Name: Rogers

Exponential Growth and Decay word problems

1. Find a bank account balance if the account starts with $100, has an annual rate of 4%, and the money left in the account was for 12 years.

Exponential Growth or Decay? Growth

a= 100   r= .04   t= 12

Function that represents the problem: $y = 100(1 + .04)^{12}$

Answer: $ 160.10

2. In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75% per year 1985. How many cell phone subscribers were in Centerville in 1994?

Exponential Growth or Decay? Growth

a= 285   r= .75   t= 1994 - 1985 = 9

Function that represents the problem: $y = 285(1 + .75)^9$

Answer: 43,872 subscribers

3. You have inherited land that was purchased for $30,000 in 1998. The value of the land increased by approximately 5% per year. What is the approximate value of the land in the year 2016?

Exponential Growth or Decay? Growth

a= 30,000   r= .05   t= 2016 - 1998 = 18

Function that represents the problem: $y = 30,000(1 + .05)^{18}$

Answer: $ 72,198.58

$ 72,198.60

4. An adult takes 400 mg of ibuprofen. each hour the amount of ibuprofen in the person's systems |decreases\ by about 29%. How much ibuprofen is left after 6 hours?

Exponential Growth or Decay? Decay

$a = 400$ $r = .29$ $t = 6$

Function that represents the problem: $y = 400(1 - .29)^6$

Answer: 51.24 or 51

5. You deposit $1600 in a bank account. Find the balance after 3 years for each of the following situations?

$a = 1600$
$t = 3$
$r = .025$

a. The account pays 2.5% yearly
$$y = 1600(1 + .025)^3 \doteq \$1723.03$$

b. The account pays 1.75 % yearly
$$y = 1600(1 + .0175)^3 = \$1685.48$$

$r = .0175$