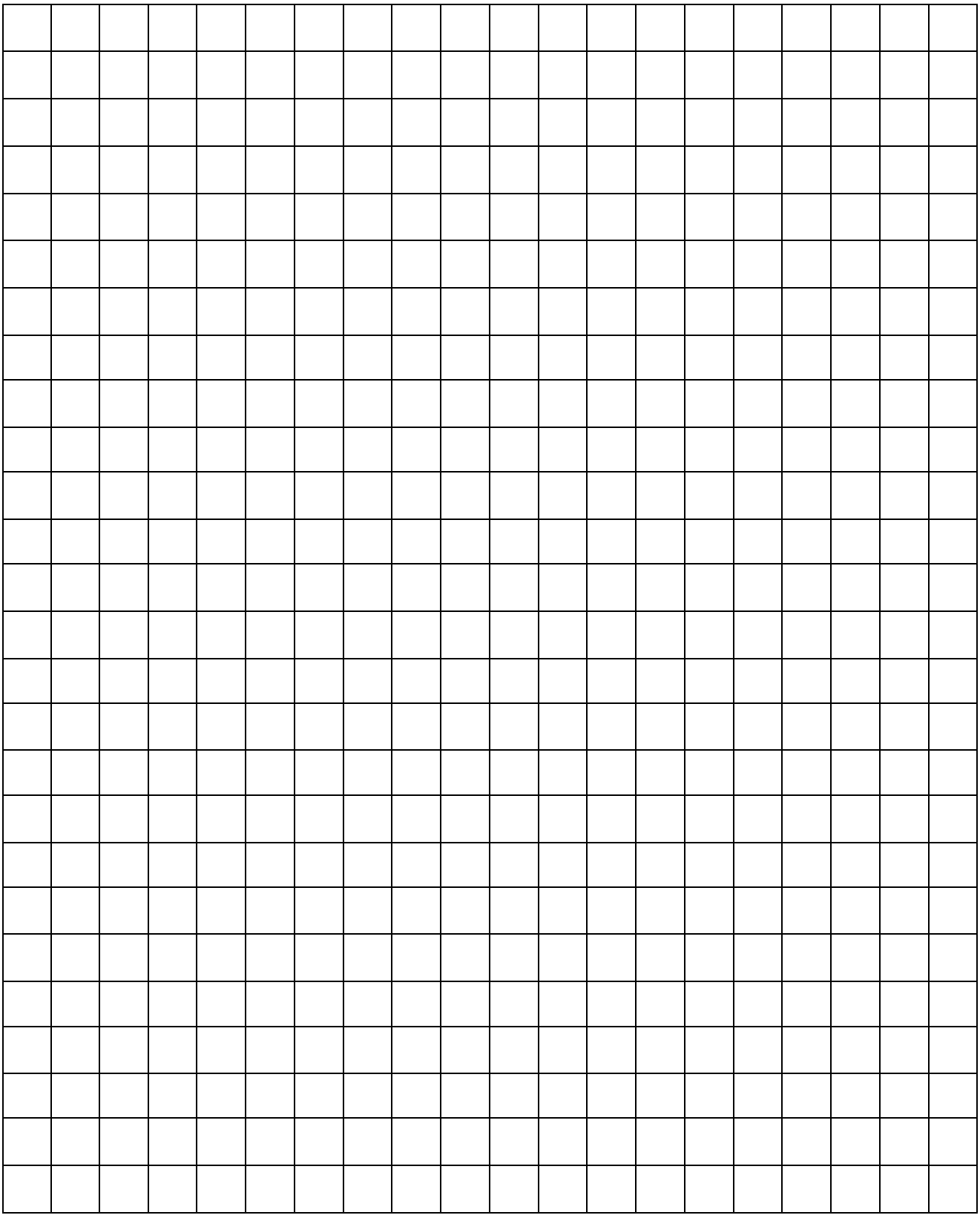
Procedure

1. Count out 25 white beans (which represent the rabbits) and place them in the cup provided for you.
2. Randomly dump the "rabbits" onto the grid from a height of about 1 foot.
3. If five or more rabbits occupy a square, remove all of them from that square. This represents overpopulation of the environment (there were not enough resources to support them all) and that means that the rabbits have died.
4. If two, three or four rabbits occupy a square, add a bean to that square for each one there (for example, if there are 2 beans in a square, add two more beans, if there are three, add three more, if there are four, add four more). This represents reproduction. The overpopulation and death rule doesn't apply to these yet (they are babies and won't eat much or take up too much space).
5. If there is only one rabbit in a square, they survive to the next round but don't reproduce because rabbits cannot reproduce without a mate.
6. Now count the number of rabbits left on the grid and record the population for the next round in the data table below.
7. Gather up all of the beans on the grid (the population number you recorded in #6), place them into the empty cup, and start over with step #2.
8. Repeat the above process for eight rounds. Each of these rounds represents a year. Record the total population present at the end of each round.
9. On the graph paper provided, graph the results from your data table with Population of rabbits on the y-axis and Time on the x-axis (let each round represent one year).
10. Estimate the carrying capacity of your population and indicate it on your graph.

Data table

Round	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Population	**25**								

Population of Rabbits



Time in Years

Questions:

1) What was your carrying capacity?

2) In the real world, the population of your rabbits would also fluctuate over time. What could be some causes for this (be specific).

3) In the real world, several factors might influence the carrying capacity of rabbits in an environment.
    a. What could make the carrying capacity increase?

    b. What could make the carrying capacity decrease?