Lesson 10 Practice Problems

1. a. Use the base-2 log table (printed in the lesson) to approximate the value of each exponential expression.
   i. 2^5
   ii. $2^{3.7}$
   iii. $2^{4.25}$

   b. Use the base-2 log table to find or approximate the value of each logarithm.
   i. $\log_2 4$
   ii. $\log_2 17$
   iii. $\log_2 35$

2. Here is a logarithmic expression: $\log_2 64$.

   a. How do we say the expression in words?

   b. Explain in your own words what the expression means.

   c. What is the value of this expression?

3. a. What is $\log_{10}(100)$? What about $\log_{100}(10)$?

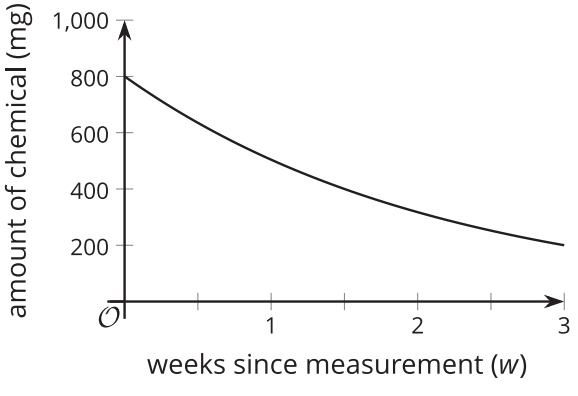
   b. What is $\log_2(4)$? What about $\log_4(2)$?

   c. Express b as a power of a if $a^2 = b$.

4. In order for an investment, which is increasing in value exponentially, to increase by a factor of 5 in 20 years, about what percent does it need to grow each year? Explain how you know.

(From Unit 4, Lesson 4.)

5. Here is the graph of the amount of a chemical remaining after it was first measured. The chemical decays exponentially.



What is the approximate half-life of the chemical? Explain how you know.

(From Unit 4, Lesson 7.)

6. Find each missing exponent.

   a. $10^{?} = 100$

   b. $10^{?} = 0.01$

   c. $\left(\frac{1}{10}\right)^{?} = \frac{1}{1{,}000}$

   d. $2^{?} = \frac{1}{2}$

   e. $\left(\frac{1}{2}\right)^{?} = 2$

(From Unit 4, Lesson 8.)

7. Explain why $\log_{10} 1 = 0$.

(From Unit 4, Lesson 9.)

8. How are the two equations $10^2 = 100$ and $\log_{10}(100) = 2$ related?

(From Unit 4, Lesson 9.)