**Biology Bellwork #1 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

One of the most important developments in modern medicine was the discovery of antibiotics. Antibiotics are used to treat infections caused by bacteria. However, strains of bacteria that are resistant to antibiotics are emerging. The rate of increase in infections caused by these antibiotic-resistant strains of bacteria is a concern for human health. The bacterium Streptococcus pneumoniae is a major cause of the respiratory disease pneumonia. The graph below shows trends in bacterial resistance to different antibiotics in pneumonia cases from 1986 to 1999.



The graph shows the changes in antibiotic resistance of Streptococcus pneumoniae over time.

a. Based on the graph, which antibiotic had Streptococcus pneumoniae become most resistant to by 1999?

b. Describe what usually happens to a population of Streptococcus pneumoniae immediately after it is exposed to a new antibiotic.

c. Explain, in detail, how antibiotic-resistant populations of Streptococcus pneumoniae develop over time as a result of the process of natural selection.