GRADE UP ⍋
1.Progressive index of (without replacement) X←A1; Y←A1
 ((ρX)ρ⍋⍋X⍳X,Y)⍳(ρY)ρ⍋⍋X⍳Y,X
2.Ascending cardinal numbers (ranking, shareable) X←D1
 ⌊.5×(⍋⍋X)+⌽⍋⍋⌽X
3.Cumulative maxima (⌈\) of subvectors of Y indicated by X X←B1; Y←D1
 Y[A⍳⌈\A←⍋A[⍋(+\X)[A←⍋Y]]]
4.Cumulative minima (⌊\) of subvectors of Y indicated by X X←B1; Y←D1
 Y[A⍳⌈\A←⍋A[⍋(+\X)[A←⍒Y]]]
5.Progressive index of (without replacement) X←A1; Y←A1
 ((⍋X⍳X,Y)⍳⍳ρX)⍳(⍋X⍳Y,X)⍳⍳ρY
6.Test if X and Y are permutations of each other X←D1; Y←D1
 Y[⍋Y]∧.=X[⍋X]
7.Test if X is a permutation vector X←I1
 X∧.=⍋⍋X
8.Grade up (⍋) for sorting subvectors of X having lengths Y X←D1; Y←I1; (ρX) ↔ +/Y
 A[⍋(+\(⍳ρY)∊+\⎕IO,X)[A←⍋Y]]
9.Index of the elements of X in Y X←D1; Y←D1
 (((1,A)/B)⌊1+ρY)[(ρY)↓(+\1,A←(1↓A)≠¯1↓A←A[B])[⍋B←⍋A←Y,X]]
10.Minima (⌊/) of elements of subvectors of Y indicated by X X←B1; Y←D1
 Y[A[X/⍋(+\X)[A←⍋Y]]]
11.Grade up (⍋) for sorting subvectors of Y indicated by X X←B1; Y←D1
 A[⍋(+\X)[A←⍋Y]]
12.Occurences of the elements of X X←D1
 |-≠(2,ρX)ρ⍋⍋X,X
13.Sorting rows of matrix X into ascending order X←D2
 (ρX)ρ(,X)[A[⍋(,⍉(⌽ρX)ρ⍳1↑ρX)[A←⍋,X]]]
14.Adding a new dimension after dimension G Y-fold G←I0; Y←I0; X←A
 (⍋⍋(G+1),⍳ρρX)⍉(Y,ρX)ρX
15.Sorting rows of matrix X into ascending order X←D2
 (ρX)ρ(,X)[⎕IO+A[⍋⌊A÷¯1↑ρX]] ⍝ A←(⍋,X)-⎕IO
16.Y smallest elements of X in order of occurrence X←D1, Y←I0
 ((⍋⍋X)∊⍳Y)/X
17.Merging X, Y, Z ... under control of G (mesh) X←A1; Y←A1; Z←A1; ... ; G←I1
 (Y,X,Z,...)[⍋⍋G]
18.Merging X and Y under control of G (mesh) X←A1; Y←A1; G←B1
 (X,Y)[⍋⍋G]
19.Ascending cardinal numbers (ranking, all different) X←D1
 ⍋⍋X
20.Grade down (⍒) for sorting subvectors of Y having lengths X X←D1; Y←I1; (ρX) ↔ +/Y
 A[⍋(+\(⍳ρY)∊+\⎕IO,X)[A←⍒Y]]
21.Maxima (⌈/) of elements of subvectors of Y indicated by X X←B1; Y←D1
 Y[A[X/⍋(+\X)[A←⍒Y]]]
22.Grade down (⍒) for sorting subvectors of Y indicated by X X←B1; Y←D1
 A[⍋(+\X)[A←⍒Y]]
23.Y largest elements of X in order of occurrence X←D1; Y←I0
 ((⍋⍒X)∊⍳Y)/X
24.Merging X and Y under control of G (mesh) X←A1; Y←A1; G←B1
 (Y,X)[⍋⍒G]
25.Descending cardinal numbers (ranking, all different) X←D1
 ⍋⍒X
26.Sorting rows of X according to key Y (alphabetizing) X←A2; Y←A1
 X[⍋(1+ρY)⊥Y⍳⍉X;]
27.Diagonal ravel X←A
 (,X)[⍋+≠(ρX)⊤(⍳ρ,X)-⎕IO]
28.Grade up according to key Y Y←A1; X←A1
 ⍋Y⍳X
29.Test if X is a permutation vector X←I1
 X[⍋X]∧.=⍳ρX
30.Sorting a matrix into lexicographic order X←D2
 X[⍋+≠A<.-⍉a←x,0;]
31.Sorting words in list X according to word length X←C2
 X[⍋X+.≠' ';]
32.Classification of X to classes starting with Y X←D1;Y←D1;Y<.≥1⌽y
 A ⍝ A[(B/C)-ρY]←B/+\~B←(ρY)

33.Rotate first elements (1⌽) of subvectors of Y indicated by X X←B1; Y←A1
 Y[⍋X++\X]
34.Doubling quotes (for execution) X←C1
 (X,'''')[(⎕IO+⍴X)⌊⍋(⍳⍴X),(''''=X)/⍳⍴X]
35.Inserting Y *'s into vector X after indices G X←C1; Y←I0; G←I1
 (X,'*')[(⎕IO+⍴X)⌊⍋(⍳⍴X),(Y×⍴G)⍴G]
36.Median X←D1
 X[(⍋X)[⌈.5×⍴X]]
37.Index of last maximum element of X X←D1
 ¯1↑⍋X
38.Index of (first) minimum element of X X←D1
 1↑⍋X
39.Expansion vector with zero after indices Y X←D1; Y←I1
 (⍴X)≥⍋(⍳⍴X),Y
40.Catenating G elements H before indices Y in vector X X←A1; Y←I1; G←I0; H←A0
 ((A⍴H),X)[⍋(A⍴Y),⍳⍴X] △ A←G×⍴,Y
41.Catenating G elements H after indices Y in vector X X←A1; Y←I1; G←I0; H←A0
 (X,A⍴H)[⍋(⍳⍴X),A⍴Y] △ A←G×⍴,Y
42.Merging X and Y under control of G (mesh) X←A1; Y←A1; G←B1
 A △ A[⍋G]←A←Y,X
43.Sorting a matrix according to Y:th column X←D2
 X[⍋X[;Y];]
44.Sorting indices X according to data Y X←I1; Y←D1
 X[⍋Y[X]]
45.Choosing sorting direction during execution X←D1; Y←I0
 ⍋X×¯1 1[Y]
46.Sorting Y according to X X←A1; Y←A1
 Y[⍋X]
47.Sorting X into ascending order X←D1
 X[⍋X]
48.Inverting a permutation X←I1
 ⍋X

GRADE DOWN ⍒
49.Reverse vector X on condition Y X←A1; Y←B0
 X[⍒Y!⍳⍴X]
50.Sorting a matrix into reverse lexicographic order X←D2
 X[⍒+⌿A<.-⍉a←x,0;]
52.Reversal (⌽) of subvectors of X having lengths Y X←D1; Y←I1
 X[⌽⍒+\(⍳⍴X)∊+\⎕IO,Y]
53.Reversal (⌽) of subvectors of Y indicated by X X←B1; Y←A1
 Y[⌽⍒+\X]
55.Indices of ones in logical vector X X←B1
 (+/X)↑⍒X
56.Index of first maximum element of X X←D1
 1↑⍒X
57.Moving all blanks to end of text X←C1
 X[⍒' '≠X]
58.Sorting X into descending order X←D1
 X[⍒X]
59.Moving elements satisfying condition Y to the start of X X←A1; Y←B1
 X[⍒Y]

MATRIX INVERSION / MATRIX DIVISION ⌹
60.Interpolated value of series (X,Y) at G X←D1; Y←D1; G←D0
 G⊥Y⌹X∘.*⌽-⎕IO-⍳⍴X
61.Predicted values of exponential (curve) fit X←D1; Y←D1
 *A+.×(⍟Y)⌹A←X∘.*0 1
62.Coefficients of exponential (curve) fit of points (X,Y) X←D1; Y←D1
 A △ A[1]←*A[1] △ A←(⍟Y)⌹X∘.*0 1
63.Predicted values of best linear fit (least squares) X←D1; Y←D1
 A+.×Y⌹A←X∘.*0 1
64.G-degree polynomial (curve) fit of points (X,Y) X←D1; Y←D1
 ⌽Y⌹X∘.*0,⍳G
65.Best linear fit of points (X,Y) (least squares) X←D1; Y←D1
 Y⌹X∘.*0 1

DECODE ⊥

66.Binary format of decimal number X X←I0
 ¯10⊥((1+⌈2⍟⌈/,X)ρ2)⊤X
67.Barchart of two integer series (across the page) X←I2; 1↑ρX ←→ 2
 ' *○⍟'[⎕IO+2⌊X∘.≥⍳⌈/,X]
68.Case structure with an encoded branch destination Y←I1; X←B1
 →Y[1+2⊥X]
69.Representation of current time (24 hour clock)
 A ◊ A[3 6]←':' ◊ A←¯1000⊥3↑3↓⎕TS
70.Representation of current date (descending format)
 A ◊ A[5 8]←'-' ◊ A←¯1000⊥3↑⎕TS
71.Representation of current time (12 hour clock)
 (1⌽,' ::',3 2ρ6 0¯100⊥12 0 0|3↑3↓⎕TS),'AP'[1+12≤⎕TS[4]],'M'
73.Removing duplicate rows X←A2
 ((A⍳A)=⍳ρA←2⊥X∧.=⍉X)⌿X
74.Conversion from hexadecimal to decimal X←C
 16⊥-⎕IO-'0123456789ABCDEF'⍳⍉X
75.Conversion of alphanumeric string into numeric X←C1
 10⊥¯1+'0123456789'⍳X
76.Value of polynomial with coefficients Y at points X X←D1; Y←D1
 (X∘.+,0)⊥Y
77.Changing connectivity list X to a connectivity matrix X←C2
 BρA ◊ A[⎕IO+B[1]⊥-⎕IO-X]←1 ◊ A←(×/B←0 0+⌈/,X)ρ0
78.Present value of cash flows X at interest rate Y % X←D1; Y←D0
 (÷1+Y÷100)⊥⌽X
79.Justifying right X←C
 (1-(' '=X)⊥1)⌽X
80.Number of days in month X of years Y (for all leap years) X←I0; Y←I
 (12ρ7ρ31 30)[X]-0⌈¯1+2⊥(X=2),[.1](0≠400|Y)-(0≠100|Y)-0≠4|Y
81.Number of days in month X of years Y (for most leap years) X←I0; Y←I
 (12ρ7ρ31 30)[X]-0⌈¯1+2⊥(X=2),[.1]0≠4|Y
82.Encoding current date
 100⊥100|3↑⎕TS
83.Removing trailing blanks X←C1
 (1-(' '=X)⊥1)↓X
84.Index of first non-blank, counted from the rear X←C1
 (' '=X)⊥1
85.Indexing scattered elements X←A; Y←I2
 (,X)[⎕IO+(ρX)⊥Y-⎕IO]
86.Conversion of indices Y of array X to indices of raveled X X←A; Y←I2
 ⎕IO+(ρX)⊥Y-⎕IO
87.Number of columns in array X as a scalar X←A
 0⊥ρX
88.Future value of cash flows X at interest rate Y % X←D1; Y←D0
 (1+Y÷100)⊥X
89.Sum of the elements of vector X X←D1
 1⊥X
90.Last element of numeric vector X as a scalar X←D1
 0⊥X
91.Last row of matrix X as a vector X←A
 0⊥X
92.Integer representation of logical vectors X←B
 2⊥X
93.Value of polynomial with coefficients Y at point X X←D0; Y←D
 X⊥Y

ENCODE ⊤
94.Conversion from decimal to hexadecimal (X=1..255)X←I
 ⍉'0123456789ABCDEF'[⎕IO+((⌈⌈/16⍟,X)ρ16)⊤X]
95.All binary representations up to X (truth table) X←I0
 ((⌈2⍟1+X)ρ2)⊤0,⍳X
96.Representation of X in base Y X←D0; Y←D0
 ((1+⌊Y⍟X)ρY)⊤X
97.Digits of X separately X←I0
 ((1+⌊10⍟X)ρ10)⊤X
98.Helps locating column positions 1..X X←I0
 1 0¯10 10⊤1-⎕IO-⍳X
99.Conversion of characters to hexadecimal representation (⎕AV) X←C1
 ,' ',⍉'0123456789ABCDEF'[⎕IO+16 16⊤-⎕IO-⎕AV⍳X]

100.Polynomial with roots X X←D1
 ⌽((0,⍳⍴X)∘.=+/~A)+.×(-X)×.*A←((⍴X)⍴2)⊤¯1+⍳2*⍴X
101.Index pairs of saddle points X←D2
 ⎕IO+(⍴X)⊤-⎕IO-(,(X=(⍴X)⍴⌈/⍦X)∧X=⍉(⍉⍴X)⍴⌊/X)/⍳×/⍴X
102.Changing connectivity matrix X to a connectivity list X←C2
 (,X)/1+A⊤¯1+⍳×/A←⍴X
103.Matrix of all indices of X X←A
 ⎕IO+(⍴X)⊤(⍳×/⍴X)-⎕IO
104.Separating a date YYMMDD to YY, MM, DD X←D
 ⍉(3⍴100)⊤X
105.Indices of elements Y in array X X←A; Y←A
 ⎕IO+(⍴X)⊤(-⎕IO)+(,X∊Y)/⍳⍴,X
106.All pairs of elements of ⍳X and ⍳Y X←I0; Y←I0
 ⎕IO+(X,Y)⊤(⍳X×Y)-⎕IO
107.Matrix for choosing all subsets of X (truth table) X←A1
 ((⍴X)⍴2)⊤¯1+⍳2*⍴X
108.All binary representations with X bits (truth table) X←I0
 (X⍴2)⊤¯1+⍳2*X
109.Incrementing cyclic counter X with upper limit Y X←D; Y←D0
 1+Y⊤X
110.Decoding numeric code ABBCCC into a matrix X←I
 10 100 1000⊤X
111.Integer and fractional parts of positive numbers X←D
 0 1⊤X

LOGARITHM ⍟
112.Number of decimals of elements of X X←D1
 ⌊10⍟(⌽('.'≠A)/A←⍕X)÷X
113.Number of sortable columns at a time using ⊥ and alphabet X X←C1
 ⌊(1+⍴X)⍟2*(A=¯1+A←2*⍳128)⍳1
114.Playing order in a cup for X ranked players X←I0
 ,⍉(A⍴2)⍴(2*A←⌈2⍟X)↑⍳X
115.Arithmetic precision of the system (in decimals)
 ⌊|10⍟|1-3×÷3
116.Number of digitpositions in integers in X X←I
 1+(X<0)+⌊10⍟|x+0=x
117.Number of digit positions in integers in X X←I
 1+⌊10⍟(X=0)+X×1 ¯10[1+X<0]
118.Number of digits in positive integers in X X←I
 1+⌊10⍟X+0=X

BRANCH →
119.Case structure according to key vector G X←A0; Y←I1; G←A1
 →Y[G⍳X]
120.Forming a transitive closure X←B2
 →⎕LC⌈⍳∨/,(X←X∨X∨.∧X)≠+X
121.Case structure with integer switch X←I0; Y←I1
 →X⌽Y
122.For-loop ending construct X←I0; Y←I0; G←I0
 →Y⌈⍳G≥X←X+1
123.Conditional branch to line Y X←B0; Y←I0; Y>0
 →Y⌈⍳X
124.Conditional branch out of program X←B0
 →0⌊⍳X
125.Conditional branch depending on sign of X X←I0; Y←I1
 →Y[2+×X]
126.Continuing from line Y (if X>0) or exit X←D0; Y←I0
 →Y××X
127.Case structure using levels with limits G X←D0; G←D1; Y←I1
 →(X≥G)/Y
128.Case structure with logical switch (preferring from start) X←B1; Y←I1
 →X/Y
129.Conditional branch out of program X←B0
 →0×⍳X

EXECUTE ⍎
132.Test for symmetricity of matrix X X←A2
 ⍎⍎'1',''↑↓'[⎕IO+∧/(⍴X)=⍉⍴X],'''0~0∊X=⍉X'''

133.Using a variable named according to X X←A0; Y←A
 ⍕'VAR',(⍕X),'←Y'
134.Rounding to ⎕PP precision X←D1
 ⍎⍕X
135.Convert character or numeric data into numeric X←A1
 ⍎⍕X
136.Reshaping only one-element numeric vector X into a scalar X←D1
 ⍎⍕X
137.Graph of F(X) at points X ('X'∊F) F←A1; X←D1
 ' *'[⎕IO+(⌽(¯1+⌊/A)+⍳1+(⌈/A)-⌊/A)∘.=A←⌊.5+⍕F]
138.Conversion of each row to a number (default zero) X←C2
 (X∨.≠' ')\1↓⍎'0 ',,X,' '
139.Test for symmetricity of matrix X X←A2
 ⍎(¯7*A∧.=⌽A←⍴X)↑'0~0∊X=⍉X'
140.Execution of expression X with default value Y X←D1
 ⍎((X∧.=' ')/'Y'),X
141.Changing X if a new input value is given X←A
 X←⍕,((2↑'X'),' ',[.5]A)[⎕IO+~' '∧.=A←⎕;]
142.Definite integral of F(X) in range Y with G steps ('X'∊F) F←A1; G←D0;
Y←D1; ⍴Y ↔ 2
 A+.×⍕F,0⍴X←Y[1]+(A←--/Y÷G)×0,⍳G
143.Test if numeric and conversion to numeric form X←C1
 1↓⍎'0 ',(∧/X∊' 0123456789')/X
144.Tests the social security number (Finnish) Y←'01...9ABC...Z'; 10=⍴X
 (¯1↑X)=((~Y∊'GIOQ')/Y)[1+31|⍎9↑X]
145.Conditional execution X←B0
 ⍎X/'EXPRESSION'
146.Conditional branch out of programs X←L0
 ⍎X/'→'
147.Using default value 100 if X does not exist X←A
 ⍎(¯3*2≠⎕NC 'X')↑'X100'
148.Conditional execution X←B0; Y←A1
 ⍎X↓'⍝ ...'
149.Giving a numeric default value for input X←D0
 1⍴(⍎⎕,',⍳0'),X
150.Assign values of expressions in X to variables named in Y X←C2; Y←C2
 A←⍕,',',',','(','0','⍴',Y,'←',X,')'
151.Evaluation of several expressions; results form a vector X←A
 ⍕,',',',','(',',',X,')'
152.Sum of numbers in character matrix X X←A2
 ⍕,'+',X
153.Indexing when rank is not known beforehand X←A; Y←I
 ⍎'X[',((¯1+⍴⍴X)⍴';'),'Y]'

FORMAT ⍕
154.Numeric headers (elements of X) for rows of table Y X←D1; Y←A2
 (3⌽7 0⍕X∘.+,0),⍕Y
155.Formatting a numerical vector to run down the page X←D1
 ⍕X∘.+,0
156.Representation of current date (ascending format)
 A ⍝ A[(' '=A)/⍳⍴A]←'.' ⍝ A←⍕⌽3↑⎕TS
157.Representation of current date (American)
 A ⍝ A[(' '=A)/⍳⍴A]←'/' ⍝ A←⍕100|1⌽3↑⎕TS
158.Formatting with zero values replaced with blanks X←A
 (⍴A)⍴B\(B←,('0'≠A)∨' '≠¯1⌽A)/,A←' ',⍕X
159.Number of digit positions in scalar X (depends on ⎕PP) X←D0
 ⍴⍕X
160.Leading zeroes for X in fields of width Y X←I1; Y←I0; X≥0
 0 1↓(2↑Y+1)⍕X∘.+,10*Y
161.Row-by-row formatting (width G) of X with Y decimals per row X←D2;
Y←I1; G←I0
 ((1,G)×⍴X)⍴2 1 3⍉(⌽G,⍴X)⍴(,G,[1.1]Y)⍕⍉X
163.Formatting X with H decimals in fields of width G X←D; G←I1; H←I1
 (,G,[1.1]H)⍕X

ROLL / DEAL ?
164.Y-shaped array of random numbers within (X[1],X[2]] X←I1; Y←I1
 X[1]+?Y⍴--/X

165.Removing punctuation characters X←A1
 (~Xϵ' .,:;?''')/X
166.Choosing Y objects out of ιX with replacement (roll) Y←I; X←I
 ?YρX
167.Choosing Y objects out of ιX without replacement (deal) X←I0; Y←I0
 Y?X
GEOMETRICAL FUNCTIONS ○
168.Arctan Y÷X X←D; Y←D
 ((X≠0)ׯ3○Y÷X+X=0)+○((X=0)×.5××Y)+(X<0)×1-2×y<0
169.Conversion from degrees to radians X←D
 X×○÷180
170.Conversion from radians to degrees X←D
 X×180÷○1
171.Rotation matrix for angle X (in radians) counter-clockwise X←D0
 2 2ρ1 ¯1 1 1×2 1 1 2○X

FACTORIAL / BINOMIAL !
172.Number of permutations of X objects taken Y at a time X←D; Y←D
 (!Y)×Y!X
173.Value of Taylor series with coefficients Y at point X X←D0; Y←D1
 +/Y×(X*A)÷!A←¯1+ιρY
174.Poisson distribution of states X with average number Y X←I; Y←D0
 (*-Y)×(Y*X)÷!X
175.Gamma function X←D0
 !X-1
176.Binomial distribution of X trials with probability Y X←I0; Y←D0
 (A!X)×(Y*A)×(1-Y)*X-A←-⎕IO-ιX+1
177.Beta function X←D0; Y←D0
 ÷Y×(X-1)!Y+X-1
178.Selecting elements satisfying condition X, others to 1 X←B; Y←D
 X!Y
179.Number of combinations of X objects taken Y at a time X←D; Y←D
 Y!X

INDEX OF ι
180.Removing elements Y from beginning and end of vector X X←A1; Y←A
 ((Aι1)-⎕IO)↓(⎕IO-(ɸA←~XϵY)ι1)↓X
181.Alphabetical comparison with alphabets G X←A; Y←A
 (GιX)
183.Sum over elements of X determined by elements of Y X←D1; Y←D1
 X+.×Y○.=((ιρY)=YιY)/Y
184.First occurrence of string X in string Y X←A1; Y←A1
 (∧≠(¯1+ιρX)ɸX○.=Y)ι1
185.Removing duplicate rows X←A2
 ((AιA)=ιρA←⎕IO++≠∧╲X∨.≠ɸX)≠X
186.First occurrence of string X in matrix Y X←A2; Y←A1; ¯1↑ρY↔→ρX
 (Y∧.=X)ι1
187.Indices of ones in logical vector X X←B1
 (+\X)ιι+/X
188.Executing costly monadic function F on repetitive arguments X←A1
 (F B/X)[+\B←(XιX)=ιρX]
189.Index of (first) maximum element of X X←D1
 Xι⌈/X
190.Index of first occurrence of elements of Y X←C1; Y←C1
 ⌊/XιY
191.Index of (first) minimum element of X X←D1
 Xι⌊/X
192.Test if each element of X occurs only once X←A1
 ∧/(XιX)=ιρX
193.Test if all elements of vector X are equal X←A1
 ∧/⎕IO=XιX
194.Interpretation of roman numbers X←A
 +/Aׯ1*A<1ɸa←0,1000 500 100 50 10 5 1['MDCLXVI'ιX]
195.Removing elements Y from end of vector X X←A1; Y←A
 (⎕IO-(~ɸXϵY)ι1)↓X
196.Removing trailing blanks X←C1
 (1-(ɸ' '≠X)ι1)↓X
198.Index of last occurrence of Y in X (⎕IO-1 if not found) X←A1; Y←A

```
 (¯1 1[2×□IO]+ρX)-(ΦX)ιY
199.Index of last occurrence of Y in X (0 if not found) X←A1; Y←A
 (1+ρX)-(ΦX)ιY
200.Index of last occurrence of Y in X, counted from the rear X←A1; Y←A
 (ΦX)ιY
201.Index of first occurrence of G in X (circularly) after Y X←A1; Y←I0; G←A
 □IO+(ρX)|Y+(YΦX)ιG
202.Alphabetizing X; equal alphabets in same column of Y Y←C2; X←C
 (¯1↑ρY)|(,Y)ιX
203.Changing index of an unfound element to zero Y←A1; X←A
 (1+ρY)|YιX
204.Replacing elements of G in set X with corresponding Y X←A1, Y←A1, G←A
 (ρG)ρA △ A[B/ιρB]←Y[(B←B≤ρY)/B←XιA←,G]
205.Removing duplicate elements (nub) X←A1
 ((XιX)=ιρX)/X
206.First word in X X←C1
 (¯1+Xι' ')↑X
207.Removing elements Y from beginning of vector X X←A1; Y←A
 (((~XϵY)ι1)-□IO)↓X
208.Removing leading zeroes X←A1
 (¯1+(X='0')ι0)↓X
209.Index of first one after index Y in X G←I0; X←B1
 Y+(Y↓X)ι1
210.Changing index of an unfound element to zero (not effective) X←A; Y←A1
 (XϵY)×YιX
211.Indicator of first occurrence of each unique element of X X←A1
 (XιX)=ιρX
212.Inverting a permutation X←I1
 XιιρX
213.Index of first differing element in vectors X and Y X←A1; Y←A1
 (Y≠X)ι1
214.Which elements of X are not in set Y (difference of sets) X←A; Y←A1
 (□IO+ρY)=YιX
215.Changing numeric code X into corresponding name in Y X←D; Y←D1; G←C2
 G[YιX;]
216.Index of key Y in key vector X X←A1; Y←A
 XιY
217.Conversion from characters to numeric codes X←A
 □AVιX
218.Index of first satisfied condition in X X←B1
 Xι1

OUTER PRODUCT ∘.! ∘.⌈ ∘.|
219.Pascal's triangle of order X (binomial coefficients) X←I0
 ΦA∘.!A←0,ιX
220.Maximum table X←I0
 (ιX)∘.⌈ιX
221.Number of decimals (up to Y) of elements of X X←D; Y←I0
 0+.≠(⌈(10*Y)×10*□IO-ιY+1)∘.|⌈X×10*Y
222.Greatest common divisor of elements of X X←I1
 ⌈/(∧/0=A∘.|X)/A←ι⌊/X
223.Divisibility table X←I1
 0=(ι⌈/X)∘.|X
224.All primes up to X X←I0
 (2=+/0=(ιX)∘.|ιX)/ιX

OUTER PRODUCT ∘.* ∘.× ∘.- ∘.+
225.Compound interest for principals Y at rates G % in times X X←D; Y←D; G←D
 Y∘.×(1+G÷100)∘.*X
226.Product of two polynomials with coefficients X and Y X←D1; Y←D1
 +/(□IO-ιρX)ΦX∘.×Y,0×1↓X
228.Shur product X←D2; Y←D2
 1 2 1 2⍉X∘.×Y
229.Direct matrix product X←D2; Y←D2
 1 3 2 4⍉X∘.×Y
230.Multiplication table X←I0
 (ιX)∘.×ιX
231.Replicating a dimension of rank three array X Y-fold Y←I0; X←A3
```

```
 X[;,(Yρ1)∘.×ι(ρX)[2];]
232.Array and its negative ('plus minus') X←D
 X∘.×1 ¯1
233.Move set of points X into first quadrant X←D2
 1 2 1⍉X∘.-⌊/X
234.Test relations of elements of X to range Y; result in ¯2..2 X←D; Y←D; 2=¯1↑ρY
 +/×X∘.-Y
235.Occurrences of string X in string Y X←A1; Y←A1
 (Y[A∘.+¯1+ιρX]∧.=X)/A←(A=1↑X)/ιρA←(1-ρX)↓Y
236.Sum of common parts of matrices (matrix sum) X←D2; Y←D2
 1 2 1 2⍉X∘.+Y
237.Adding X to each column of Y X←D1; Y←D2
 1 1 2⍉X∘.+Y
238.Adding X to each column of Y X←D1; Y←D2
 1 2 1⍉Y∘.+X
240.Adding X to each row of Y X←D1; Y←D2
 2 1 2⍉X∘.+Y
241.Adding X to each row of Y X←D1; Y←D2
 1 2 2⍉Y∘.+X
242.Hilbert matrix of order X X←ι0
 ÷¯1+(ιX)∘.+ιX
243.Moving index of width Y for vector X X←A1; Y←I0
 (0,ι(ρX)-Y)∘.+Y
244.Indices of subvectors of length Y starting at X+1 X←I1; Y←I0
 X∘.+ιY
245.Reshaping numeric vector X into a one-column matrix X←D1
 X∘.+,0
246.Annuity coefficient: X periods at interest rate Y % X←I; Y←D
 ((ρA)ρY÷100)÷A←⍉1-(1+Y÷100)∘.*-X

OUTER PRODUCT ∘.<∘.≤ ∘.≥ ∘.>
247.Matrix with X[i] trailing zeroes on row i X←I1
 X∘.<⌽ι⌈/x
248.Matrix with X[i] leading zeroes on row i X←I1
 X∘.<ι⌈/x
249.Distribution of X into intervals between Y X←D; Y←D1
 +/((¯1↓Y)∘.≤X)∧(1↓Y)∘.>X
250.Histogram (distribution barchart; down the page) X←I1
 ' ⎕'[⎕IO+(⌽ι⌈/A)∘.≤A←+/(ι1+(⌈/X)-⌊/X)∘.=X]
251.Barchart of integer values (down the page) X←I1
 ' ⎕'[⎕IO+(⌽ι⌈/X)∘.≤X]
252.Test if X is an upper triangular matrix X←D2
 ∧/,(0≠X)≤A∘.≤A←ι1↑ρX
253.Number of ?s intersecting ?s (X=starts, Y=stops) X←D1; Y←D1
 +/A∧⍉A←X∘.≤Y
254.Contour levels Y at points with altitudes X X←D0; Y←D1
 Y[+/Y∘.≤X]
255.X×X upper triangular matrix X←I0
 (ιX)∘.≤ιX
256.Classification of elements Y into X classes of equal size X←I0; Y←D1
 +/(A×X÷⌈/A←Y-⌊/Y)∘.≥¯1+ιX
257.Matrix with X[i] trailing ones on row i X←I1
 X∘.≥⌽ι⌈/X
258.Comparison table X←I1
 X∘.≥ι⌈/X,0
259.Barchart of X with height Y (across the page) X←D1; Y←D0
 ' ⎕'[⎕IO+X∘.≥(⌈/X)×(ιY)÷Y]
260.Barchart of integer values (across the page) X←I1
 ' ⎕'[⎕IO+X∘.≥ι⌈/X]
261.Matrix with X[i] leading ones on row i X←I1
 X∘.≥ι⌈/X
263.Test if X is a lower triangular matrix X←D2
 ∧/,(0≠X)≤A∘.≥A←ι1↑ρX
264.Test if X is within range [ Y[1],Y[2] ) X←D; Y←D1
 ≠/X∘.≥Y
265.Ordinal numbers of words in X that indices Y point to X←C1; Y←I
 ⎕IO++/Y∘.≥(' '=X)/ιρX
266.Which class do elements of X belong to X←D
```

```
 +/X∘.≥0 50 100 1000
267.X×X lower triangular matrix X←I0
 (ιX)∘.≥ιX
268.Moving all blanks to end of each row X←C
 (ρX)ρ(,(+/A)∘.>-⎕IO-ι¯1↑ρX)\(,A←X≠' ')/,X
269.Justifying right fields of X (lengths Y) to length G X←A1; Y←I1; G←I0
 (,Y∘.>ϕ(ιG)-⎕IO)\X
270.Justifying left fields of X (lengths Y) to length G X←A1; Y←I1; G←I0
 (,Y∘.>(ιG)-⎕IO)\X

OUTER PRODUCT ∘.≠ ∘.=
271.Indices of elements of Y in corr. rows of X (X[i;]ιY[i;]) X←A2; Y←A2
 1++/∧\1 2 1 3⍉Y∘.≠X
273.Indicating equal elements of X as a logical matrix X←A1
 ⍉X∘.=(1 1⍉<\x∘.=x)/x
275.Changing connection matrix X (¯1 → 1) to a node matrix X←I2
 (1 ¯1∘.=⍉X)+.×ι1↑ρ⎕←X
276.Sums according to codes G X←A; Y←D; G←A
 (G∘.=X)+.×Y
277.Removing duplicate elements (nub) X←A1
 (1 1⍉<\x∘.=x)/x
278.Changing node matrix X (starts,ends) to a connection matrix X←I2
 -/(ι⌈/,X)∘.=⍉X
279.Test if all elements of vector X are equal X←B1
 ∨/∧/0 1∘.=X
280.Test if elements of X belong to corr. row of Y (X[i;]∈Y[i;]) X←A2;
Y←A2; 1↑ρX←→1↑ρY
 ∨/1 2 1 3⍉X∘.=Y
281.Test if X is a permutation vector X←I1
 ∧/1=+/X∘.=ιρX
282.Occurrences of string X in string Y X←C1; Y←C1
 (∧≠(¯1+ιρX)ϕ(X∘.=Y),0)/ι1+ρY
283.Division to Y classes with width H, minimum G X←D; Y←I0; G←D0; H←D0
 +/(ιY)∘.=⌈(X-G)÷H
285.Repeat matrix X←A1; Y←A1
 (((¯1ϕ~A)∧A←(¯1↓X=1ϕX),0)/Y)∘.=Y
286.X×X identity matrix X←I0
 (ιX)∘.=ιX

INNER PRODUCT ⌈.× ⌊.× ⌊.+ ×.∘ ×.* +.*
287.Maxima of elements of subsets of X specified by Y X←A1; Y←B
 A+(X-A←⌊/X)⌈.×Y
288.Indices of last non-blanks in rows X←C
 (' '≠X)⌈.×ι¯1↑ρX
289.Maximum of X with weights Y X←D1; Y←D1
 Y⌈.×X
290.Minimum of X with weights Y X←D1; Y←D1
 Y⌊.×X
292.Extending a distance table to next leg X←D2
 X←X⌊.+X
293.A way to combine trigonometric functions (sin X cos Y) X←D0; Y←D0
 1 2×.∘X,Y
294.Sine of a complex number X←D; 2=1↑ρX
 (2 2ρ1 6 2 5)×.∘X
295.Products over subsets of X specified by Y X←A1; Y←B
 X×.*Y
296.Sum of squares of X X←D1
 X+.*2
297.Randomizing random numbers (in ⎕LX in a workspace)
 ⎕RL←⎕TS+.*2

INNER PRODUCT ∨.∧ <.< <.≤ <.≥ ≤.≥>.>
298.Extending a transitive binary relation X←B2
 X←X∨.∧X
299.Test if X is within range [ Y[1;],Y[2;] ) X←D0; Y←D2; 1↑ρY ←→ 2
 X<.
300.Test if X is within range ( Y[1;],Y[2;] ] X←D0; Y←D2; 1↑ρY ←→ 2
 X<.≤y
```

301.Test if X is within range (Y[1;],Y[2;]] X←D; Y←D2; 1↑ρY ←→ 2
 X<.≤Y
302.Test if the elements of X are ascending X←D1
 X<.≥1⌽X
303.Test if X is an integer within range [G,H) X←I0; G←I0; H←I0
 ~X≤.≥(⌈X),G,H
304.Test if X is within range (Y[1;],Y[2;]] X←D; Y←D2; 1↑ρY ←→ 2
 (X,[.1+ρρX]X)>.>Y

INNER PRODUCT ∨.≠ ∧.= +.≠ +.=
306.Removing trailing blank columns X←C2
 (⌽∨\⌽' '∨.≠X)/X
307.Removing leading blank rows X←C2
 (∨\X∨.≠' ')⌿X
308.Removing leading blank columns X←C2
 (∨\' '∨.≠X)/X
309.Index of first occurrences of rows of X as rows of Y X←A, Y←A2
 ⎕IO++/≠\∧\Y∨.≠⍉X
310.'X⍳Y' for rows of matrices X←A2; Y←A2
 ⎕IO++/≠\∧\X∨.≠⍉Y
311.Removing duplicate blank rows X←C2
 (A∨1↓1⌽1,A←X∨.≠' ')⌿X
312.Removing duplicate blank columns X←C2
 (A∨1,¯1↓A←' '∨.≠X)/X
313.Removing blank columns X←C2
 (' '∨.≠X)/X
314.Removing blank rows X←C2
 (X∨.≠' ')⌿X
315.Test if rows of X contain elements differing from Y X←A; Y←A0
 X∨.≠Y
316.Removing trailing blank rows X←C2
 (-2↑+/∧\⌽X∧.=' ')↓X
317.Removing duplicate rows X←A2
 (∨≠<\X∧.=⍉X)⌿X
318.Removing duplicate rows X←A2
 (1 1⍉<\X∧.=⍉X)⌿X
319.Test if circular lists are equal (excluding phase) X←A1; Y←A1
 ∨/Y∧.=⍉(⍳ρX)⌽(2ρρX)ρX
320.Test if all elements of vector X are equal X←B1
 X∧.=∨/X
321.Test if all elements of vector X are equal X←B1
 X∧.=∧/X
322.Rows of matrix X starting with string Y X←A2; Y←A1
 ((((1↑ρX),ρY)↑X)∧.=Y)⌿X
323.Occurrences of string X in string Y X←A1; Y←A1
 ((-A)↓X∧.=(A,1+ρY)ρY)/⍳(ρY)+1-A←ρX
324.Test if vector Y is a row of array X X←A; Y←A1
 1∊X∧.=Y
325.Comparing vector Y with rows of array X X←A; Y←A1
 X∧.=Y
326.Word lengths of words in list X X←C
 X+.≠' '
327.Number of occurrences of scalar X in array Y X←A0; Y←A
 X+.=,Y
328.Counting pairwise matches (equal elements) in two vectors X←A1; Y←A1
 X+.=Y

INNER PRODUCT -.÷ +.÷ +.×
329.Sum of alternating reciprocal series Y÷X X←D1; Y←D1
 Y-.÷X
330.Limits X to fit in ⍕ field Y[1 2] X←D; Y←I1
 (X⌈1↓A)⌊1↑A←(2 2ρ¯1 1 1 ¯.1)+.×10*(-1↓Y),-/Y+Y>99 0
331.Value of polynomial with coefficients Y at point X X←D0; Y←D
 (X*¯1+⍳ρY)+.×⌽Y
332.Arithmetic average (mean value) of X weighted by Y X←D1; Y←D1
 (Y+.×X)÷ρX
333.Scalar (dot) product of vectors X←D1; Y←D1
 Y+.×X

334.Sum of squares of X X←D1
 X+.×X
335.Summation over subsets of X specified by Y X←A1; Y←B
 X+.×Y
336.Matrix product X←D; Y←D; ¯1↑ρX ←→ 1↑ρY
 X+.×Y
337.Sum of reciprocal series Y÷X X←D1; Y←D1
 Y+.÷X

SCAN ⌈\ ⌊\ ×\ −\
338.Groups of ones in Y pointed to by X (or trailing parts) X←B; Y←B
 Y∧A=⌈\X×A←+\Y>¯1↓0,Y
339.Test if X is in ascending order along direction Y X←D; Y←I0
 ∧/[Y]X=⌈\[Y]X
340.Duplicating element of X belonging to Y,1↑X until next found X←A1;
Y←B1
 X[1⌈⌈\Y×ιρY]
341.Test if X is in descending order along direction Y X←D; Y←I0
 ∧/[Y]X=⌊\[Y]X
342.Value of Taylor series with coefficients Y at point X X←D0; Y←D1
 +/Y××\1,X÷ι¯1+ρY
343.Alternating series (1 ¯1 2 ¯2 3 ¯3 ...) X←I0
 −\ιX

SCAN ∼∧\ <\ ≤\ ≠\
346.Value of saddle point X←D2
 (<\,(x=(ρx)ρ⌈≠x)∧x=⍉(⌽ρx)ρ⌊/x)/,x
348.First one (turn off all ones after first one) X←B
 <\x
350.Not first zero (turn on all zeroes after first zero) X←B
 ≤\X
351.Running parity (≠\) over subvectors of Y indicated by X X←B1; Y←B1
 ≠\Y≠X\A≠¯1↓0,A←X/≠\¯1↓0,Y
352.Vector (X[1]ρ1),(X[2]ρ0),(X[3]ρ1),... X←I1; ∧/0
 ≠\(ι+/X)ε+\⎕IO,X
353.Not leading zeroes(∨\) in each subvector of Y indicated by X X←B1; Y←B1
 ≠\(Y∨X)\A≠¯1↓0,A←(Y∨X)/Y
354.Leading ones (∧\) in each subvector of Y indicated by X X←B1; Y←B1
 ∼≠\(Y≤X)\A≠¯1↓0,A←∼(Y≤X)/Y
355.Locations of texts between and including quotes X←C1
 A∨¯1↓0,A←≠\X=''''
356.Locations of texts between quotes X←C1
 A∧¯1↓0,A←≠\X=''''
357.Joining pairs of ones X←B
 X∨≠\X
358.Places between pairs of ones X←B
 (∼X)∧≠\X
359.Running parity X←B
 ≠\X

SCAN ∨\ ∧\
360.Removing leading and trailing blanks X←C1
 ((⌽∨\⌽A)∧∨\A←' '≠X)/X
361.First group of ones X←B
 X∧∧\X=∨\X
362.Removing trailing blank columns X←C2
 (⌽∨\⌽∨≠' '≠X)/X
363.Removing trailing blanks X←C1
 (⌽∨\⌽' '≠X)/X
364.Removing leading blanks X←C1
 (∨\' '≠X)/X
365.Not leading zeroes (turn on all zeroes after first one) X←B
 ∨\X
366.Centering character array X with ragged edges X←C
 (A−⌊0.5×(A←+/∧\⌽A)++/∧\A←' '=⌽X)⌽X
367.Decommenting a matrix representation of a function (⎕CR) X←C2
 (∨/A)≠(ρX)ρ(,A)\(,A←∧\('⍝'≠X)∨≠\X='''')/,X
369.Centering character array X with only right edge ragged X←C

```
 (-⌊0.5×+/∧\' '=⌽X)⌽X
370.Justifying right X←C
 (-+/∧\⌽' '=X)⌽X
371.Removing trailing blanks X←C1
 (-+/∧\⌽' '=X)↓X
372.Justifying left X←C
 (+/∧\' '=X)⌽X
373.Editing X with Y ∇-wise X←C1; Y←C1
 ((~(ρA↑X)↑'/'=Y)/A↑X),(1↓A↓Y),(A←+/∧\Y≠','))↓X
374.Removing leading blanks X←C1
 (+/∧\' '=X)↓X
375.Indices of first blanks in rows of array X X←C
 ⎕IO++/∧\' '≠X
377.Leading ones (turn off all ones after first zero) X←B
 ∧\X


SCAN +\
378.Vector (X[1]ρ1),(Y[1]ρ0),(X[2]ρ1),... Q←I1; Y←I1
 (ι+/X,Y)ϵ+\1+¯1↓0,((ι+/X)ϵ+\X)\Y
379.Replicate Y[i] X[i] times (for all i) X←I1; Y←A1
 ((X≠0)/Y)[+\¯1Φ(ι+/X)ϵ+\X]
380.Vector (Y[1]+ιX[1]),(Y[2]+ιX[2]),(Y[3]+ιX[3]),... X←I1; Y←I1; ρX↔ρY
 ⎕IO++\1+((ι+/X)ϵ+\⎕IO,X)\Y-¯1↓1,X+Y
381.Replicate Y[i] X[i] times (for all i) X←I1; Y←A1; ∧/0
 Y[+\(ι+/X)ϵ¯1↓1++\0,X]
382.Replicate Y[i] X[i] times (for all i) X←I1; Y←A1; ∧/0
 Y[⎕IO++\(ι+/X)ϵ⎕IO++\X]
383.Cumulative sums (+\) over subvectors of Y indicated by X X←B1; Y←D1
 +\Y-X\A-¯1↓0,A←X/+\¯1↓0,Y
384.Sums over (+/) subvectors of Y, lengths in X X←I1; Y←D1
 A-¯1↓0,A←(+\Y)[+\X]
386.X first figurate numbers X←I0
 +\+\ιX
387.Insert vector for X[i] zeroes after i:th subvector X←I1; Y←B1
 (ι(ρY)++/X)ϵ+\1+¯1↓0,(1ΦY)\X
388.Open a gap of X[i] after Y[G[i]] (for all i) X←I1; Y←A1; G←I1
 ((ι(ρY)++/X)ϵ+\1+¯1↓0,((ιρY)ϵG)\X)\Y
389.Open a gap of X[i] before Y[G[i]] (for all i) X←I1; Y←A1; G←I1
 ((ι(ρY)++/X)ϵ+\1+((ιρY)ϵG)\X)\Y
390.Changing lengths X of subvectors to starting indicators X←I1
 A Δ A[+\¯1↓⎕IO,X]←1 Δ A←(+/X)ρ0
391.Changing lengths X of subvectors to ending indicators X←I1
 (ι+/X)ϵ(+\X)-~⎕IO
392.Changing lengths X of subvectors to starting indicators X←I1
 (ι+/X)ϵ+\⎕IO,X
393.Insert vector for X[i] elements before i:th element X←I1
 (ι+/A)ϵ+\A←1+X
394.Sums over (+/) subvectors of Y indicated by X X←B1; Y←D1
 A-¯1↓0,A←(1ΦX)/+\Y
395.Fifo stock Y decremented with X units Y←D1; X←D0
 G-¯1↓0,G←0⌈(+\Y)-X
396.Locations of texts between and including quotes X←C1
 A∨¯1↓0,A←2|+\X=''''
397.Locations of texts between quotes X←C1
 A∧¯1↓0,A←2|+\X=''''
398.X:th subvector of Y (subvectors separated by Y[1]) Y←A1; X←I0
 1↓(X=+\Y=1↑Y)/Y
399.Locating field number Y starting with first element of X Y←I0; X←C1
 (Y=+\X=1↑X)/X
400.Sum elements of X marked by succeeding identicals in Y X←D1; Y←D1
 A-¯1↓0,A←(Y≠1↓Y,0)/+\X
401.Groups of ones in Y pointed to by X X←B1; Y←B1
 Y∧Aϵ(X∧Y)/A←+\Y>¯1↓0,Y
402.ith starting indicators X X←B1; Y←B1
 (+\X)ϵY/ιρY
403.G:th subvector of Y (subvectors indicated by X) X←B1; Y←A1; G←I0
 (G=+\X)/Y
404.Running sum of Y consecutive elements of X X←D1; Y←I0
```

```
  ((Y-1)↓A)-0,(-Y)↓A←+\X
405.Depth of parentheses X←C1
 +\('('=X)-¯1↓0,')'=X
406.Starting positions of subvectors having lengths X X←I1
 +\¯1↓□IO,X
407.Changing lengths X of subvectors of Y to ending indicators X←I1
 (ιρY)∈(+\X)-~□IO
408.Changing lengths X of subvectors of Y to starting indicators X←I1
 (ιρY)∈+\□IO,X
409.X first triangular numbers X←I0
 +\ιX
410.Cumulative sum X←D
 +\X

REDUCTION ○/ ÷/ -/ ×/
411.Complementary angle (arccos sin X) X←D0
 ○/¯2 1,X
412.Evaluating a two-row determinant X←D2
 -/×/0 1⊖X
413.Evaluating a two-row determinant X←D2
 -/×≠0 1⌽X
414.Area of triangle with side lengths in X (Heron's formula) X←D1; 3 ↔ ρX
 (×/(+/X÷2)-0,X)*.5
415.Juxtapositioning planes of rank 3 array X X←A3
 (×≠2 2ρ1,ρX)ρ2 1 3⍉X
416.Number of rows in array X (also of a vector) X←A
 ×/¯1↓ρX
417.(Real) solution of quadratic equation with coefficients X X←D1; 3 ↔ ρX
 (-X[2]-¯1 1×((X[2]*2)-×/4,X[1 3])*.5)÷2×X[1]
418.Reshaping planes of rank 3 array to rows of a matrix X←A3
 (×/2 2ρ1,ρX)ρX
419.Reshaping planes of rank 3 array to a matrix X←A3
 (×/2 2ρ(ρX),1)ρX
420.Number of elements (also of a scalar) X←A
 ×/ρX
421.Product of elements of X X←D1
 ×/X
422.Alternating product X←D
 ÷/X
423.Centering text line X into a field of width Y X←C1; Y←I0
 Y↑((⌊-/.5×Y,ρX)ρ' '),X
424.Alternating sum X←D
 -/X

REDUCTION ⌈/ ⌊/
425.Test if all elements of vector X are equal X←D1
 (⌈/X)=⌊/X
426.Size of range of elements of X X←D1
 (⌈/X)-⌊/X
427.Conversion of set of positive integers X to a mask X←I1
 (ι⌈/X)∈X
428.Negative infinity; the smallest representable value
 ⌈/ι0
429.Vectors as column matrices in catenation beneath each other X←A1/2; Y←A1/2
 X,[1+.5×⌈/(ρρX),ρρY]Y
430.Vectors as row matrices in catenation upon each other X←A1/2; Y←A1/2
 X,[.5×⌈/(ρρX),ρρY]Y
431.Quick membership (∈) for positive integers X←I1; Y←I1
 A[X] ∆ A[Y]←1 ∆ A←(⌈/X,Y)ρ0
432.Positive maximum, at least zero (also for empty X) X←D1
 ⌈/X,0
433.Maximum of elements of X X←D1
 ⌈/X
434.Positive infinity; the largest representable value
 ⌊/ι0
435.Minimum of elements of X X←D1
 ⌊/X
```

REDUCTION ∨/ ˜∧/ ≠/
436.Test if all elements of vector X are equal X←B1
 ˜∧/0 1∈X
437.Test if all elements of vector X are equal X←B1
 (∧/X)∨~∨/X
438.Test if all elements of vector X are equal X←B1
 (∧/X)=∨/X
439.Test if all elements of vector X are equal X←B1
 ∧/X÷∨/X
440.Removing duplicate rows from ordered matrix X X←A2
 (¯1φ1↓(∨/X≠¯1⊖X),1)/X
441.Vector having as many ones as X has rows X←A2
 ∨/0/X
442.Test if X and Y have elements in common X←A; Y←A1
 ∨/Y∈X
443.None, neither X←B
 ~∨/X
444.Any, anyone X←B
 ∨/X
445.Test if all elements of vector X are equal X←B1
 ≠/0 1∈X
446.Parity X←B
 ≠/X

REDUCTION ∧/
447.Number of areas intersecting areas in X X←D3 (n × 2 × dim)
 +/A∧⍉A←∧/X[;A⍴1;]≤2 1 3⍉X[;(A←1↑⍴X)⍴2;]
448.Test if all elements of vector X are equal X←B1
 ∧/X/1φX
449.Comparison of successive rows X←A2
 ∧/X=1⊖X
450.Test if all elements of vector X are equal X←A1
 ∧/X=1φX
451.Test if X is a valid APL name X←C1
 ∧/((1↑X)∈10↓A),X∈A←'0..9A..Z∆a..x∆'
452.Test if all elements of vector X are equal X←A1
 ∧/X=1↑X
453.Identity of two sets X←A1; Y←A1
 ∧/(X∈Y),Y∈X
454.Test if X is a permutation vector X←I1
 ∧/(ι⍴X)∈X
455.Test if all elements of vector X are equal X←B1
 ~∧/X∈~X
456.Test if X is boolean X←A
 ∧/,X∈0 1
457.Test if Y is a subset of X (Y ⊂ X) X←A; Y←A1
 ∧/Y∈X
458.Test if arrays of equal shape are identical X←A; Y←A; ⍴X ↔ ⍴Y
 ∧/,X=Y
459.Test if all elements of vector X are equal X←A1
 ∧/X=X[1]
460.Blank rows X←C2
 ∧/' '=X
461.All, both X←B
 ∧/X

REDUCTION +/
462.Standard deviation of X X←D1
 ((+/(X-(+/X)÷⍴X)*2)÷⍴X)*.5
463.Y:th moment of X X←D1
 (+/(X-(+/X)÷⍴X)*Y)÷⍴X
464.Variance (dispersion) of X X←D1
 (+/(X-(+/X)÷⍴X)*2)÷⍴X
465.Arithmetic average (mean value), also for an empty array X←D
 (+/,X)÷1⌈⍴,X
466.Test if all elements of vector X are equal X←B1
 0=(⍴X)|+/X
467.Average (mean value) of columns of matrix X X←D2

```
 (+⌿X)÷1↑(⍴X),1
468.Average (mean value) of rows of matrix X X←D2
 (+/X)÷¯1↑1,⍴X
469.Number of occurrences of scalar X in array Y X←A0; Y←A
 +/X=,Y
470.Average (mean value) of elements of X along direction Y X←D; Y←I0
 (+/[Y]X)÷(⍴X)[Y]
471.Arithmetic average (mean value) X←D1
 (+/X)÷⍴X
472.Resistance of parallel resistors X←D1
 ÷+/÷X
473.Sum of elements of X X←D1
 +/X
474.Row sum of a matrix X←D2
 +/X
475.Column sum of a matrix X←D2
 +⌿X
476.Reshaping one-element vector X into a scalar X←A1
 +/X
477.Number of elements satisfying condition X X←B1
 +/X


REVERSE ⌽ ⊖
478.Scan from end with function α X←A
 ⌽α\⌽X
479.The index of positive integers in Y X←I; Y←I1
 A[X] ∆ A[⌽Y]←⌽⍳⍴Y ∆ A←9999⍴⎕IO+⍴Y
480.'Transpose' of matrix X with column fields of width Y X←A2; G←I0
 ((⌽A)×1,Y)⍴2 1 3⍉(1⌽Y,A←(⍴X)÷1,Y)⍴X
482.Adding X to each column of Y X←D1; Y←D; (⍴X)=1↑⍴Y
 Y+⍉(⌽⍴Y)⍴X
483.Matrix with shape of Y and X as its columns X←A1; Y←A2
 ⍉(⌽⍴Y)⍴X
484.Derivate of polynomial X X←D1
 ¯1↓X×⌽¯1+⍳⍴X
485.Reverse vector X on condition Y X←A1; Y←B0
 ,⌽[⎕IO+Y](1,⍴X)⍴X
486.Reshaping vector X into a one-column matrix X←A1
 (⌽1,⍴X)⍴X
487.Avoiding parentheses with help of reversal
 (⌽1, ...)


ROTATE ⌽ ⊖
488.Vector (cross) product of vectors X←D; Y←D
 ((1⌽X)×¯1⌽Y)-(¯1⌽X)×1⌽Y
489.A magic square, side X X←I0; 1=2|X
 A⊖(A←(⍳X)-⌈X÷2)⌽(X,X)⍴⍳X×X
490.Removing duplicates from an ordered vector X←A1
 (¯1⌽1↓(X≠¯1⌽X),1)/X
491.An expression giving itself
 1⌽22⍴11⍴'''1⌽22⍴11⍴'''
492.Transpose matrix X on condition Y X←A2; Y←B0
 (Y⌽1 2)⍉X
493.Any element true (∨/) on each subvector of Y indicated by X X←B1; Y←B1
 (X/Y)≥A/1⌽A←(Y∨X)/X
494.All elements true (∧/) on each subvector of Y indicated by X X←B1; Y←B1
 (X/Y)∧A/1⌽A←(Y≤X)/X
495.Removing leading, multiple and trailing Y's X←A1; Y←A0
 (1↑A)↓(A⍲1⌽A←Y=X)/X
496.Changing starting indicators X of subvectors to lengths X←B1
 A-¯1↓0,A←(1⌽X)/⍳⍴X
498.(Cyclic) compression of successive blanks X←C1
 (A∨1⌽A←X≠' ')/X
499.Aligning columns of matrix X to diagonals X←A2
 (1-⍳¯1↑⍴X)⌽X
500.Aligning diagonals of matrix X to columns X←A2
 (¯1+⍳¯1↑⍴X)⌽X
501.Diagonal matrix with elements of X X←D1
```

```
   0 ¯1↓(-⍳⍴X)⌽((2⍴⍴X)⍴0),X
502.Test if elements differ from previous ones (non-empty X) X←A1
   1,1↓X≠¯1⌽X
503.Test if elements differ from next ones (non-empty X) X←A1
   (¯1↓X≠1⌽X),1
504.Replacing first element of X with Y X←A1; Y←A0
   ¯1⌽1↓X,Y
505.Replacing last element of X with Y X←A1; Y←A0
   1⌽¯1↓Y,X
506.Ending points for X in indices pointed by Y X←A1; Y←I1
   1⌽(⍳⍴X)∊Y
507.Leftmost neighboring elements cyclically X←A
   ¯1⌽X
508.Rightmost neighboring elements cyclically X←A
   1⌽X

TRANSPOSE ⍉
509.Applying to columns action defined on rows X←A1; Y←I0
   ⍉ ... ⍉X
510.Retrieving scattered elements Y from matrix X X←A2; Y←I2
   1 1⍉X[Y[1;];Y[2;]]
511.Successive transposes of G (X after Y: X⍉Y⍉G) X←I1; Y←I1
   X[Y]⍉G
512.Major diagonal of array X X←A
   (1*⍴X)⍉X
513.Reshaping a 400×12 character matrix to fit into one page X←C2
   40 120⍴2 1 3⍉10 40 12⍴X
514.Transpose of planes of a rank three array X←A3
   1 3 2⍉X
515.Major diagonal of matrix X X←A2
   1 1⍉X
516.Selecting specific elements from a 'large' outer product X←A; Y←A; G←I1
   G⍉X∘.⍺Y
517.Test for antisymmetricity of square matrix X X←D2
   ~0∊X=-⍉X
518.Test for symmetricity of square matrix X X←A2
   ~0∊X=⍉X
519.Matrix with X columns Y X←I0; Y←D1
   ⍉(X,⍴Y)⍴Y

MAXIMUM ⌈ MINIMUM ⌊
520.Limiting X between Y[1] and Y[2], inclusive X←D; Y←D1
   Y[1]⌈Y[2]⌊X
521.Inserting vector Y to the end of matrix X X←A2; Y←A1
   (A↑X),[⍳1](1↓A←(⍴X)⌈0,⍴Y)↑Y
522.Widening matrix X to be compatible with Y X←A2; Y←A2
   ((0 1×⍴Y)⌈⍴X)↑X
523.Lengthening matrix X to be compatible with Y X←A2; Y←A2
   ((1 0×⍴Y)⌈⍴X)↑X
524.Reshaping non-empty lower-rank array X into a matrix X←A; 2≥⍴⍴X
   (1⌈¯2↑⍴X)⍴X
525.Take of at most X elements from Y X←I; Y←A
   (X⌊⍴Y)↑Y
526.Limiting indices and giving a default value G X←A1; Y←I; G←A0
   (X,G)[(1+⍴X)⌊Y]

CEILING ⌈ FLOOR ⌊
527.Reshaping X into a matrix of width Y X←D, Y←I0
   ((⌈(⍴,X)÷Y),Y)⍴X
528.Rounding to nearest even integer X←D
   ⌊X+1≤2|X
529.Rounding, to nearest even integer for .5 = 1||X X←D
   ⌊X+.5×.5≠2|X
530.Rounding, to nearest even integer for .5 = 1||X X←D
   ⌊X+.5×.5≠2|X
531.Arithmetic progression from X to Y with step G X←D0; Y←D0; G←D0
   X+(G××Y-X)×(⍳1+|⌊(Y-X)÷G)-⎕IO
532.Centering text line X into a field of width Y X←C1; Y←I0
```

```
 (-⌊.5×Y+ρX)↑X
533.Test if integer X←D
 X=⌊X
534.Rounding currencies to nearest 5 subunits X←D
 .05×⌊.5+X÷.05
535.First part of numeric code ABBB X←I
 ⌊X÷1000
536.Rounding to X decimals X←I; Y←D
 (10*-X)×⌊0.5+Y×10*X
537.Rounding to nearest hundredth X←D
 0.01×⌊0.5+100×X
538.Rounding to nearest integer X←D
 ⌊0.5+X
539.Demote floating point representations to integers X←I
 ⌊X

RESIDUE |
540.Test if X is a leap year X←I
 (0=400|X)∨(0≠100|X)∧0=4|X
541.Framing X←C2
 '_',[1]('|',X,'|'),[1]'‾'
542.Magnitude of fractional part X←D
 1||X
543.Fractional part with sign X←D
 (×X)|X
544.Increasing the dimension of X to multiple of Y X←A1; Y←I0
 X,(Y|-ρX)↑0/X
545.Removing every Y:th element of X X←A1; Y←I0
 (0≠Y|ιρX)/X
546.Taking every Y:th element of X X←A1; Y←I0
 (0=Y|ιρX)/X
547.Divisors of X X←I0
 (0=A|X)/A←ιX
548.Removing every second element of X X←A1
 (2|ιρX)/X
549.Elements of X divisible by Y X←D1; Y←D0/1
 (0=Y|X)/X
550.Ravel of a matrix to Y[1] columns with a gap of Y[2] X←A2; Y←I1
 (A×Y[1]*‾1 1)ρ(A←(ρX)+(Y[1]|-1↑ρX),Y[2])↑X
551.Test if even X←I
 ~2|X
552.Last part of numeric code ABBB X←I
 1000|X
553.Fractional part X←D
 1|X

MAGNITUDE |, SIGNUM ×
554.Increasing absolute value without change of sign X←D; Y←D
 (×X)×Y+|X
555.Rounding to zero values of X close to zero X←D; Y←D
 X×Y≤|X
556.Square of elements of X without change of sign X←D
 X×|X
557.Choosing according to signum X←D; Y←A1
 Y[2+×X]

EXPAND \ ⍀
558.Not first zero (≤\) in each subvector of Y indicated by X X←B1; Y←B1
 ~(B∧X)∨(B∨X)\A>‾1↓0,A←(B∨X)/B←~Y
559.First one (<\) in each subvector of Y indicated by X X←B1; Y←B1
 (Y∧X)∨(Y∨X)\A>‾1↓0,A←(Y∨X)/Y
560.Replacing elements of X in set Y with blanks/zeroes X←A0; Y←A1
 A\(A←~X∈Y)/X
561.Replacing elements of X not in set Y with blanks/zeroes X←A1; Y←A
 A\(A←X∈Y)/X
562.Merging X and Y under control of G (mesh) X←A1; Y←A1; G←B1
 A Δ A[(~G)/ιρG]←Y Δ A←G\X
563.Replacing elements of X not satisfying Y with blanks/zeroes X←A; Y←B1
```

```
  Y\Y/X
564.Adding an empty row into X after rows Y X←A2; Y←I1
 (~(ι(ρY)+1ρρX)∊Y+ιρY)⌿X
565.Test if numeric X←A1
 0∊0\0ρX
566.Adding an empty row into X after row Y X←A2; Y←I0
 ((Y+1)≠ι1+1ρρX)⌿X
567.Underlining words X←C1
 X,[⎕IO-.1](' '≠X)\'‾'
568.Using boolean matrix Y in expanding X X←A1; Y←B2
 (ρY)ρ(,Y)\X
569.Spacing out text X←C1
 ((2×ρX)ρ1 0)\X


COMPRESS / ≠
570.Lengths of groups of ones in X X←B1
 (A>0)/A←(1↓A)-1+‾1↓A←(~A)/ιρA←0,X,0
571.Syllabization of a Finnish word X X←A1
 (~A∊1,ρX)/A←A/ιρA←(1↓A,0)
572.Choosing a string according to boolean value G X←C1; Y←C1; G←B0
 (G/X),(~G)/Y
573.Removing leading, multiple and trailing blanks X←C1
 (' '=1↑X)↓((1↓A,0)∨A←' '≠X)/X
575.Removing columns Y from array X X←A; Y←I1
 (~(ι‾1↑ρX)∊Y)/X
576.Removing trailing blanks X←C1
 (‾1↑(' '≠X)/ιρX)ρX
577.Lengths of subvectors of X having equal elements X←A1
 (1↓A)-‾1↓A←(A,1)/ι1+ρA←1,(1↓X)≠‾1↓X
578.Field lengths of vector X; G ↔ ending indices X←A1; G←I1
 G-‾1↓0,G←(~⎕IO)+(((1↓X)≠‾1↓X),1)/ιρX
580.Removing multiple and trailing blanks X←C1
 ((1↓A,0)∨A←' '≠X)/X
581.Removing leading and multiple blanks X←C1
 (A∨‾1↓0,A←' '≠X)/X
582.Removing multiple blanks X←C1
 (A∨‾1↓1,A←' '≠X)/X
583.Removing duplicate Y's from vector X X←A1; Y←A0
 (A∨‾1↓1,A←X≠Y)/X
584.Indices of all occurrences of elements of Y in X X←A1; Y←A
 (X∊Y)/ιρX
585.Union of sets, ∪ X←A1; Y←A1
 Y,(~X∊Y)/X
586.Elements of X not in Y (difference of sets) X←A1; Y←A
 (~X∊Y)/X
587.Rows of non-empty matrix X starting with a character in Y X←A2; Y←A1
 (X[;1]∊Y)⌿X
588.Intersection of sets, ∩ X←A1; Y←A
 (X∊Y)/X
589.Reduction with function α in dimension Y, rank unchanged Y←I0; X←A
 ((ρX)*Y≠ιρρX)ρ α/[Y]X
590.Replacing all values X in G with Y X←A0; Y←A0; G←A
 (ρG)ρA △ A[(A=X)/ιρA←,G]←Y
591.Indices of all occurrences of Y in X X←A1; Y←A0
 (Y=X)/ιρX
592.Replacing elements of G satisfying X with Y Y←A0; X←B1; G←A1
 G[X/ιρG]←Y
593.Removing duplicates from positive integers X←I1
 A/ι9999 △ A[X]←1 △ A←9999ρ0
594.Indices of ones in logical vector X X←B1
 X/ιρX
595.Conditional in text X←B0
 ((~X)/'IN'),'CORRECT'
596.Removing blanks X←A1
 (' '≠X)/X
597.Removing elements Y from vector X X←A1; Y←A0
 (X≠Y)/X
598.Vector to expand a new element after each one in X X←B1
```

```
 (,X,[1.5]1)/,X,[1.5]~X
599.Reduction with FUNCTION α without respect to shape X←D
 α/,X
600.Reshaping scalar X into a one-element vector X←A
 1/X
601.Empty matrix X←A2
 0≠X
602.Selecting elements of X satisfying condition Y X←A; Y←B1
 Y/X


TAKE ↑
603.Inserting vector X into matrix Y after row G X←A1; Y←A2; G←I0
 Y[⍳G;],[1]((1↓ρY)↑X),[1](2↑G)↓Y
604.Filling X with last element of X to length Y X←A1; Y←I0
 Y↑X,Yρ¯1↑X
605.Input of row Y of text matrix X X←C2; Y←I0
 X[Y;]←(1↑ρX)↑⎕
606.First ones in groups of ones X←B
 X>((-ρρX)↑¯1)↓0,X
607.Inserting X into Y after index G X←A1; Y←A1; G←I0
 (G↑Y),X,G↓Y
608.Pairwise differences of successive columns (inverse of +\) X←D
 X-((-ρρX)↑¯1)↓0,X
609.Leftmost neighboring elements X←D
 ((-ρρX)↑¯1)↓0,X
610.Rightmost neighboring elements X←D
 ((-ρρX)↑1)↓X,0
611.Shifting vector X right with Y without rotate X←A1; Y←I0
 (-ρX)↑(-Y)↓X
612.Shifting vector X left with Y without rotate X←A1; Y←I0
 (ρX)↑Y↓X
613.Drop of Y first rows from matrix X X←A2; Y←I0
 (2↑Y)↓X
614.Test if numeric X←A
 0∈1↑0ρX
615.Reshaping non-empty lower-rank array X into a matrix X←A; 2≥ρρX
 (¯2↑1 1,ρX)ρX
616.Giving a character default value for input X←C0
 1↑⎕,X
617.Adding scalar Y to last element of X X←D; Y←D0
 X+(-ρX)↑Y
618.Number of rows in matrix X X←A2
 1↑ρX
619.Number of columns in matrix X X←A2
 ¯1↑ρX
620.Ending points for X fields of width Y X←I0; Y←I0
 (X×Y)ρ(-Y)↑1
621.Starting points for X fields of width Y X←I0; Y←I0
 (X×Y)ρY↑1
622.Zero or space depending on the type of X (fill element) X←A
 1↑0ρX
623.Forming first row of a matrix to be expanded X←A1
 1 80ρ80↑X
624.Vector of length Y with X ones on the left, the rest zeroes X←I0; Y←I0
 Y↑Xρ1
625.Justifying text X to right edge of field of width Y Y←I0; X←C1
 (-Y)↑X


DROP ↓
627.Starting points of groups of equal elements (non-empty X) X←A1
 1,(1↓X)≠¯1↓X
628.Ending points of groups of equal elements (non-empty X) X←A1
 ((1↓X)≠¯1↓X),1
629.Pairwise ratios of successive elements of vector X X←D1
 (1↓X)÷¯1↓X
630.Pairwise differences of successive elements of vector X X←D1
 (1↓X)-¯1↓X
631.Differences of successive elements of X along direction Y X←D; Y←I0
```

```
 X-(-Y=ιρρX)↓0,[Y]X
632.Ascending series of integers Y..X (for small Y and X) X←I0; Y←I0
 (Y-1)↓ιX
633.First ones in groups of ones X←B1
 X>¯1↓0,X
634.Last ones in groups of ones X←B1
 X>1↓X,0
635.List of names in X (one per row) X←C2
 1↓,',',X
636.Selection of X or Y depending on condition G X←A0; Y←A0; G←B0
 ''ρG↓X,Y
637.Restoring argument of cumulative sum (inverse of +\) X←D1
 X-¯1↓0,X
638.Drop of Y first rows from matrix X X←A2; Y←I0
 (Y,0)↓X
639.Drop of Y first columns from matrix X X←A2; Y←I0
 (0,Y)↓X
640.Number of rows in matrix X X←A2
 ¯1↓ρX
641.Number of columns in matrix X X←A2
 1↓ρX
642.Conditional drop of Y elements from array X X←A; Y←I1; G←B1
 (Y×G)↓X
643.Conditional drop of last element of X X←A1; Y←B0
 (-Y)↓X

MEMBER OF ∈
644.Expansion vector with zero after indices Y X←A1; Y←I1
 ~(ι(ρY)+ρX)∈Y+ιρY
645.Boolean vector of length Y with zeroes in locations X X←I; Y←I0
 (~(ιY)∈X)
646.Starting points for X in indices pointed by Y X←A1; Y←I1
 (ιρX)∈Y
647.Boolean vector of length Y with ones in locations X X←I; Y←I0
 (ιY)∈X
648.Check for input in range 1..X X←A
 (Y←□)∈ιX
649.Test if arrays are identical X←A; Y←A
 ~0∈X=Y
650.Zeroing elements of Y depending on their values Y←D; X←D
 Y×~Y∈X
651.Test if single or scalar X←A
 1∈ρ,X
652.Test if vector X←A
 1∈ρρX
653.Test if X is an empty array X←A
 0∈ρX

INDEX GENERATOR ι
654.Inverting a permutation X←I1
 A ∆ A[X]←A ∆ A←ιρX
655.All axes of array X X←A
 ιρρX
656.All indices of vector X X←A1
 ιρX
657.Arithmetic progression of Y numbers from X with step G X←D0; Y←D0; G←D0
 X+G×(ιY)-□IO
658.Consecutive integers from X to Y (arithmetic progression) X←I0; Y←I0
 (X-□IO)+ι1+Y-X
659.Empty numeric vector
 ι0
660.Index origin (□IO) as a vector
 ι1

LOGICAL FUNCTIONS ~ ∨ ∧ ṽ ⍲
661.Demote non-boolean representations to booleans X←B
 0∨X
662.Test if X is within range ( Y[1],Y[2] ) X←D; Y←D1
```

```
 (Y[1]<X)∧X<Y[2]
663.Test if X is within range [ Y[1],Y[2] ] X←D; Y←D1; 2=ρY
 (Y[1]≤X)∧(X≤Y[2])
664.Zeroing all boolean values X←B
 0∧X
666.Selection of elements of X and Y depending on condition G X←D; Y←D;
G←B
 (X×G)+Y×~G
667.Changing an index origin dependent result to be as □IO=1 X←I
 (~□IO)+X
668.Conditional change of elements of Y to one according to X Y←D; X←B
 Y*~X


COMPARISON <≤≥>=≠
669.X implies Y X←B; Y←B
 X≤Y
670.X but not Y X←B; Y←B
 X>Y
671.Avoiding division by zero error (gets value zero) X←D; Y←D
 (0≠X)×Y÷X+0=X
672.Exclusive or X←B; Y←B
 X≠Y
673.Replacing zeroes with corresponding elements of Y X←D; Y←D
 X+Y×X=0
674.Kronecker delta of X and Y (element of identity matrix) X←I; Y←I
 Y=X


RAVEL ,
675.Catenating Y elements G after every element of X X←A1; Y←I0; G←A
 ,X,((ρX),Y)ρG
676.Catenating Y elements G before every element of X X←A1; Y←I0; G←A0
 ,(((ρX),Y)ρG),X
677.Merging vectors X and Y alternately X←A1; Y←A1
 ,Y,[□IO+.5]X
678.Inserting Y after each element of X X←A1; Y←A0
 ,X,[1.1]Y
679.Spacing out text X←C1
 ,X,[1.1]' '
680.Reshaping X into a matrix of width Y X←D, Y←I0
 (((ρ,X),1)×Y*¯1 1)ρX
681.Temporary ravel of X for indexing with G X←A; Y←A; G←I
 X←AρX △ X[G]←Y △ X←,X △ A←ρX
682.Temporary ravel of X for indexing with G X←A; Y←A; G←I
 X←(ρX)ρA △ A[G]←Y △ A←,X
683.First column as a matrix X←A2
 X[;,1]
684.Number of elements (also of a scalar) X←A
 ρ,X


CATENATE ,
685.Separating variable length lines X←A1; Y←A1
 X,□TC[2],Y
686.X×X identity matrix X←I0
 (X,X)ρ1,Xρ0
687.Array and its negative ('plus minus') X←D
 X,[.5+ρρX]-X
688.Underlining a string X←C1
 X,[□IO-.1]'¯'
689.Forming a two-column matrix X←A1; Y←A1
 X,[1.1]Y
690.Forming a two-row matrix X←A1; Y←A1
 X,[.1]Y
691.Selection of X or Y depending on condition G X←A0; Y←A0; G←B0
 (X,Y)[□IO+G]
692.Increasing rank of Y to rank of X X←A; Y←A
 ((((ρρX)-ρρY)ρ1),ρY)ρY
693.Identity matrix of shape of matrix X X←D2
 (ρX)ρ1,0×X
```

694.Reshaping vector X into a two-column matrix X←A1
 ((0.5×ρX),2)ρX
696.Reshaping vector X into a one-row matrix X←A1
 (1,ρX)ρX
697.Reshaping vector X into a one-column matrix X←A1
 ((ρX),1)ρX
698.Forming a Y-row matrix with all rows alike (X) X←A1; Y←I0
 (Y,ρX)ρX
699.Handling array X temporarily as a vector X←A
 (ρX)ρ ... ,X
700.Joining sentences X←A; Y←A1
 Y,0ρX
701.Entering from terminal data exceeding input (printing) width X←D
 X←0 2 1 2 5 8 0 4 5,□

INDEXING [ ]
702.Value of fixed-degree polynomial Y at points X Y←D1; X←D
 Y[3]+X×Y[2]+X×Y[1]
703.Number of columns in array X X←A
 (ρX)[ρρX]
704.Number of rows in matrix X X←A2
 (ρX)[1]
705.Number of columns in matrix X X←A2
 (ρX)[2]
706.Conditional elementwise change of sign Y←D; X←B
 Y×1 ‾1[1+X]
707.Selection depending on index origin X←A1
 X[2×□IO]
708.Indexing with boolean value X (plotting a curve) X←B
 ' *'[□IO+X]
709.Indexing independent of index origin X←A1; Y←I
 X[□IO+Y]
710.Selection depending on index origin X←A1
 X[1]
711.Zeroing a vector (without change of size) X←D1
 X[]←0
712.First column as a vector X←A2
 X[;1]

SHAPE ρ
713.Rank of array X X←A
 ρρX
715.Duplicating vector X Y times X←A1; Y←I0
 (Y×ρX)ρX
716.Adding X to each row of Y X←D1; Y←D; (ρX)=‾1↑ρY
 Y+(ρY)ρX
717.Array with shape of Y and X as its rows X←A1; Y←A
 (ρY)ρX
718.Number of rows in matrix X X←A2
 1ρρX

RESHAPE ρ
720.Forming an initially empty array to be expanded
 0 80ρ0
721.Output of an empty line X←A
 0ρX←
722.Reshaping first element of X into a scalar X←A
 ''ρX
723.Corner element of a (non-empty) array X←A
 1ρX

ARITHMETIC + - × ÷
724.Continued fraction
 1+÷2+÷3+÷4+÷5+÷6+÷ ...
725.Force 0÷0 into DOMAIN ERROR in division X←D; Y←D
 Y×÷X
726.Conditional elementwise change of sign X←D; Y←B; ρX ↔ ρY
 X×‾1*Y

727.Zero array of shape and size of X X←D
 0×X
728.Selecting elements satisfying condition Y, zeroing others X←D; Y←B
 Y×X
729.Number and its negative ('plus minus') X←D0
 1 ¯1×X
730.Changing an index origin dependent result to be as ⎕IO=0 X←I
 −⎕IO−X
731.Changing an index origin dependent argument to act as ⎕IO=1 X←I
 (⎕IO−1)+X
732.Output of assigned numeric value X←D
 +X←
733.Changing an index origin dependent argument to act as ⎕IO=0 X←I
 ⎕IO+X
734.Selecting elements satisfying condition Y, others to one X←D; Y←B
 X*Y

MISCELLANEOUS
736.Setting a constant with hyphens
 ⎕LX←⍞
737.Output of assigned value X←A
 ⎕←X←
738.Syntax error to stop execution
 *
888.Meaning of life
 ⍙⊖⍭⊃⊂|∟−*+○⌈×÷!⌽⍉⊟~ρ⍋⍤,⍟?⍳0