Find the final amount for each investment.

29. $1000 at 6% interest compounded annually for 20 years
30. $1000 at 6% interest compounded semiannually for 20 years
31. $750 at 10% interest compounded quarterly for 10 years
32. $750 at 5% interest compounded quarterly for 10 years
33. $1800 at 5.65% interest compounded daily for 3 years
34. $1800 at 5.65% interest compounded daily for 6 years

51. **INVESTMENTS** Find the final amount of a $2000 certificate of deposit (CD) after 5 years at an annual interest rate of 5.51% compounded annually.

53. **INVESTMENTS** The final amount for $5000 invested for 25 years at 10% annual interest compounded semiannually is $57,337.
   a. What is the effect of doubling the amount invested?
   b. What is the effect of doubling the annual interest rate?
   c. What is the effect of doubling the investment period?
   d. Which of the above has the greatest effect on the final amount of the investment?

14. **HEALTH** A certain medication is eliminated from the bloodstream at a rate of about 12% per hour. The medication reaches a peak level in the bloodstream of 40 milligrams. Predict the amount, to the nearest tenth of a milligram, of the medication remaining 2 hours after the peak level and 3 hours after the peak level.

48. **HEALTH** A dye is injected into the pancreas during a certain medical procedure. A physician injects 0.3 grams of the dye, and a healthy pancreas will secrete 4% of the dye each minute. Predict the amount of dye remaining, to the nearest hundredth of a gram, in a healthy pancreas 30 minutes after the injection.
1. **INVESTMENTS** The value of a painting is $12,000 in 1990 and increases by 8% of its value each year. Write and evaluate an expression to estimate the painting’s value in 2005.

2. **DEPRECIATION** The value of a new car is $23,000 in 1998; it loses 15% of its value each year. Write and evaluate an expression to estimate the car’s value in 2005.

**Identify each function as representing exponential growth or decay.**

3. \( f(x) = 4(0.89)^x \)
4. \( g(x) = \frac{1}{3}(1.06)^x \)
5. \( h(x) = 5(1.06)^x \)
6. \( j(x) = 25\left(\frac{2}{5}\right)^x \)

44. **INVESTMENTS** Sharon invests $2500 at an annual interest rate of 9%. How much is the investment worth after 10 years if the interest is compounded continuously?

50. **BIOLOGY** Given favorable living conditions, fruit fly populations can grow at the astounding rate of 28% per day. If a laboratory selects a population of 25 fruit flies to reproduce, about how big will the population be after 3 days? after 5 days? after 1 week?

1. **DEMOGRAPHICS** The population of Petoskey, Michigan, was 6076 in 1990 and was growing at the rate of 3.7% per year. The city planners want to know what the population will be in the year 2025. Write and evaluate an expression to estimate this population.

25. \( y = 2^x \)
26. \( y = 2(3)^x \)
27. \( y = 2\left(\frac{1}{3}\right)^x \)
28. \( y = \left(\frac{1}{2}\right)^x \)