$1\,\mu s = 1 \cdot 10^{-6} s \quad \overset{t=1s}{\Rightarrow} \frac{1s}{10^{-6}s} = 10^6$ (Anweisungen)

$\log_2(n)$: $\quad \log_2(n) = 10^6 \iff 2^{10^6} = n$

$\log_2(n) = 1 \cdot 10^6 \iff 2^{1 \cdot 10^6} = 10^{300000}$

$t(n) = 1s$

$t(n) = \log_2(n)$

$2^{t(n)} = n$

$n \log_2(n) = 10^6$

$\log_2(n) = \frac{10^6}{n}$

$2^{\frac{10^6}{n}} = n$

$\sqrt[n]{2^{10^6}} = n^n$

$2^{10^6} = n^n$

$2^{\frac{n}{2}} = \sqrt[2]{2^n}$

$2^{\frac{3}{2}} = \sqrt[2]{2^3}$

$2^n = 10^6$

$\log_2(10^6) \approx 20$

$\left(2^{10^6}\right)^{\frac{1}{n}} = n$

$n \log_{2^{10^6}}(n) = \frac{1}{n}$

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

	Sekunde	Stunde	Monat (30 Tage)	Lichtgeschwindigkeit
$\log_2(n) = 10^6$	$\log_2(n) = 36 \cdot 10^8$	$\log_2(n) = 2.678 \cdot 10^{12}$	$\log_2(n) = 3.21408 \cdot 10^{15}$
$n = 2^{10^6}$	$n = 2^{36 \cdot 10^8}$	$n = 2^{2.678 \cdot 10^{12}}$	$n = 2^{3.21408 \cdot 10^{15}}$
$n = 10^{300000}$	$n = 10^{10^9}$		
$n = 10^6$	$n = 36 \cdot 10^8$	$n = 2.678 \cdot 10^{12}$	$n = 3.2141 \cdot 10^{15}$

$n \log_2(n) = 10^6$

$\log_2(n^n) = 10^6$

$n^n = 2^{10^6}$ $\quad n^n = 2^{36 \cdot 10^8}$ $\quad n^n = 2^{2.678 \cdot 10^{12}}$ $\quad n^n = 2^{3.2141 \cdot 10^{15}}$

dann probieren wir einsetzen:

WA: $n = e^{W(\ln(2^{10^6}))} = 62746$

$62549 = n$	$n = ?$	$n = ?$
$n \approx 10^8$	$n \approx 7.42 \cdot 10^{10}$	$n \approx 6.989 \cdot 10^{13}$
$n = 1.334 \cdot 10^8$		

$x = n^2 \quad \sqrt{x} = n$

$n = \sqrt{10^1} = 1000$ $\quad n = \sqrt{36 \cdot 10^8} = 60000$ $\quad n = \sqrt{2.678 \cdot 10^{12}} \approx 1636459.6$ $\quad n \approx \sqrt{3.21408 \cdot 10^{15}} \approx 56692859.7$

$2^n = x$

$\log_2(x) = n$

$n = 19.93$	$n = 31,75$	$n = 41,28$	$n \approx 51,51$

b) $x = n^2 \iff n = \sqrt{x}$

$n = \sqrt{10^8} = 31622,8$	$n = \sqrt{36 \cdot 10^{11}} = 1897366,6$	$n = 2.678 \cdot 10^{15}$	$n = \sqrt{3.21408 \cdot 10^{18}} = 1792785542$
		$n \approx 51749386.13$	

$2^n = x$

$\log_2(x) = n$

1 s: $n = \log_2(10^9) = 29{,}9$

1 L: $n = \log_2(36 \cdot 10^{27}) = 64{,}71$

1 A: $n = \log_2(31 \cdot 24 \cdot 36 \cdot 10^{27}) = 59{,}25$

1 a $n = \log_2(100 \cdot 12 \cdot 31 \cdot 24 \cdot 36 \cdot 10^{27}) = 67{,}68$

c) $1 \leq 1{,}01 \leq 1{,}37 \leq 9{,}94 \leq 13 \leq 58{,}77 \leq 1024 \leq 2048 \leq \infty$

$100 \cdot \log_2(n)$ n^3 2^n $n!$ 10^{n+2} $100n(\log_2(n))$ $1000n$ $Apfel^{n^2}(\log_2(n))$

Gegeben.