



A Problem of Epidemic Proportions!

You're on a Quest!

Imagine that you wanted to witness a live bacterium's ability to reproduce rapidly. You would put the bacterium in a test tube, add the proper food and nutrients, and provide it with the perfect temperature. Under these optimum conditions, bacteria reproduce about every 20 minutes. Bacteria reproduce by doubling, so after 20 minutes, 1 bacterium would be 2; after 40 minutes, 2 bacteria would be 4, and so on. Assuming that you start with one bacterium, how many bacteria would you have after 1 day (24 hours)?

1. Use a separate sheet of paper to create and extend the following data table:

- a. How many bacteria exist after the first hour? _____
- b. How many bacteria exist after three hours? _____
- c. How many bacteria exist after 24 hours? _____

Time	Bacteria
0	1
20 min	2
40 min	3
60 min	4

d. Do you think this type of bacterial growth would actually happen in the test tube? Explain why.

2. On a separate sheet of graph paper, make a line graph that contains the bacterial data for the first three hours of growth.

- a. What is the shape of the line in your graph? _____
Does it seem to represent accurately the pattern of growth you would expect if you added the rest of the data to your graph? Explain. _____

3. Each entry in the data table represents one generation for bacteria. Explain how the data table and graph would look if you were using humans instead of bacteria. Why? _____

4. A growing concern in the health community is the emergence of “super germs” – microbes that can no longer be managed using traditional antibiotic treatments (such as penicillin) or antibacterial disinfectant-type household cleaners. Use the Internet, or other available resources, to find out about “super germs.”

a. Why is this resistance happening? _____

b. How is it related to the rapid reproductive rates of microbes that you have just explored? _____

c. Imagine that you are a health-care professional or an epidemiologist. What course of action would you take when dealing with the public on the “super germ” issue? How could this be beneficial? _____

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