

Name: _____ Date: _____

HW: Exponential Growth and Decay Practice

$$\text{Growth: } y = a_0(1+r)^t$$

$$\text{Decay: } y = a_0(1-r)^t$$

For each of the following determine if it is

- a. Growth or Decay
- b. Write the formula
- c. Solve the problem

1. You deposit \$1500 in an account that pays 5% interest compounded yearly. How much do you expect to have in 20 years?

2. The mice population is 25,000 and is decreasing by 20% each year. How many mice do you expect there to be in 4 years?

3. The number of mosquitoes at the beach increases at a rate of 6% each year. In 2000 there were 8,000 mosquitos. How many mosquitos do you expect in 2013? (hint: for t think of how many years it is between 2000 and 2013)

4. I bought a car for \$25,000, but its value is depreciating at a rate of 10% per year. How much money can I expect the car to be worth 6 years from now?

5. I bought issue one of a comic that was signed by the artist for \$65. I expect the price to increase by 30% each year. How much do you expect I will be able to sell it for in 15 years?
6. Darius bought a laptop for \$999. The value depreciates by 18% each year. How much should he expect his laptop to be worth in 5 years?
7. The University of Georgia has increased the number of freshman it takes each year. This year they accepted 4,518 freshman. If the acceptance rate grows 1.3% each year, how many Freshmen do you expect them to take in 4 years?
8. Studies have shown that America is one of the most obese countries in the world. In a 2012 study, there were 105,000,000 obese people in the United States. If obesity rates are increasing 4.6% each year, how many people do you expect will be obese in America in 10 years? **Bonus:** how many more people became obese in those 10 years?