

An exponential “times” table

B \ E	2	3	4	5	6	7	8	9	10
2	4	8	16	32	64	128	256	512	1,024
3	9	27	81	243	729	2,187	6,561	19,683	59,049
4	16	64	256	1,024	4,096	16,384	65,536	262,144	1,048,576
5	25	125	625	3,125	15,625	78,125	390,625	1,953,125	9,765,625
6	36	216	1,296	7,776	46,656	279,936	1,679,616	10,077,696	60,466,176
7	49	343	2,401	16,807	117,649	823,543	5,764,801	40,353,607	282,475,249
8	64	512	4,096	32,768	262,144	2,097,152	16,777,216	134,217,728	1,073,741,824
9	81	729	6,561	59,049	539,441	4,782,969	43,046,721	387,420,489	3,486,784,401
10	100	1,000	10,000	100,000	1,000,000	10,000,000	100,000,000	1,000,000,000	10,000,000,000

Fun facts: $2^3 < 3^2$ $2^4 = 4^2$

An exponential “times” table (number of digits)

B \ E	2	3	4	5	6	7	8	9	10
2	1	1	2	2	2	3	3	3	4
3	1	2	2	3	3	4	4	5	5
4	2	2	3	4	4	5	5	6	7
5	2	3	3	4	5	5	6	7	7
6	2	3	4	4	5	6	7	8	8
7	2	3	4	5	6	6	7	8	9
8	2	3	4	5	6	7	8	9	10
9	2	3	4	5	6	7	8	9	10
10	3	4	5	6	7	8	9	10	11

$x^y - y^x$

	2	3	4	5	6	7	8	9	10
2	0	-1	0	7	28	79	192	431	924
3	1	0	17	118	513	1844	6049	18954	58049
4	0	-17	0	399	2800	13983	61440	255583	1038576
5	-7	-118	-399	0	7849	61318	357857	1894076	9665625
6	-28	-513	-2800	-7849	0	162287	1417472	9546255	59466176
7	-79	-1844	-13983	-61318	-162287	0	3667649	35570638	272475249
8	-192	-6049	-61440	-357857	-1417472	-3667649	0	91171007	973741824
9	-431	-18954	-255583	-1894076	-9546255	-35570638	-91171007	0	2486784401
10	-924	-58049	-1038576	-9665625	-59466176	-272475249	-973741824	-2486784401	0

1	1	2	2	2	3	3	3	4
1	2	2	3	3	4	4	5	5
2	2	3	4	4	5	5	6	7
2	3	3	4	5	5	6	7	7
2	3	4	4	5	6	7	8	8
2	3	4	5	6	6	7	8	9
2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10
3	4	5	6	7	8	9	10	11