

> # Nの約数(N=x*y){x,y}の和がその数の倍数=N*h 完全数の一般化 by H.E '20-9-17:

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> c := 0 :for n from 1 to 10000000 do ys := {1} :for h from 2 to floor( evalf( n^(1/2) ) ) + 1 do
  if n mod h = 0 then ys := ys union { h, n/h } fi:od: yks := 0 :for j from 1 to nops(ys)
  do yks := yks + ys[j] :od:if yks mod n = 0 then print( N(n) の 約数の和 = yks [ n
  . { yks/n } ] ) :if nops(ys) > 5 and nops(ys) mod 5 = 0 then for jj from 1
  to floor( nops(ys)/5 ) do print(yk[jj] = [seq( (ys[j])[j], j = ((jj-1)*5 + 1) ..jj*5 ) ] ) :
  od fi:if nops(ys) mod 5 ≠ 0 and nops(ys) > 5 then for jj from 1 to floor( nops(ys)/5 )
  do print(yk[jj] = [seq( (ys[j])[j], j = ((jj-1)*5 + 1) ..jj*5 ) ] ) :od: print( yk[jj]
  = [seq( (ys[j])[j], j = 5*floor( nops(ys)/5 ) + 1 ..nops(ys) ) ] ) ) elif nops(ys) ≤ 5
  then print(yk[1] = [seq( (ys[j])[j], j = 1 ..nops(ys) ) ] ) fi : print( ) fi:od:

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$N(1)$ の 約数の和 = $1_{\{1\}}$

$yk_1 = [1_1]$

$N(6)$ の 約数の和 = $6_{\{1\}}$

$yk_1 = [1_1, 2_2, 3_3]$

$N(28)$ の 約数の和 = $28_{28\{1\}}$

$yk_1 = [1_1, 2_2, 4_3, 7_4, 14_5]$

$N(120)$ の 約数の和 = $240_{120\{2\}}$

$yk_1 = [1_1, 2_2, 3_3, 4_4, 5_5]$

$yk_2 = [6_6, 8_7, 10_8, 12_9, 15_{10}]$

$yk_3 = [20_{11}, 24_{12}, 30_{13}, 40_{14}, 60_{15}]$

$N(496)$ の 約数の和 = $496_{496\{1\}}$

$yk_1 = [1_1, 2_2, 4_3, 8_4, 16_5]$

$yk_2 = [31_6, 62_7, 124_8, 248_9]$

$N(672)$ の 約数の和 = $1344_{672\{2\}}$

$yk_1 = [1_1, 2_2, 3_3, 4_4, 6_5]$

$yk_2 = [7_6, 8_7, 12_8, 14_9, 16_{10}]$

$yk_3 = [21_{11}, 24_{12}, 28_{13}, 32_{14}, 42_{15}]$

$yk_4 = [48_{16}, 56_{17}, 84_{18}, 96_{19}, 112_{20}]$

$yk_5 = [168_{21}, 224_{22}, 336_{23}]$

$N(8128)$ の約数の和 = $8128_{8128 \{1\}}$

$$yk_1 = [1_1, 2_2, 4_3, 8_4, 16_5]$$

$$yk_2 = [32_6, 64_7, 127_8, 254_9, 508_{10}]$$

$$yk_3 = [1016_{11}, 2032_{12}, 4064_{13}]$$

$N(30240)$ の約数の和 = $90720_{30240 \{3\}}$

$$yk_1 = [1_1, 2_2, 3_3, 4_4, 5_5]$$

$$yk_2 = [6_6, 7_7, 8_8, 9_9, 10_{10}]$$

$$yk_3 = [12_{11}, 14_{12}, 15_{13}, 16_{14}, 18_{15}]$$

$$yk_4 = [20_{16}, 21_{17}, 24_{18}, 27_{19}, 28_{20}]$$

$$yk_5 = [30_{21}, 32_{22}, 35_{23}, 36_{24}, 40_{25}]$$

$$yk_6 = [42_{26}, 45_{27}, 48_{28}, 54_{29}, 56_{30}]$$

$$yk_7 = [60_{31}, 63_{32}, 70_{33}, 72_{34}, 80_{35}]$$

$$yk_8 = [84_{36}, 90_{37}, 96_{38}, 105_{39}, 108_{40}]$$

$$yk_9 = [112_{41}, 120_{42}, 126_{43}, 135_{44}, 140_{45}]$$

$$yk_{10} = [144_{46}, 160_{47}, 168_{48}, 180_{49}, 189_{50}]$$

$$yk_{11} = [210_{51}, 216_{52}, 224_{53}, 240_{54}, 252_{55}]$$

$$yk_{12} = [270_{56}, 280_{57}, 288_{58}, 315_{59}, 336_{60}]$$

$$yk_{13} = [360_{61}, 378_{62}, 420_{63}, 432_{64}, 480_{65}]$$

$$yk_{14} = [504_{66}, 540_{67}, 560_{68}, 630_{69}, 672_{70}]$$

$$yk_{15} = [720_{71}, 756_{72}, 840_{73}, 864_{74}, 945_{75}]$$

$$yk_{16} = [1008_{76}, 1080_{77}, 1120_{78}, 1260_{79}, 1440_{80}]$$

$$yk_{17} = [1512_{81}, 1680_{82}, 1890_{83}, 2016_{84}, 2160_{85}]$$

$$yk_{18} = [2520_{86}, 3024_{87}, 3360_{88}, 3780_{89}, 4320_{90}]$$

$$yk_{19} = [5040_{91}, 6048_{92}, 7560_{93}, 10080_{94}, 15120_{95}]$$

$N(32760)$ の約数の和 = $98280_{32760 \{3\}}$

$$yk_1 = [1_1, 2_2, 3_3, 4_4, 5_5]$$

$$yk_2 = [6_6, 7_7, 8_8, 9_9, 10_{10}]$$

$$yk_3 = [12_{11}, 13_{12}, 14_{13}, 15_{14}, 18_{15}]$$

$$yk_4 = [20_{16}, 21_{17}, 24_{18}, 26_{19}, 28_{20}]$$

$$yk_5 = [30_{21}, 35_{22}, 36_{23}, 39_{24}, 40_{25}]$$

$$yk_6 = [42_{26}, 45_{27}, 52_{28}, 56_{29}, 60_{30}]$$

$$yk_7 = [63_{31}, 65_{32}, 70_{33}, 72_{34}, 78_{35}]$$

$$yk_8 = [84_{36}, 90_{37}, 91_{38}, 104_{39}, 105_{40}]$$

$$yk_9 = [117_{41}, 120_{42}, 126_{43}, 130_{44}, 140_{45}]$$

$$yk_{10} = [156_{46}, 168_{47}, 180_{48}, 182_{49}, 195_{50}]$$

$$\begin{aligned}
yk_{11} &= [210_{51}, 234_{52}, 252_{53}, 260_{54}, 273_{55}] \\
yk_{12} &= [280_{56}, 312_{57}, 315_{58}, 360_{59}, 364_{60}] \\
yk_{13} &= [390_{61}, 420_{62}, 455_{63}, 468_{64}, 504_{65}] \\
yk_{14} &= [520_{66}, 546_{67}, 585_{68}, 630_{69}, 728_{70}] \\
yk_{15} &= [780_{71}, 819_{72}, 840_{73}, 910_{74}, 936_{75}] \\
yk_{16} &= [1092_{76}, 1170_{77}, 1260_{78}, 1365_{79}, 1560_{80}] \\
yk_{17} &= [1638_{81}, 1820_{82}, 2184_{83}, 2340_{84}, 2520_{85}] \\
yk_{18} &= [2730_{86}, 3276_{87}, 3640_{88}, 4095_{89}, 4680_{90}] \\
yk_{19} &= [5460_{91}, 6552_{92}, 8190_{93}, 10920_{94}, 16380_{95}]
\end{aligned}$$

$N(523776)$ の約数の和 = $1047552_{523776 \{2\}}$

$$\begin{aligned}
yk_1 &= [1_1, 2_2, 3_3, 4_4, 6_5] \\
yk_2 &= [8_6, 11_7, 12_8, 16_9, 22_{10}] \\
yk_3 &= [24_{11}, 31_{12}, 32_{13}, 33_{14}, 44_{15}] \\
yk_4 &= [48_{16}, 62_{17}, 64_{18}, 66_{19}, 88_{20}] \\
yk_5 &= [93_{21}, 96_{22}, 124_{23}, 128_{24}, 132_{25}] \\
yk_6 &= [176_{26}, 186_{27}, 192_{28}, 248_{29}, 256_{30}] \\
yk_7 &= [264_{31}, 341_{32}, 352_{33}, 372_{34}, 384_{35}] \\
yk_8 &= [496_{36}, 512_{37}, 528_{38}, 682_{39}, 704_{40}] \\
yk_9 &= [744_{41}, 768_{42}, 992_{43}, 1023_{44}, 1056_{45}] \\
yk_{10} &= [1364_{46}, 1408_{47}, 1488_{48}, 1536_{49}, 1984_{50}] \\
yk_{11} &= [2046_{51}, 2112_{52}, 2728_{53}, 2816_{54}, 2976_{55}] \\
yk_{12} &= [3968_{56}, 4092_{57}, 4224_{58}, 5456_{59}, 5632_{60}] \\
yk_{13} &= [5952_{61}, 7936_{62}, 8184_{63}, 8448_{64}, 10912_{65}] \\
yk_{14} &= [11904_{66}, 15872_{67}, 16368_{68}, 16896_{69}, 21824_{70}] \\
yk_{15} &= [23808_{71}, 32736_{72}, 43648_{73}, 47616_{74}, 65472_{75}] \\
yk_{16} &= [87296_{76}, 130944_{77}, 174592_{78}, 261888_{79}]
\end{aligned}$$

$N(2178540)$ の約数の和 = $6535620_{2178540 \{3\}}$

$$\begin{aligned}
yk_1 &= [1_1, 2_2, 3_3, 4_4, 5_5] \\
yk_2 &= [6_6, 7_7, 9_8, 10_9, 12_{10}] \\
yk_3 &= [13_{11}, 14_{12}, 15_{13}, 18_{14}, 19_{15}] \\
yk_4 &= [20_{16}, 21_{17}, 26_{18}, 28_{19}, 30_{20}] \\
yk_5 &= [35_{21}, 36_{22}, 38_{23}, 39_{24}, 42_{25}] \\
yk_6 &= [45_{26}, 49_{27}, 52_{28}, 57_{29}, 60_{30}] \\
yk_7 &= [63_{31}, 65_{32}, 70_{33}, 76_{34}, 78_{35}] \\
yk_8 &= [84_{36}, 90_{37}, 91_{38}, 95_{39}, 98_{40}]
\end{aligned}$$

$$\begin{aligned}
yk_9 &= [105_{41}, 114_{42}, 117_{43}, 126_{44}, 130_{45}] \\
yk_{10} &= [133_{46}, 140_{47}, 147_{48}, 156_{49}, 171_{50}] \\
yk_{11} &= [180_{51}, 182_{52}, 190_{53}, 195_{54}, 196_{55}] \\
yk_{12} &= [210_{56}, 228_{57}, 234_{58}, 245_{59}, 247_{60}] \\
yk_{13} &= [252_{61}, 260_{62}, 266_{63}, 273_{64}, 285_{65}] \\
yk_{14} &= [294_{66}, 315_{67}, 342_{68}, 364_{69}, 380_{70}] \\
yk_{15} &= [390_{71}, 399_{72}, 420_{73}, 441_{74}, 455_{75}] \\
yk_{16} &= [468_{76}, 490_{77}, 494_{78}, 532_{79}, 546_{80}] \\
yk_{17} &= [570_{81}, 585_{82}, 588_{83}, 630_{84}, 637_{85}] \\
yk_{18} &= [665_{86}, 684_{87}, 735_{88}, 741_{89}, 780_{90}] \\
yk_{19} &= [798_{91}, 819_{92}, 855_{93}, 882_{94}, 910_{95}] \\
yk_{20} &= [931_{96}, 980_{97}, 988_{98}, 1092_{99}, 1140_{100}] \\
yk_{21} &= [1170_{101}, 1197_{102}, 1235_{103}, 1260_{104}, 1274_{105}] \\
yk_{22} &= [1330_{106}, 1365_{107}, 1470_{108}, 1482_{109}, 1596_{110}] \\
yk_{23} &= [1638_{111}, 1710_{112}, 1729_{113}, 1764_{114}, 1820_{115}] \\
yk_{24} &= [1862_{116}, 1911_{117}, 1995_{118}, 2205_{119}, 2223_{120}] \\
yk_{25} &= [2340_{121}, 2394_{122}, 2470_{123}, 2548_{124}, 2660_{125}] \\
yk_{26} &= [2730_{126}, 2793_{127}, 2940_{128}, 2964_{129}, 3185_{130}] \\
yk_{27} &= [3276_{131}, 3420_{132}, 3458_{133}, 3705_{134}, 3724_{135}] \\
yk_{28} &= [3822_{136}, 3990_{137}, 4095_{138}, 4410_{139}, 4446_{140}] \\
yk_{29} &= [4655_{141}, 4788_{142}, 4940_{143}, 5187_{144}, 5460_{145}] \\
yk_{30} &= [5586_{146}, 5733_{147}, 5985_{148}, 6370_{149}, 6916_{150}] \\
yk_{31} &= [7410_{151}, 7644_{152}, 7980_{153}, 8190_{154}, 8379_{155}] \\
yk_{32} &= [8645_{156}, 8820_{157}, 8892_{158}, 9310_{159}, 9555_{160}] \\
yk_{33} &= [10374_{161}, 11115_{162}, 11172_{163}, 11466_{164}, 11970_{165}] \\
yk_{34} &= [12103_{166}, 12740_{167}, 13965_{168}, 14820_{169}, 15561_{170}] \\
yk_{35} &= [16380_{171}, 16758_{172}, 17290_{173}, 18620_{174}, 19110_{175}] \\
yk_{36} &= [20748_{176}, 22230_{177}, 22932_{178}, 23940_{179}, 24206_{180}] \\
yk_{37} &= [25935_{181}, 27930_{182}, 28665_{183}, 31122_{184}, 33516_{185}] \\
yk_{38} &= [34580_{186}, 36309_{187}, 38220_{188}, 41895_{189}, 44460_{190}] \\
yk_{39} &= [48412_{191}, 51870_{192}, 55860_{193}, 57330_{194}, 60515_{195}] \\
yk_{40} &= [62244_{196}, 72618_{197}, 77805_{198}, 83790_{199}, 103740_{200}] \\
yk_{41} &= [108927_{201}, 114660_{202}, 121030_{203}, 145236_{204}, 155610_{205}] \\
yk_{42} &= [167580_{206}, 181545_{207}, 217854_{208}, 242060_{209}, 311220_{210}] \\
yk_{43} &= [363090_{211}, 435708_{212}, 544635_{213}, 726180_{214}, 1089270_{215}]
\end{aligned}$$



