

**7-6 Skills Practice****Growth and Decay**

- 1. POPULATION** The population of New York City increased from 8,008,278 in 2000 to 8,168,388 in 2005. The annual rate of population increase for the period was about 0.4%.
- Write an equation for the population  $t$  years after 2000.
  - Use the equation to predict the population of New York City in 2015.
- 2. SAVINGS** The Fresh and Green Company has a savings plan for its employees. If an employee makes an initial contribution of \$1000, the company pays 8% interest compounded quarterly.
- If an employee participating in the plan withdraws the balance of the account after 5 years, how much will be in the account?
  - If an employee participating in the plan withdraws the balance of the account after 35 years, how much will be in the account?
- 3. HOUSING** Mr. and Mrs. Boyce bought a house for \$96,000 in 1995. The real estate broker indicated that houses in their area were appreciating at an average annual rate of 7%. If the appreciation remained steady at this rate, what was the value of the Boyce's home in 2009?
- 4. MANUFACTURING** Zeller Industries bought a piece of weaving equipment for \$60,000. It is expected to depreciate at an average rate of 10% per year.
- Write an equation for the value of the piece of equipment after  $t$  years.
  - Find the value of the piece of equipment after 6 years.
- 5. FINANCES** Kyle saved \$500 from a summer job. He plans to spend 10% of his savings each week on various forms of entertainment. At this rate, how much will Kyle have left after 15 weeks?
- 6. TRANSPORTATION** Tiffany's mother bought a car for \$9000 five years ago. She wants to sell it to Tiffany based on a 15% annual rate of depreciation. At this rate, how much will Tiffany pay for the car?

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1. **COMMUNICATIONS** Sports radio stations numbered 220 in 1996. The number of sports radio stations has since increased by approximately 14.3% per year.
  - a. Write an equation for the number of sports radio stations for  $t$  years after 1996.
  - b. If the trend continues, predict the number of sports radio stations in 2015.
2. **INVESTMENTS** Determine the amount of an investment if \$500 is invested at an interest rate of 4.25% compounded quarterly for 12 years.
3. **INVESTMENTS** Determine the amount of an investment if \$300 is invested at an interest rate of 6.75% compounded semiannually for 20 years.
4. **HOUSING** The Greens bought a condominium for \$110,000 in 2010. If its value appreciates at an average rate of 6% per year, what will the value be in 2015?
5. **DEFORESTATION** During the 1990s, the forested area of Guatemala decreased at an average rate of 1.7%.
  - a. If the forested area in Guatemala in 1990 was about 34,400 square kilometers, write an equation for the forested area for  $t$  years after 1990.
  - b. If this trend continues, predict the forested area in 2015.
6. **BUSINESS** A piece of machinery valued at \$25,000 depreciates at a steady rate of 10% yearly. What will the value of the piece of machinery be after 7 years?
7. **TRANSPORTATION** A new car costs \$18,000. It is expected to depreciate at an average rate of 12% per year. Find the value of the car in 8 years.
8. **POPULATION** The population of Osaka, Japan, declined at an average annual rate of 0.05% for the five years between 1995 and 2000. If the population of Osaka was 11,013,000 in 2000 and it continues to decline at the same rate, predict the population in 2050.