

Solution : (wolf / dog puppy)

$$\text{Assume } A = Ce^{kt} ;$$

$\frac{1}{2}$ -life of Carbon 14 is 5730 years, so that

$$t = 5730, A = \frac{1}{2}C \rightarrow$$

$$\frac{1}{2}C = Ce^{k(5730)} \rightarrow \ln\left(\frac{1}{2}\right) = \ln e^{5730k}$$

$$\rightarrow \ln\left(\frac{1}{2}\right) = 5730k \rightarrow k = \frac{\ln\left(\frac{1}{2}\right)}{5730} ;$$

$$\text{Now let } t = 18,000 \rightarrow$$

$$A = Ce^{\frac{\ln\left(\frac{1}{2}\right)}{5730}(18,000)}$$

$$\approx 0.1133 C$$

$\approx 11.33\%$ of the original

amount of Carbon 14.