

NOMBRES - Curiosités, théorie et usages

Plus petite puissance pannumérique des nombres de 2 à 100

Retour [page principale](#): plus petite puissance pannumérique
Accès aux [Tables](#) – [Index](#)

Objet

Quelle est la plus petite puissance d'un nombre présentant tous les chiffres de 0 à 9 au moins une fois ? Ou de 1 à 9 ?

Quelles sont les puissances successives qui font apparaitre les chiffres les uns après les autres ?

Exemple pour le nombre 2, il faut atteindre la puissance 68, un nombre de 21 chiffres: $2^{68} = 295\ 147\ 905\ 179\ 352\ 825\ 856 = 2,95... \cdot 10^{20}$

Sommaire des tables de cette page

[>>>](#) Table des nombres de 2 à 100 et chiffres **de 1 à 9**

[>>>](#) Table des nombres de 2 à 100 et chiffres **de 0 à 9**

[>>>](#) Apparition des chiffres selon puissance: nombres de 2 à 20

Table des nombres de 2 à 100 et chiffres **de 1 à 9**

Exemple: avec 2, il faut arriver à la puissance 51 pour avoir un nombre contenant les chiffres de 1 à 9 au moins une fois et ce nombre comporte 16 chiffres.

2, 51, 2251799813685248, 16
3, 39, 4052555153018976267, 19
4, 34, 295147905179352825856, 21
5, 18, 3814697265625, 13
6, 20, 3656158440062976, 16
7, 18, 1628413597910449, 16
8, 17, 2251799813685248, 16
9, 24, 79766443076872509863361, 23
11, 16, 45949729863572161, 17
12, 20, 3833759992447475122176, 22
13, 22, 3211838877954855105157369, 25
14, 21, 1171355575953987221848064, 25
15, 12, 129746337890625, 15
16, 17, 295147905179352825856, 21
17, 14, 168377826559400929, 18
18, 21, 229468251895129407139872768, 27
19, 17, 5480386857784802185939, 22

67, 10, 1822837804551761449, 19
68, 9, 31087100296429568, 17
69, 8, 513798374428641, 15
70, 18, 16284135979104490000000000000000, 34
71, 15, 5873205959385493353867330551, 28
72, 12, 19408409961765342806016, 23
73, 14, 122045014039746588673695409, 27
74, 12, 26963771415920784510976, 23
75, 11, 422351360321044921875, 21
76, 12, 37133262473195501387776, 23
77, 8, 1235736291547681, 16
78, 10, 8335775831236199424, 19
79, 13, 4668229371502258117133839, 25
80, 17, 22517998136852480000000000000000, 33
81, 12, 79766443076872509863361, 23
82, 9, 167619550409708032, 18
83, 9, 186940255267540403, 18
84, 9, 208215748530929664, 18
85, 10, 19687440434072265625, 20
86, 12, 163674647745587512938496, 24
87, 11, 2161283703465490489863, 22
88, 15, 146973853900112596791703109632, 30
89, 11, 2775173073766990340489, 22
90, 24, 797664430768725098633610000000000000000000000000000, 47
91, 13, 29345269354638035222576971, 26
92, 13, 33825307664249166246182912, 26
93, 12, 418596297479370673535601, 24
94, 12, 475920314814253376475136, 24
95, 13, 51334208327950511474609375, 26
96, 10, 66483263599150104576, 20
97, 13, 67302709016557486028618977, 26
98, 14, 7536419414749019520643907584, 28
99, 9, 913517247483640899, 18

[Haut de page](#)

Table des nombres de 2 à 100 et chiffres de 0 à 9

Exemple: avec 2, il faut arriver à la puissance 68 pour avoir un nombre contenant les chiffres de 0 à 9 au moins une fois et ce nombre comporte 21 chiffres.

2, 68, 295147905179352825856, 21
3, 39, 4052555153018976267, 19
4, 34, 295147905179352825856, 21
5, 19, 19073486328125, 14
6, 20, 3656158440062976, 16
7, 18, 1628413597910449, 16

8, 28, 19342813113834066795298816, 26
 9, 24, 79766443076872509863361, 23
 11, 23, 895430243255237372246531, 24
 12, 22, 552061438912436417593344, 24
 13, 22, 3211838877954855105157369, 25
 14, 21, 1171355575953987221848064, 25
 15, 12, 129746337890625, 15
 16, 17, 295147905179352825856, 21
 17, 14, 168377826559400929, 18
 18, 21, 229468251895129407139872768, 27
 19, 17, 5480386857784802185939, 22
 20, 51, 2251799813685248
 000, 67
 21, 17, 30041942495081691894741, 23
 22, 18, 1457498964228107529355264, 25
 23, 14, 11592836324538749809, 20
 24, 19, 167499529910025153071284224, 27
 25, 11, 2384185791015625, 16
 26, 18, 29479510200013918864408576, 26
 27, 13, 4052555153018976267, 19
 28, 11, 8293509467471872, 16
 29, 12, 353814783205469041, 18
 30, 39, 4052555153018976267
 000, 58
 31, 11, 25408476896404831, 17
 32, 14, 1180591620717411303424, 22
 33, 16, 1977985201462558877934081, 25
 34, 14, 2758702310349224820736, 22
 35, 19, 217416671473944530487060546875, 30
 36, 10, 3656158440062976, 16
 37, 13, 243569224216081305397, 21
 38, 14, 13090925539866773438464, 23
 39, 17, 1117116121846700839825703079, 28
 40, 34, 295147905179352825856
 000, 55
 41, 11, 550329031716248441, 18
 42, 17, 3937657486715347520027492352, 28
 43, 13, 1718264124282290785243, 22
 44, 16, 197352587024076973231046656, 27
 45, 15, 6283298708943145751953125, 25
 46, 11, 1951354384207722496, 19
 47, 12, 116191483108948578241, 21
 48, 12, 149587343098087735296, 21
 49, 9, 1628413597910449, 16
 50, 18, 38146972656250000000000000000000, 31
 51, 16, 2094704750199298376445300801, 28
 52, 11, 7516865509350965248, 19
 53, 13, 26036721925606486195973, 23
 54, 10, 210832519264920576, 18
 55, 12, 766217865410400390625, 21

56, 7, 1727094849536, 13
57, 13, 67046038752496061076057, 23
58, 11, 24986644000165537792, 20
59, 11, 30155888444737842659, 20
60, 20, 3656158440062976000000000000000000, 36
61, 14, 9876832533361318095112441, 25
62, 18, 183252712161029662582812243656704, 33
63, 13, 246278864694166156419903, 24
64, 14, 19342813113834066795298816, 26
65, 10, 1346274334462890625, 19
66, 13, 450890579914330142416896, 24
67, 10, 1822837804551761449, 19
68, 9, 31087100296429568, 17
69, 11, 168787390185178426269, 21
70, 18, 1628413597910449000000000000000000, 34
71, 15, 5873205959385493353867330551, 28
72, 12, 19408409961765342806016, 23
73, 14, 122045014039746588673695409, 27
74, 12, 26963771415920784510976, 23
75, 11, 422351360321044921875, 21
76, 12, 37133262473195501387776, 23
77, 15, 19831742626597600733536317893, 29
78, 11, 650190514836423555072, 21
79, 13, 4668229371502258117133839, 25
80, 17, 22517998136852480000000000000000, 33
81, 12, 79766443076872509863361, 23
82, 9, 167619550409708032, 18
83, 9, 186940255267540403, 18
84, 9, 208215748530929664, 18
85, 10, 19687440434072265625, 20
86, 16, 8953136790196197357146289012736, 31
87, 11, 2161283703465490489863, 22
88, 15, 146973853900112596791703109632, 30
89, 11, 2775173073766990340489, 22
90, 24, 797664430768725098633610000000000000000000000000000, 47
91, 13, 29345269354638035222576971, 26
92, 13, 33825307664249166246182912, 26
93, 12, 418596297479370673535601, 24
94, 12, 475920314814253376475136, 24
95, 13, 51334208327950511474609375, 26
96, 10, 66483263599150104576, 20
97, 13, 67302709016557486028618977, 26
98, 14, 7536419414749019520643907584, 28
99, 9, 913517247483640899, 18

[Haut de page](#)



Table des nombres de 2 à 20 et chiffres de 1 à 9

Quelles sont les puissances successives qui font apparaître les chiffres les uns après les autres ?

Exemple: la première ligne indique que $2^4 = 16$ est la première puissance avec présence du "1". Le "2" arrive avec la puissance 7. Etc.

2, 4, 16, {1}
2, 7, 128, {1, 2}
2, 17, 131072, {1, 2, 3}
2, 27, 134217728, {1, 2, 3, 4}
2, 37, 137438953472, {1, 2, 3, 4, 5}
2, 49, 562949953421312, {1, 2, 3, 4, 5, 6}
2, 51, 2251799813685248, {1, 2, 3, 4, 5, 6, 7}
2, 58, 288230376151711744, {1, 2, 3, 4, 5, 6, 7, 8}
2, 67, 147573952589676412928, {1, 2, 3, 4, 5, 6, 7, 8, 9}

3, 4, 81, {1}
3, 7, 2187, {1, 2}
3, 13, 1594323, {1, 2, 3}
3, 16, 43046721, {1, 2, 3, 4}
3, 21, 10460353203, {1, 2, 3, 4, 5}
3, 24, 282429536481, {1, 2, 3, 4, 5, 6}
3, 39, 4052555153018976267, {1, 2, 3, 4, 5, 6, 7}
3, 45, 2954312706550833698643, {1, 2, 3, 4, 5, 6, 7, 8}
3, 47, 26588814358957503287787, {1, 2, 3, 4, 5, 6, 7, 8, 9}

4, 2, 16, {1}
4, 5, 1024, {1, 2}
4, 15, 1073741824, {1, 2, 3}
4, 29, 288230376151711744, {1, 2, 3, 4}
4, 34, 295147905179352825856, {1, 2, 3, 4, 5}
4, 35, 1180591620717411303424, {1, 2, 3, 4, 5, 6}
4, 36, 4722366482869645213696, {1, 2, 3, 4, 5, 6, 7}
4, 38, 75557863725914323419136, {1, 2, 3, 4, 5, 6, 7, 8}
4, 41, 4835703278458516698824704, {1, 2, 3, 4, 5, 6, 7, 8, 9}

5, 3, 125, {1}
5, 5, 3125, {1, 2}
5, 9, 1953125, {1, 2, 3}
5, 17, 762939453125, {1, 2, 3, 4}
5, 18, 3814697265625, {1, 2, 3, 4, 5}
5, 19, 19073486328125, {1, 2, 3, 4, 5, 6}
5, 20, 95367431640625, {1, 2, 3, 4, 5, 6, 7}
5, 21, 476837158203125, {1, 2, 3, 4, 5, 6, 7, 8}
5, 22, 2384185791015625, {1, 2, 3, 4, 5, 6, 7, 8, 9}

6, 3, 216, {1}
6, 4, 1296, {1, 2}
6, 12, 2176782336, {1, 2, 3}
6, 17, 16926659444736, {1, 2, 3, 4}
6, 20, 3656158440062976, {1, 2, 3, 4, 5}
6, 21, 21936950640377856, {1, 2, 3, 4, 5, 6}
6, 27, 1023490369077469249536, {1, 2, 3, 4, 5, 6, 7}
6, 31, 1326443518324400147398656, {1, 2, 3, 4, 5, 6, 7, 8}
6, 34, 286511799958070431838109696, {1, 2, 3, 4, 5, 6, 7, 8, 9}

7, 4, 2401, {1}

7, 11, 1977326743, {1, 2}
7, 12, 13841287201, {1, 2, 3}
7, 18, 1628413597910449, {1, 2, 3, 4}
7, 22, 3909821048582988049, {1, 2, 3, 4, 5}
7, 24, 191581231380566414401, {1, 2, 3, 4, 5, 6}
7, 27, 65712362363534280139543, {1, 2, 3, 4, 5, 6, 7}
7, 31, 157775382034845806615042743, {1, 2, 3, 4, 5, 6, 7, 8}
7, 34, 54116956037952111668959660849, {1, 2, 3, 4, 5, 6, 7, 8, 9}
8, 3, 512, {1}
8, 6, 262144, {1, 2}
8, 9, 134217728, {1, 2, 3}
8, 10, 1073741824, {1, 2, 3, 4}
8, 15, 35184372088832, {1, 2, 3, 4, 5}
8, 17, 2251799813685248, {1, 2, 3, 4, 5, 6}
8, 24, 4722366482869645213696, {1, 2, 3, 4, 5, 6, 7}
8, 27, 2417851639229258349412352, {1, 2, 3, 4, 5, 6, 7, 8}
8, 28, 19342813113834066795298816, {1, 2, 3, 4, 5, 6, 7, 8, 9}
9, 2, 81, {1}
9, 8, 43046721, {1, 2}
9, 12, 282429536481, {1, 2, 3}
9, 13, 2541865828329, {1, 2, 3, 4}
9, 15, 205891132094649, {1, 2, 3, 4, 5}
9, 18, 150094635296999121, {1, 2, 3, 4, 5, 6}
9, 24, 79766443076872509863361, {1, 2, 3, 4, 5, 6, 7}
9, 30, 42391158275216203514294433201, {1, 2, 3, 4, 5, 6, 7, 8}
9, 31, 381520424476945831628649898809, {1, 2, 3, 4, 5, 6, 7, 8, 9}
10, 2, 100, {1}

11, 2, 121, {1}
11, 8, 214358881, {1, 2}
11, 9, 2357947691, {1, 2, 3}
11, 10, 25937424601, {1, 2, 3, 4}
11, 13, 34522712143931, {1, 2, 3, 4, 5}
11, 16, 45949729863572161, {1, 2, 3, 4, 5, 6}
11, 20, 672749994932560009201, {1, 2, 3, 4, 5, 6, 7}
11, 23, 895430243255237372246531, {1, 2, 3, 4, 5, 6, 7, 8}
11, 24, 9849732675807611094711841, {1, 2, 3, 4, 5, 6, 7, 8, 9}
12, 2, 144, {1}
12, 3, 1728, {1, 2}
12, 9, 5159780352, {1, 2, 3}
12, 10, 61917364224, {1, 2, 3, 4}
12, 14, 1283918464548864, {1, 2, 3, 4, 5}
12, 15, 15407021574586368, {1, 2, 3, 4, 5, 6}
12, 20, 3833759992447475122176, {1, 2, 3, 4, 5, 6, 7}
12, 22, 552061438912436417593344, {1, 2, 3, 4, 5, 6, 7, 8}
12, 24, 79496847203390844133441536, {1, 2, 3, 4, 5, 6, 7, 8, 9}
13, 2, 169, {1}
13, 3, 2197, {1, 2}
13, 5, 371293, {1, 2, 3}
13, 11, 1792160394037, {1, 2, 3, 4}
13, 12, 23298085122481, {1, 2, 3, 4, 5}
13, 18, 112455406951957393129, {1, 2, 3, 4, 5, 6}
13, 19, 1461920290375446110677, {1, 2, 3, 4, 5, 6, 7}
13, 22, 3211838877954855105157369, {1, 2, 3, 4, 5, 6, 7, 8}
13, 24, 542800770374370512771595361, {1, 2, 3, 4, 5, 6, 7, 8, 9}

14, 2, 196, {1}
14, 9, 20661046784, {1, 2}
14, 12, 56693912375296, {1, 2, 3}
14, 13, 793714773254144, {1, 2, 3, 4}
14, 17, 30491346729331195904, {1, 2, 3, 4, 5}
14, 18, 426878854210636742656, {1, 2, 3, 4, 5, 6}
14, 20, 83668255425284801560576, {1, 2, 3, 4, 5, 6, 7}
14, 21, 1171355575953987221848064, {1, 2, 3, 4, 5, 6, 7, 8}
14, 24, 3214199700417740936751087616, {1, 2, 3, 4, 5, 6, 7, 8, 9}
15, 6, 11390625, {1}
15, 12, 129746337890625, {1, 2}
15, 14, 29192926025390625, {1, 2, 3}
15, 16, 6568408355712890625, {1, 2, 3, 4}
15, 18, 1477891880035400390625, {1, 2, 3, 4, 5}
15, 22, 74818276426792144775390625, {1, 2, 3, 4, 5, 6}
15, 23, 1122274146401882171630859375, {1, 2, 3, 4, 5, 6, 7}
15, 24, 16834112196028232574462890625, {1, 2, 3, 4, 5, 6, 7, 8}
15, 25, 252511682940423488616943359375, {1, 2, 3, 4, 5, 6, 7, 8, 9}
16, 5, 1048576, {1}
16, 6, 16777216, {1, 2}
16, 17, 295147905179352825856, {1, 2, 3}
16, 18, 4722366482869645213696, {1, 2, 3, 4}
16, 19, 75557863725914323419136, {1, 2, 3, 4, 5}
16, 21, 19342813113834066795298816, {1, 2, 3, 4, 5, 6}
16, 22, 309485009821345068724781056, {1, 2, 3, 4, 5, 6, 7}
16, 24, 79228162514264337593543950336, {1, 2, 3, 4, 5, 6, 7, 8}
16, 25, 1267650600228229401496703205376, {1, 2, 3, 4, 5, 6, 7, 8, 9}
17, 3, 4913, {1}
17, 4, 83521, {1, 2}
17, 6, 24137569, {1, 2, 3}
17, 10, 2015993900449, {1, 2, 3, 4}
17, 14, 168377826559400929, {1, 2, 3, 4, 5}
17, 15, 2862423051509815793, {1, 2, 3, 4, 5, 6}
17, 18, 14063084452067724991009, {1, 2, 3, 4, 5, 6, 7}
17, 19, 239072435685151324847153, {1, 2, 3, 4, 5, 6, 7, 8}
17, 24, 339448671314611904643504117121, {1, 2, 3, 4, 5, 6, 7, 8, 9}
18, 4, 104976, {1}
18, 6, 34012224, {1, 2}
18, 7, 612220032, {1, 2, 3}
18, 11, 64268410079232, {1, 2, 3, 4}
18, 12, 1156831381426176, {1, 2, 3, 4, 5}
18, 14, 374813367582081024, {1, 2, 3, 4, 5, 6}
18, 15, 6746640616477458432, {1, 2, 3, 4, 5, 6, 7}
18, 21, 229468251895129407139872768, {1, 2, 3, 4, 5, 6, 7, 8}
18, 24, 1338258845052394702439737982976, {1, 2, 3, 4, 5, 6, 7, 8, 9}
19, 2, 361, {1}
19, 4, 130321, {1, 2}
19, 10, 6131066257801, {1, 2, 3}
19, 12, 2213314919066161, {1, 2, 3, 4}
19, 16, 288441413567621167681, {1, 2, 3, 4, 5}
19, 17, 5480386857784802185939, {1, 2, 3, 4, 5, 6}
19, 19, 1978419655660313589123979, {1, 2, 3, 4, 5, 6, 7}
19, 24, 4898762930960846817716295277921, {1, 2, 3, 4, 5, 6, 7, 8}
19, 25, 93076495688256089536609610280499, {1, 2, 3, 4, 5, 6, 7, 8, 9}

20, 4, 160000, {1}
20, 7, 1280000000, {1, 2}
20, 17, 1310720000000000000000, {1, 2, 3}
20, 27, 1342177280000000000000..., {1, 2, 3, 4}
20, 37, 1374389534720000000000..., {1, 2, 3, 4, 5}
20, 49, 5629499534213120000000..., {1, 2, 3, 4, 5, 6}
20, 51, 2251799813685248000000..., {1, 2, 3, 4, 5, 6, 7}
20, 58, 28823037615171174400000..., {1, 2, 3, 4, 5, 6, 7, 8}
20, 67, 14757395258967641292800..., {1, 2, 3, 4, 5, 6, 7, 8, 9}

[Haut de page](#)

Cette page: <http://villemin.gerard.free.fr/Wwwgvmm/Formes/PuisPann.pdf>

