1 Infections seldom start with a single bacterium. Suppose that you cut yourself on a rusty nail that puts 25 bacteria cells into the wound. Suppose also that those bacteria divide in two after every quarter of an hour.

a. Make and record a guess of how many bacteria you think would be present in the cut after 8 hours (32 quarter-hours) if the infection continues to spread as predicted. (Assume that your body does not fight off the infection and you do not apply medication.) Then answer the following questions to check your ability to estimate the rate of exponential growth.

b. Complete a table showing the first several numbers in the bacteria growth pattern:

Number of Quarter-Hour Periods	0	1	2	3	4
Number of Bacteria in the Cut	25	50			

c. Use *NOW* and *NEXT* to write a rule showing how the number of bacteria changes from one quarter-hour to the next, starting from 25 at time 0.

d. Write a rule showing how to calculate the number of bacteria N in the cut after x quarter-hour time periods.

e. Use the rules in Parts c and d to calculate the number of bacteria after 8 hours. Then compare the results to each other and to your initial estimate in Part a.

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