

## Guided Notes: Population Ecology

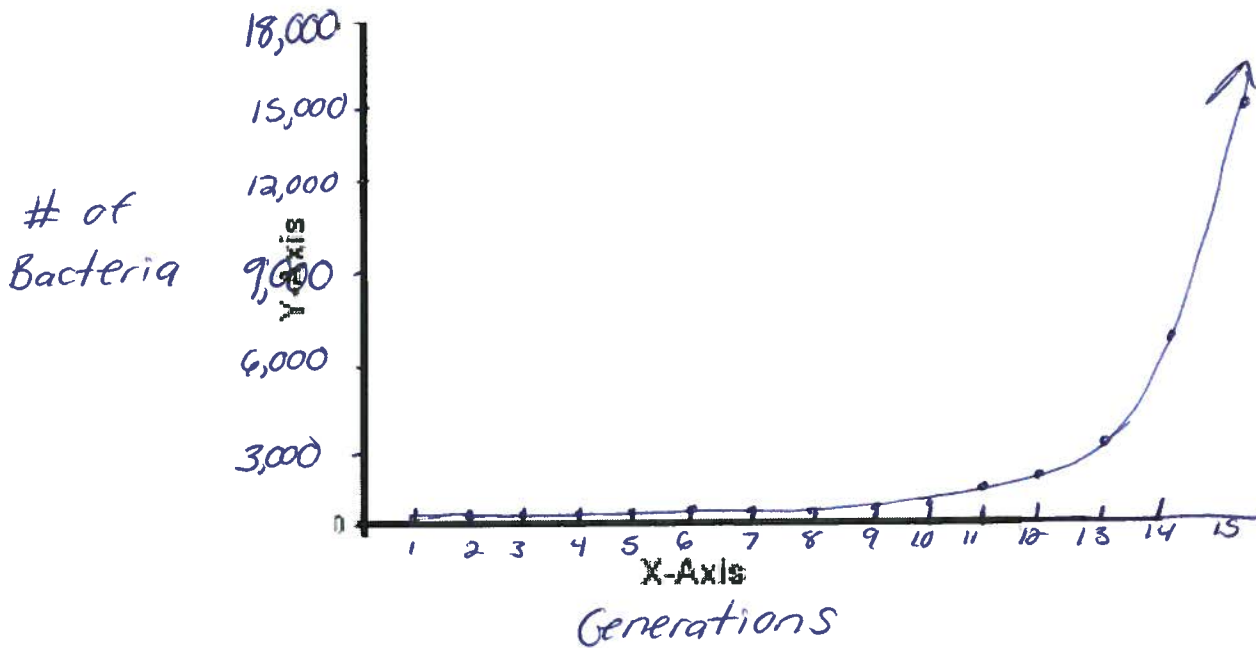
Populations are a group of the same species that can interbreed.

**PROBLEM:** Start with a single bacterium. Bacteria reproduce asexually by through binary fission (similar to mitosis). How many bacteria will there be after 15 generations?

Show work

$$\begin{array}{r} 1 \\ 1 \end{array} \quad \begin{array}{r} 2 \\ 2 \end{array} \quad \begin{array}{r} 3 \\ 4 \end{array} \quad \begin{array}{r} 4 \\ 8 \end{array} \quad \begin{array}{r} 5 \\ 16 \end{array} \quad \begin{array}{r} 6 \\ 32 \end{array} \quad \begin{array}{r} 7 \\ 64 \end{array} \quad \begin{array}{r} 8 \\ 128 \end{array} \quad \begin{array}{r} 9 \\ 256 \end{array} \quad \begin{array}{r} 10 \\ 512 \end{array} \quad \begin{array}{r} 11 \\ 1024 \end{array} \quad \begin{array}{r} 12 \\ 2048 \end{array} \quad \begin{array}{r} 13 \\ 4096 \end{array} \quad \begin{array}{r} 14 \\ 8192 \end{array} \quad \begin{array}{r} 15 \\ 16,384 \end{array}$$

Graph growth (Number of Bacteria on y-axis and number of generations on x-axis)



Can populations keep increasing/growing?

No, why?

Limiting Factors

Abiotic  
Space  
air

Biotic  
Food  
Other organisms