

## Unit 6 Project

1. Write  $3^7 = 2187$  in logarithmic form.
2. Write  $\log_8 16 = (4/3)$  in exponential form.
3. Express  $\log_3 5$  in terms of common logarithms. Then approximate its value to four decimal places.
4. Evaluate  $\log_2(1/64)$ .

**Use  $\log_4 7 \approx 1.4037$  and  $\log_4 3 \approx 0.7925$  to approximate the value of each expression.**

5.  $\log_4 21$
6.  $\log_4 (7/12)$

**Solve each equation or inequality. Round to four decimal places if necessary.**

7.  $27^{2p+1} = 3^{4p-1}$
8.  $\log_m 144 = -2$
9.  $2e^{3x} + 5 = 11$
10.  $\log_9 (x + 4) + \log_9 (x - 4) = 1$
11.  $\log_2 x < 7$

**Use the following information for questions 13-14.**

**You buy a commemorative coin for \$20. The value of the coin increases at a rate of 3.5% per year.**

12. How much will the coin be worth in 15 years?
13. After how many years will the coin have doubled in value?
14. Radioactive iodine is used to determine the health of the thyroid gland. It decays according to the equation  $y = ae^{-0.0856t}$ , where  $t$  is in days. Find the half-life of this substance.