

## Comparison of Execution Times

time $\rightarrow$ $f(n)$ $\downarrow$	1 second	1 minute	1 hour	1 day	1 month	1 year	1 century
$\log n$							
$\sqrt{n}$							
$n$							
$n \log n$							
$n^2$							
$n^3$							
$2^n$							
$n!$							

Fill in the table with the largest problem size (to within a constant) that can be solved in time  $t$  assuming the algorithm used takes  $O(f(n))$  microseconds.

To find the largest problem size solvable in 1 second, since there are 1,000,000 ( $10^6$ ) microseconds in a second:

$$\frac{\log n}{10^6} = 1 \qquad \log n = 10^6 \qquad n = 2^{10^6}$$

Assume 30 days per month, 12 months per year, 100 years per century.