

Algorithm Design
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Solution of Exercise R-1.7

The numbers in the first row are quite large. The table below calculates it approximately in powers of 10. People might also choose to use powers of 2. Being close to the answer is enough for the big numbers (within a few factors of 10 from the answers shown).

	1 Second	1 Hour	1 Month	1 Century
$\log n$	$2^{10^6} \approx 10^{300000}$	$2^{3.6 \times 10^9} \approx 10^{10^9}$	$2^{2.6 \times 10^{12}} \approx 10^{0.8 \times 10^{12}}$	$2^{3.1 \times 10^{15}} \approx 10^{10^{15}}$
\sqrt{n}	$\approx 10^{12}$	$\approx 1.3 \times 10^{19}$	$\approx 6.8 \times 10^{24}$	$\approx 9.7 \times 10^{30}$
n	10^6	3.6×10^9	$\approx 2.6 \times 10^{12}$	$\approx 3.12 \times 10^{15}$
$n \log n$	$\approx 10^5$	$\approx 10^9$	$\approx 10^{11}$	$\approx 10^{14}$
n^2	1000	6×10^4	$\approx 1.6 \times 10^6$	$\approx 5.6 \times 10^7$
n^3	100	≈ 1500	≈ 14000	≈ 1500000
2^n	19	31	41	51
$n!$	9	12	15	17