

Exponential growth and decay problems

Name:



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

a) In the above equation what does 800 represent?

b) In the above equation what does 0.95 represent?

c) Is this a decay or a growth exponential function? Explain.

d) Use the equation above to predict the number of wolves in the year 2013. (Since t is the number of years since 2000, use $t = 13$ to predict the number of wolves in 2013.)

2) Kathy deposits \$25,000 into an investment account with an annual rate of 3.5%, compounded annually. 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 2000?

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? Use the equation $V = 22900(0.80)^t$ where V is the value of the car and t is time in year.

Bonus Thinker: Why is the growth/decay ratio .80 rather than .20?