

1549

$$y = C a^x$$

$a^0 = 1$ dvs C är begynnelsemängden
 $C = \text{original mängd}$

Efter 24000 har mängden halverats

$$y = C a^x$$

$$x = 24000 \text{ ger } y = 0,5$$

$$0,5 = C a^{24000}$$

$$(0,5)^{\frac{1}{24000}} = a$$

$$(0,5)^{\frac{1}{24000}} = a$$

$$y = C a^x$$

$$\frac{1}{1000} = C \left(0,5^{\frac{1}{24000}}\right)^x$$

$$\frac{1}{1000} = 1 \left(0,5^{\frac{x}{24000}}\right)$$

$$\frac{1}{1000} = 0,5^{\frac{x}{24000}}$$

$$\lg \frac{1}{1000} = \lg 0,5^{\frac{x}{24000}}$$

$$\frac{\lg \frac{1}{1000}}{\lg 0,5} = \frac{x}{24000}$$

$$24000 \frac{\lg \frac{1}{1000}}{\lg 0,5} = x$$

$$x = 24000 \left(\frac{\lg \frac{1}{1000}}{\lg 0,5} \right) = 24000 \left(\frac{-3}{-0,30103} \right) = 24000 \cdot 9,967 \approx 239177 \text{ år}$$

239177 = 2,4 \cdot 10^5