Mixed Exponential Models Practice

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Compound Interest Continuous Compound Exponential Growth Exponential Decay**

$y=a(1+\frac{r}{n})^{t∙n}$$y=p(e)^{r∙t}$$y=a(1+r)^{t}$$y=a(1-r)^{t}$

1. A dish has 212 bacteria in it. The population of bacteria will grow by 80% every 2 days. How many bacteria will be present in 11 days?
2. The house down the street has termites in the porch. The exterminator estimated that there are about 800,000 termites eating at the porch. He said that the treatment he put on the wood would kill 40% of the termites every day. How many termites will be eating at the porch in 2 weeks?
3. In June, a 5th grade class started out with 10 mealworms for an experiment. The population of worms will double every month. How many mealworms will the class have for their experiment in 1 year?
4. The number V of computers infected by a computer increases according to the model  where t is the time (in hours). How many computers are infected after 2 hours?
5. You deposit $3500 in an account that pays 4% annual interest compounded continuously. What is the balance after 5 years?
6. The population of Hybart, AL was **11,171 in 2000. The current estimated population is 8,761. At what rate is Hybart, AL declining?**

1. Over the last several years there has been an increase in the amount of school age children carrying cell phones. Current estimates suggest that students in the US with cell phones will double by 2028. At what rate, are students’ cell phone use increasing?
2. You deposit $4800 in an account that pays 6.5% annual interest compounded monthly. What is the balance after 3 years?
3. The population of a city can be modeled by  where t is the number of years since 1990. What was the population in 1995?
4. **This year an estimated 4,324,000 people in this country are illiterate. With new incentives and funding, the country is hoping to cut that number by 11% every year.** How many people do you predict will be illiterate in the year 2035?
5. You deposit $1500 into an account that pays 3.25% annual interest compounded quarterly. What is the balance after 6 years?
6. You buy a new computer for $2100. The value of the computer decreases by about 50% annually. What is the value after 1 year?
7. Suppose you deposit $5000 in a trust fund that pays 7.5% interest, compounded continuously. In the trust fund, you specify that the balance will be given to the college from which you graduated after the money has earned interest for 50 years. How much will your college receive after 50 years?