

Log Equations with Word Problems!

Notes: Lesson 6

The hydrogen ions in a substance determines how acidic it is. The more hydrogen ions, the more acidic. The pH and number of hydrogen ions are related in the formula: $pH = -\log [H^+]$

Example 1 . . . The pH of milk is 6.6, while the pH of seawater is 8.5. Find the concentration of hydrogen ions in each substance. Which substance is more acidic?

Example 2 . . . The U.S. population of peninsular bighorn sheep was 1,170 in 1971. By 1999, only 335 remained.

- Write an exponential equation to model the decline in population.
- In what year might only 5 bighorn sheep remain in the United States?

Example 3 . . . An investment of \$2,000 earns 5.75% interest, which is compounded quarterly.

- Write an exponential equation to represent the amount of money in the bank over time.
- After approximately how many years will the investment be worth \$3,000?

Example 4... A parent raises a child's allowance by 20% each year. The child's allowance now is \$8.

a. Write an exponential equation to represent the child's allowance over time.

b. When will the child's allowance reach \$20?

Example 5... An investment of \$100 is now valued at \$149.18. The interest rate is 8%, compounded continuously. About how long has the money been invested?

Example 6... An investor sold 100 shares of stock valued at \$34.50 per share. The stock was purchased at \$7.25 per share two years ago. Find the rate of continuously compounded interest in this investment.