Chapter

7

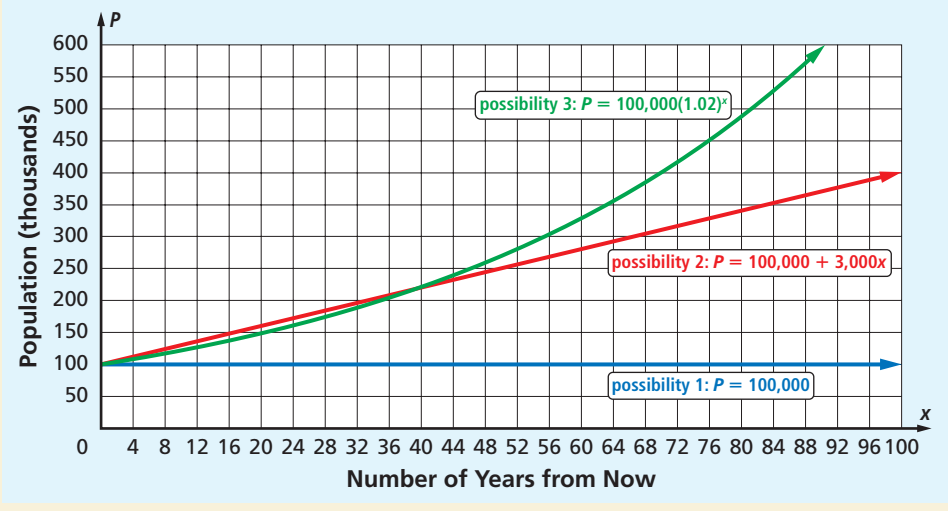
Using Algebra to Describe Patterns of Change

Contents

A small city of 100,000 people has been growing. School planners want to know how many classrooms the city might need during the next 50 years. They consider three possibilities.

1. The population stays the same.
2. The population increases by 3,000 people per year (increasing by a constant amount).
3. The population grows by 2% a year (increasing at a constant growth rate).

The graph on the next page shows what would happen under the three possibilities. P is the population x years from now.



Possibility 3 is often considered the most reasonable. Under this assumption, $P = 100{,}000(1.02)^x$. Because the variable x is an exponent, this equation is said to represent *exponential growth.* This chapter discusses the important applications of exponential growth and compares them with the constant-increase and constant-decrease situations you studied in Chapter 6.