

Name: _____ Date: _____

Exponential Growth and Decay Practice

$$\textit{Growth} : y = P(1 + r)^t$$

$$\textit{Decay} : y = P(1 - r)^t$$

$$\textit{Compound Interest} : A = P \left(1 + \frac{r}{n} \right)^{nt}$$

1. You deposit \$1500 in an account that pays 5% interest compounded yearly. Find the balance after 6 years.
 2. The mice population is 25,000 and is decreasing by 20% each year. Write a model for this situation. What will be the mice population after 3 years?
 3. The number of mosquitoes at the beach has tripled every year since 1999. In 1999, there were 2,500 mosquitoes. Write a model for this situation. How many mosquitoes would you predict were at the beach in 2005?
 4. Corey invested \$1500 when he was a freshman in order to save for college. If he chooses to invest it in an account that earns 3.5% interest and is compounded annually, how much money will he have after 4 years?
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5) Given the equation $y = 35(0.57)^x$

a) Does this equation represent growth or decay? _____

b) What is the rate of growth or decay? _____

c) What is the initial value? _____

d) Evaluate for $x = 5$ _____

6) Given the equation $y = 225(1.23)^x$

a) Does this equation represent growth or decay? _____

b) What is the rate of growth or decay? _____

c) What is the initial value? _____

d) Evaluate for $x = 2$ _____

7) A used car was purchased for \$12,329 this year. Each year the car's value decreases 8.5%.

a) Write an exponential equation describing this situation.

b) What will the car be worth in 2025?

8) You have invested \$2,500 in stocks. The stock increases at a rate of 5% and is compounded monthly.

a) Write a compound interest function to model the situation.

b) How much will the stocks be worth in 3 years?

9) A doctor prescribes 300 milligrams of medicine to treat an infection. Each hour following the initial dose, 70% of the concentration remains in the body from the preceding hour.

a) Write an exponential equation describing the situation.

b) How much will be remaining in the body at the end of 6 hours?
