Algebra 2 CC Name _____
Half-Life and Doubling HW

1.) Iridium-192 is an isotope of iridium and has a **half-life** of 73.83 days. If a laboratory experiment begins with 100 grams of Iridium-192, the number of grams, *A*, of Iridium-192 present after t days would be $A = 100\left(\frac{1}{2}\right)^{\frac{t}{73.83}}$. Which equation approximates the amount of Iridium-192 present after t days.

(A) $A = 100\left(\frac{73.83}{2}\right)^t$

(B) $A = 100\left(\frac{1}{147.66}\right)^t$

(C) $A = 100(0.990656)^t$

(D) $A = 100(0.116381)^t$

2.) Tom has 100 grams of the radioactive isotope chromium-51. Chromium-51 has a **half-life** of 28 days.

Let C represent the amount of Chromium-51 remaining after d days.

a. Write an equation that represents this scenario.

b. What is the rate of decay **per day**? [Round to the nearest tenth of a percent]

3.) A rabbit population **doubles** every 4 **weeks**. There are currently 5 rabbits in a restricted area.

Let t represents the time, in weeks, and $P(t)$ represents the population of rabbits.

a. Write and equation that will model this scenario.

b. How many rabbits will there be in 98 **days**? [Round to the nearest rabbit]

4.) An archeologist can determine the approximate age of ancient artifacts by measuring the amount of Carbon-14, contained in the artifact. Carbon-14 has a **half-life** of 5760 years. It is known that this particular artifact will originally contain 120 grams of Carbon-14.

Let C represent the amount of Carbon-14 remaining after y years.

a. Write an equation that will model this scenario.

b. How much Carbon-14 is left in the artifact after 4000 years? [Round to the nearest gram]