Name _____ Date _____ Class _____

Populations and Communities ▪ *Enrich*

Unlimited Population Growth

Suppose that the organisms in a population have unlimited food, water, space, and other resources. Also suppose that the organisms are not killed by other organisms or by disease. With no limits on its growth, the population would increase at its highest possible rate.

Bacteria are microscopic, single-celled organisms that are often used to study population growth. Most bacteria reproduce by splitting in half. Under ideal conditions, bacteria can divide about every 30 minutes. In the first half hour, one bacterium produces two bacteria. In the second half hour, the two bacteria split to produce four bacteria. In the third half hour, the four bacteria split to produce eight bacteria. Every 30 minutes, the population doubles!

Use the table on the right to answer the following questions.

1. How many bacteria will there be in 10 hours? Fill in the blank rows to complete the table.

2. On a sheet of graph paper, graph the data in your completed table.

3. Describe the shape of the graph, and explain what it shows about the bacteria population.

4. Does the graph show what usually happens in real life? Why or why not?

Counting Turtles

Problem

How can the mark-and-recapture method help ecologists monitor the size of a population?

Time (hours)	Number of Bacteria
0	1
0.5	2
1.0	4
1.5	
2.0	
2.5	
3.0	
3.5	
4.0	
4.5	
5.0	
5.5	
6.0	
6.5	
7.0	
7.5	
8.0	
8.5	
9.0	
9.5	
10.0	