

## ✓ Check Your Understanding

The patterns in spread of good deeds by the Pay It Forward process occur in other quite different situations. For example, when bacteria infect some part of your body, they often grow and split into pairs of genetically equivalent cells over and over again.

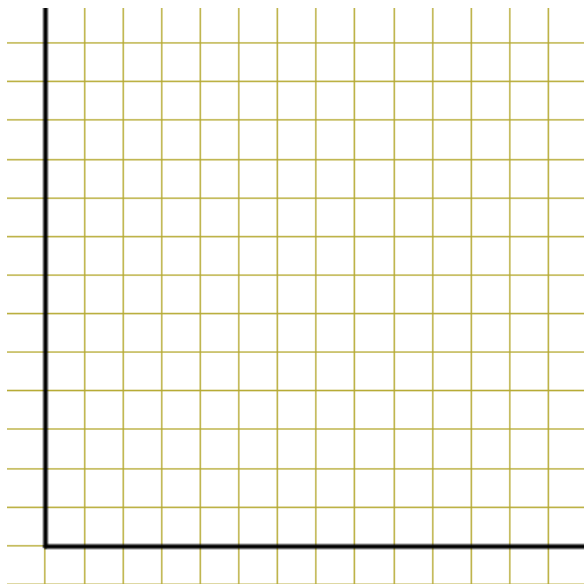
- a. Suppose a single bacterium lands in a cut on your hand. It begins spreading an infection by growing and splitting into two bacteria every 20 minutes.



- i. Complete a table showing the number of bacteria after each 20-minute period in the first three hours. (Assume none of the bacteria are killed by white blood cells.)

# 20 min periods									
Bacteria Count									

- ii. Plot the (*number of time periods, bacteria count*) values.  
 iii. Describe the pattern of growth of bacteria causing the infection.



- b. Use *NOW* and *NEXT* to write a rule relating the number of bacteria at one time to the number 20 minutes later. Then use the rule to find the number of bacteria after fifteen 20-minute periods.
- c. Write a rule showing how the number of bacteria  $N$  can be calculated from the number of stages  $x$  in the growth and division process.