Exponential Equations Practice with Word Problems Name

1) The population of wolves in an area is represented by the equation $p(t) = 800(0.95)^{t}$ where t is the number of years since the year 2000.



a) In the above equation what does 800 represent?

b) In the above equation what does 0.95 represent?

c) Predict the number of wolves in the year 2012.

2) Kathy deposits \$25,000 into an investment account with an annual rate of 3.5%, compounded annually. The amount in her account can be determined by the formula $A = P(1+R)^t$ where P is the amount deposited, R is the annual interest rate, and t is the number of years the money is invested. If she makes no other deposits or withdrawals, how much money will be in her account at the end of 15 years?

3) The population of Henderson City was 3,381,000 in 1994, and is growing at an annual rate of 1.8%. If this growth rate continues, what will the approximate population of Henderson City be in the year 2012?

4) A car was purchased in July 1999 for \$22,900. If the car loses 20% of its value each year, what is the value of the car, to the nearest hundred dollars, in July 2005?

Exponential Equations Practice with Word Problems 2 Name

1) On January 1, 1999, the price of gasoline was \$1.39 per gallon. If the price of gasoline increased by 0.5% per month, what was the cost of one gallon of gasoline, to the nearest cent, on January 1 one year later?

2) The height of a bouncing ball (measured in inches) after x bounces is represented by the equation $f(x) = 120(0.75)^x$.

a) About how many times higher is the first bounce than the fifth bounce?

b) How many bounces will it take for the ball to reach no higher that 1 inch?

3) A radioactive substance has an initial mass of 100 grams and its mass halves every 4 years. Which expression shows the number of grams remaining after t years?

(1)
$$100(4)^{\frac{t}{4}}$$
 (2) $100\left(\frac{1}{2}\right)^{\frac{t}{4}}$ (3) $100(4)^{-2t}$ (4) $100\left(\frac{1}{2}\right)^{4t}$

4) The Franklins inherited \$15,000, which they want to invest for their child's future college expenses. If they invest it at 3.25% with interest compounded monthly, determine the value of the account, in dollars, after 5 years. Use the formula

$$A = P(1 + \frac{r}{n})^{nt}$$

n where A = value of the investment after t years, P = principal invested, r = annual interest rate, and n = number of times compounded per year.