

## Operations per Time Period:

If each operation takes 1 millisecond, then there are 1,000 operations per second.

1. 1 second =  $10^3$  operations
2. 1 minute =  $60 \times 10^3 = 6 \times 10^4$  operations
3. 1 hour =  $3,600 \times 10^3 = 3.6 \times 10^6$  operations
4. 1 day =  $86,400 \times 10^3 = 8.64 \times 10^7$  operations
5. 1 month (approx. 30 days) =  $2.592 \times 10^9$  operations
6. 1 year =  $3.154 \times 10^{10}$  operations
7. 1 decade =  $3.154 \times 10^{11}$  operations
8. 1 century =  $3.154 \times 10^{12}$  operations

Complexity	1 Second	1 Minute	1 Hour	1 Day	1 Month	1 Year	1 decade	1 century
$N^{(1/3)}$	$10^9$	$2.16 \times 10^{11}$	$4.66 \times 10^{15}$	$6.5 \times 10^{18}$	$1.74 \times 10^{23}$	$3.17 \times 10^{27}$	$3.2 \times 10^{31}$	$3.2 \times 10^{36}$
$N^{(1/2)}$	$10^6$	$3.6 \times 10^9$	$1.9 \times 10^{12}$	$7.4 \times 10^{15}$	$1.6 \times 10^{18}$	$5.6 \times 10^{19}$	$5.6 \times 10^{21}$	$5.6 \times 10^{23}$
$N$	$10^3$	$6 \times 10^4$	$3.6 \times 10^6$	$8.64 \times 10^7$	$2.6 \times 10^9$	$3.2 \times 10^{10}$	$3.2 \times 10^{11}$	$3.2 \times 10^{12}$
$N \log N$	140	$1.4 \times 10^4$	$2.2 \times 10^5$	$4.3 \times 10^6$	$9.3 \times 10^7$	$1.6 \times 10^9$	$1.5 \times 10^{10}$	$1.5 \times 10^{11}$
$N^2$	31.6	245	1,897	9,300	$5.1 \times 10^4$	$1.8 \times 10^5$	$5.6 \times 10^5$	$1.8 \times 10^6$
$N^2 \log N$	25	185	1,380	7,850	$4.3 \times 10^4$	$1.6 \times 10^5$	$5.0 \times 10^5$	$1.6 \times 10^6$
$2^N$	10	15	21	26	31	34	37	40
$N!$	6	9	11	13	15	16	17	18