

What base should I use?

$$y = \log_b x \rightarrow ?$$

2 Say the computer scientists informations in bits

10 Say the scientists $\log_{10} = \log$ "common log"

e Say the mathematicians $\ln$ "natural log"
 $e = 2.71828182 \dots$

$$\log_8 90 = ?$$

$$\frac{\log 90}{\log 8} = \frac{1.95 \dots}{0.903 \dots}$$

$$= 2.163 \dots$$

$$\log_b a = \frac{\log_{10} a}{\log_{10} b} = \frac{\ln a}{\ln b} = \frac{\log_k a}{\log_k b}$$

$$\frac{\ln 90}{\ln 8} = \frac{4.49 \dots}{2.079 \dots} = 2.163 \dots$$