Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Exponential functions 01 Daily Work

____ 1. The amount A (in milligrams) remaining of n milligrams of a radioactive isotope after t days is given by $A = n\left(\frac{1}{2}\right)^{t/9}$. What percent of the isotope decays each day? If necessary, round your answer to the nearest hundredth of a percent.

a. 11.11%
c. 22.22%
b. 7.41%
d. 6.46%

____ 2. A family planned to reduce the amount of garbage it generated. The pounds of garbage y can be modeled by $y = 200(0.935)^t$ where t is years since 2009. Find the approximate monthly decrease in garbage the family generates. Round your answer to the nearest hundredth of a percent.

a. 0.56%
c. 0.61%
b. 0.54%
d. 0.52%

____ 3. The half-life of a certain radioactive material is 30 days. An initial amount of the material has a mass of 221 kg. Write an exponential function that models the decay of this material. Find how much radioactive material remains after 8 days. Round your answer to the nearest thousandth.

a. $y = 221\left(\frac{1}{2}\right)^{\frac{1}{30}x}$; 183.704 kg
c. $y = 221\left(\frac{1}{2}\right)^{30x}$; 0 kg
b. $y = 2\left(\frac{1}{221}\right)^{\frac{1}{30}x}$; 0.474 kg
d. $y = \frac{1}{2}\left(\frac{1}{221}\right)^{\frac{1}{30}x}$; 0.119 kg

____ 4. The half-life of a certain radioactive material is 57 hours. An initial amount of the material has a mass of 693 kg. Write an exponential function that models the decay of this material. Find how much radioactive material remains after 7 hours. Round your answer to the nearest thousandth.

a. $y = 2\left(\frac{1}{693}\right)^{\frac{1}{57}x}$; 0.896 kg
c. $y = 693\left(\frac{1}{2}\right)^{57x}$; 0 kg
b. $y = 693\left(\frac{1}{2}\right)^{\frac{1}{57}x}$; 636.451 kg
d. $y = \frac{1}{2}\left(\frac{1}{693}\right)^{\frac{1}{57}x}$; 0.224 kg

____ 5. In a lab, 630 cells are present at the beginning of an experiment. During the first 7 hours, the number of cells decreased by 2% each hour. Write an exponential model giving the number of cells y present t hours after starting the experiment. Estimate the time when the number of cells is 540.

a. $y = (630 \bullet 0.98)^t$; after about 1 hour
c. $y = 630(1.02)^t$; after about 0.8 hour
b. $y = 630(0.02)^t$; after about 2 hours
d. $y = 630(0.98)^t$; after about 8 hours

____ 6. The number of rabbits in a population quadruples every 5 years. By what percent does the population change each year?

a. 32% growth
c. 75.8% growth
b. 32% decay
d. 132% growth

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Answer Section

1. B
2. A
3. A
4. B
5. D
6. A