

Exercises - Exponential Growth and Decay

1

The number of rabbits in a certain population doubles every 40 days. If the population starts with 12 rabbits, which of the following gives the total number of rabbits in the population after t days?

- A) $12(2)\left(\frac{t}{40}\right)$
 B) $12(2)\left(\frac{40}{t}\right)$
 C) $12(2)^{\frac{40}{t}}$
 D) $12(2)^{\frac{t}{40}}$

2

Population P of a town is 80,000 this year. If the population of the town decreases at a rate of 4 percent each year, which of the following expressions gives population P after t years?

- A) $80,000(0.6)^t$
 B) $80,000(0.96)^t$
 C) $80,000(0.96t)$
 D) $80,000(1 - 0.04t)$

3

A house bought ten years ago for \$150,000 was sold for \$240,000 this year. Which of the following equations can be used to solve the annual growth rate r of the value of the house?

- A) $240,000 = 150,000\left(1 + \frac{r}{10}\right)$
 B) $240,000 = 150,000(1 + 10r)$
 C) $240,000 = 150,000(1 + r)^{10}$
 D) $240,000 = 150,000(r)^{10}$

4

A certain radioactive substance has a half-life of 12 days. This means that every 12 days, half of the original amount of the substance decays. If there are 128 milligrams of the radioactive substance today, how many milligrams will be left after 48 days?

- A) 4
 B) 8
 C) 16
 D) 32

Questions 5 and 6 refer to the following information.

Evelyn deposited \$3,000 into her bank account, which earns 4 percent interest compounded annually. She uses the expression $\$3,000(x)^t$ to find the value of the account after t years.

5

What is the value of x in the expression?

6

Evelyn deposited the same amount into an account that earns 5 percent interest rate compounded annually. How much more money than her original deposit in the account with 4 percent interest rate compounded annually will she have earned in 10 years?
 (Round your answer to the nearest dollar.)