

Sec. 7.7 - Exponential Decay

Learning Goal:

By the end of today, I will be able to recognize the parts of an exponential decay equation and use the equation to solve for a desired unknown.

Exponential Equation - General

$$A_f = A_o (1 + i)^n$$

Growth

$$A_f = A_o (1 - i)^n$$

Decay

Doubling Equation

$$A_f = A_o (2)^n$$

Half Life Equation

$$A_f = A_o (1 - 0.5)^n$$

$$A_f = A_o (0.5)^n$$

$$A_f = A_o \left(\frac{1}{2} \right)^n$$

Carbon - 14 is a radioactive isotope that loses half of its original mass every 5730 years.

If a sample of carbon-14 started with 100 grams, how many years does it take to get to the following masses:

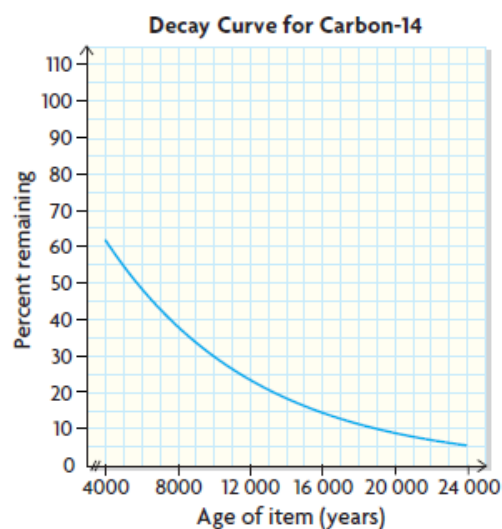
(i) 50 grams

(ii) 25 grams

(iii) 6.25 grams

Archaeologists use carbon-14 to estimate the age of the artifacts they discover. Carbon-14 has a half-life of 5730 years. This means that the amount of carbon-14 in an artifact will be reduced by half every 5730 years.

An ancient animal bone was found near a construction site. Tests were conducted, and the bone was found to contain 20% of the amount of carbon-14 in a present day bone. Use the decay curve shown to estimate the age of the bone.



Using percents with Half Life questions.

$$A_f = A_o \left(\frac{1}{2} \right)^n$$

Homework Questions

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