

## Section 6.4 Tools and Strategies to Solve Equations Involving Exponents

- Solve. Round decimal answers to one decimal place.
  - $x^3 = 71$
  - $5x^4 = 405$
  - $768 = 3x^8$
  - $8x^5 = 256$
- Solve. Round your answer to two decimal places.
  - $\frac{4}{3}\pi r^3 = 360$
  - $8200 = 6\pi r^3$
  - $2250 = \frac{1}{3}\pi r^3$
  - $1000 = \frac{2}{3}\pi r^3$
- Estimate the value of  $x$  without using a calculator. Explain how you estimated.
  - $4^x = 80$
  - $2^x = 140$
  - $3^x = 75$
  - $5^x = 55$
- Use systematic trial with a calculator to solve each equation in question 3. Round your answer to two decimal places.
- Solve using graphing technology. Round your answer to two decimal places.
  - $1.022^n = 4$
  - $1.035^b = 7$
- Use graphing technology to solve  $5^x = 2^{2x+1}$ . Round your answer to two decimal places.
- Use graphing technology to solve  $\left(\frac{1}{2}\right)^{-x-4} = 2^{2x-5}$ .
- Alex deposited \$400 into an account that pays 3.2% per year, compounded annually. The amount in the account,  $A$ , in dollars, is given by  $A = 400(1.032)^n$ , where  $n$  is the number of years. How long will it take for the amount to double in value?
- Chandra dropped a ball and recorded its height on each bounce. The equation  $h = 1.8(0.81)^n$  gives the maximum height of the ball,  $h$ , in metres, after  $n$  bounces.
  - Graph the relation. Describe the shape of the graph.
  - Determine the maximum height after each number of bounces.
    - one
    - three
    - six
- Refer to question 9.
  - From what height did Chandra initially drop the ball? Explain.
  - Determine the number of bounces before the maximum height of the ball is less than one-quarter of the height from part a).
- The height of a cone is equal to its radius,  $r$ . The volume,  $V$ , of such a cone is given by  $V = \frac{1}{3}\pi r^3$ . Determine the radius, to two decimal places, of a cone with volume  $3200 \text{ cm}^3$ .

