

Exponential Growth / Decay Problem Set

Name: _____

Steps to Remember:

- a) Exponential growth or decay:
- b) Identify the initial amount:
- c) Identify the growth/decay factor:
- d) Write an exponential function to model the situation:
- e) “Do” the problem:

1. You deposit \$1500 in an account that pays 5% interest compounded yearly. Find the balance after 6 years.

a) Exponential growth or decay:

b) Identify the initial amount:

c) Identify the growth/decay factor:

d) Write an exponential function to model the situation:

e) “Do” the problem:

2. The mice population is 25,000 and is decreasing by 20% each year. Write a model for this situation.

a) Exponential growth or decay:

b) Identify the initial amount:

c) Identify the growth/decay factor:

d) Write an exponential function to model the situation:

e) “Do” the problem:

3. Given the model for #2, what will be the mice population after 3 years?

4. 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.

5. Given the model for #4, how many mosquitoes will there be in 2005?

6. Given the exponential model $y = 200(.80)^x$, tell whether the model represents exponential growth or decay, tell what the growth/decay factor is and the growth/decay percent

7. If I have \$500 in my account after 4 years investing at 2.5% compounded annually, how much money did I start with?

8. I bought a car for \$25,000 but its value is depreciating at a rate of 10% per year. How much will my car be worth after 8 years?

ANSWERS to Problem Set: Exponential Growth and Decay Worksheet

1. $y = 1500(1.05)^6 = \$2010.14$

2. $y = 25000(1 - .2)^x$

3. $y = 25000(.8)^3 = 12,800mice$

4. $y = 2500(3)^x$

5. $y = 2500(3)^6 = 1822500mosq.$

6. decay; constant multiplier = 0.8; percent of decay = 20%

7. $y = 500(1.025)^{-4} = \$452.98$

8. $y = 25000(1 - .10)^8 = 10761.68$