Math

arc_measure
Returns degrees between start and end angles

-130°
-148°
18°

arccos
Given value between -1 and 1 returns arccosine in radians or degrees

-½
120°
arccos(-½)

area
Returns area of a closed polygon

E
10000.0
24780.993461608887

attractor
Computes minimum distance and angle from points to a shape

average
Given a list of numbers returns mean, median, mode(s), or mid-range

index	trial	heads
0	7	2
1	4	3
2	11	3
3	2	5
4	9	5
5	10	5
6	0	6
7	3	6
8	6	6
9	8	7
10	1	8
11	5	8

Mean: 5.33
Median: 5.5
Mode(s): 5,6
Mid-range: 5.0

bounds
Constrain values within upper and/or lower bounds

easing
Applies selected easing function to produce changing values over time

find_radius
Finds radius of a polygon with a given side length

percentage
Returns percentage as number or formatted string

24.05%
33.32%
38.52%
55.04%
59.75%
63.74%
73.10%

precision
Rounds a floating point number to a given precision

3
3.1
3.14
3.142
3.1416
3.14159

running_start
A running total that starts with the first value

value	running total
73	73
24	97
64	161
55	216
60	276
33	309
39	348
98	446

secs
Returns clock time in seconds since last call; use trigger to measure elapsed time - REQUIRES TIME.PY

Seconds needed to draw a polygon with one million sides: 1.594

tangent
Returns precise tangent angle at any position (0 to 100) along a path

this_or_that
If which is 0 choose this, if which is 1 choose that

470.65
(176.38)
923.58
82.95
698.37

Geometry

arrange
Arrange objects in tidy stacks

explode
Explodes path into individual lines and curves

explode

node_card
Creates specification card for each Nodebox node - REQUIRES NODELIST.PY

trace
Traces outline of a closed path

arrow
Draws an arrow with many style options

fade
Adjust alpha (0 to 100) of shapes or geometries

parabola
Creates parabola curve for y = Ax^2 + Bx + C for x between 0 and 62

$Ax^2 + Bx + C$

trajectory
Create a trajectory curve for a projectile with given angle, velocity, height, and gravity

backdrop
Add a colored backdrop behind content

Title
Title

find_arc
Finds an arc between two points

push_pull
Moves a subset of path's control points to alter its shape

treemap
Given list of values and bounding rect, returns a treemap of position of rect - REQUIRES TREEMAP.PY

balloons
Draws a bunch of balloons, colored randomly if no colors are supplied

fragments
Returns shapes arrayed in the spaces between overlapping shapes

rearrange
Move a list of objects to a list of new positions over time

triangle
Create a triangle by supplying three values, including at least one side

C = 44.09°
300
246.41
A = 59°
200
B = 76.91°

canvas
Returns a white rectangle with width and height of current canvas - REQUIRES CANVAS.PY

gear
Create an adjustable, working gear

reshape
Gradually reshape one polyline path into another

true_arc
Creates an directionally correct arc path for text to follow

text above horizon flows clockwise
text below horizon flows counter-clockwise

clean
Removes duplicate consecutive points in a path - fixes some artifacts in PNG exports

before
after

hexagons
Create a grid of hexagons

rev_dir
Reverse direction of a complex path

true_spoke
Correctly text direction for text on a spoke path

easing
Applies selected easing function to produce changing values over time

clip
Clips to boundary restoring fill and stroke colorization

image
Opens an image file and returns sample or masked portion as a pixel group

Dimensions: 220.0 x 220.0
Pixels: 38,032
Pixel size: 1.0

seg_display
Display numbers and hex values as a seven-segment display

12.34

turtle_drive
Move a pointer around a polyline path

contours
Separates path into distinct contours

join
Join a list of paths into a single seamless path

Length: 106.89 279.94 278.94 140.94 314.26 291.06 53.06
Length: 1458.64

shutter
Creates a dynamic camera shutter

unwind
Unwind a polyline path into a line or segmented curve

diamonds
Create a grid of diamonds

kern
Creates a kerned text path

Character and word spacing
Character and word spacing

stack_tight
Arrange shapes tightly together in horizontal or vertical stacks

stackTight

wind_letters
Wrote letters around a spiral

November December October January February March April May June July August September

donut
Create a donut, pie, or stacked bar chart

mask
Returns segments of background path occluded by foreground shape

style_text
Convert markup text into a list of styled word paths

Four score and *seven years* ago, our **fathers** brought forth ~onto this continent~ a new nation, **conceived in ~liberty~** and dedicated to the *~~proposition~~* that all men are created ***equal.~***

Four score and *seven years* ago, our **fathers** brought forth onto this continent a new nation, **conceived in liberty** and dedicated to the *proposition* that all men are created ***equal.***

zoom
Smoothly zoom into or out of content

draw_table
Draw a table similar to the data view of the input table

Index	word	letters	width
0	every	5	65.2852
1	good	4	55.6055
2	boy	3	40.8398
3	does	4	54.0703
4	fine	4	42.5391

metaballs
Returns shapes arrayed from unions of overlapping shapes

sub_path
Returns a portion of a complex path between two positions (0 to 100)

path

even_sample
Distribute points evenly across a path, curves only, or points only - REQUIRES CONTOURS.PY

resample
even_sample

move_to
Move a shape to a new location

text_svg
Creates a kerned single line text path based on SVG fonts - REQUIRES HersheyFont.svg

This label uses the Hershey font for plotting
This label uses the Relief font for plotting
Abc

Points

alt_grid
Create grid with options for alternating indents and zigzagging

corner
Returns a corner or midpoint in the boundary of a shape

grid_plus
Create a grid of points sized by cell width and height with options for a limit and different orders

1 2 3 4
5 6 7 8
9 10 11

intersect
Finds intersections between a line and a path

path

intrsct_circle
Finds intersections between a line and an ellipse

intrsct_curve
Finds intersections between a line and a cubic bezier curve

intrsct_line
Finds intersection between two lines

order_LRTB
Order points left to right, top to bottom

Sort X + Sort Y
Order_LRTB

outer_points
Returns the points which form a boundary enclosing the rest - REQUIRES CONVEX_HULL.PY

point_in_path
Calculate a point between beginning and end of a path

rel_change
Given start point A and end point B returns B-A, the point needed to translate A to B

scatter_evenly
Generate evenly spaced points within a rectangular area - REQUIRES POISSON.PY

Lists

diff_list
Given lists A and B, returns items in A but not B, B but not A, or in both

List A: apples, oranges, kiwis, carrots
List B: apples, kiwis, carrots, grapefruit, bananas
A not B: oranges
B not A: grapefruit, bananas
A and B: apples, kiwis, carrots

drop_last
Take all but the last item of a list

1 2 3 4
5

find_item
Returns all indices where target occurs in a source list

red
blue
green
blue
yellow

find_substr
Returns all indices of target substring within source string

That is a **bold** assertion!

indices
Returns a list of indices to enumerate items in the input list

1 2 3 4 5 6 7

list_files
Given folder path returns top level files in that folder - REQUIRES LIST_DIR.PY

python files	code lines
concat_list.py	8
convert_base.py	9
decode.py	10
font_table.py	11
conform.py	13
time.py	14
canvas.py	17
write_table.py	32
list_dir.py	49
convex_hull.py	50
convert_base.py	51
nodelist.py	79
treemap.py	102
image.py	107
poisson.py	139

list_folders
Given folder path returns top level subfolders - REQUIRES LIST_DIR.PY

FOLDERS: non-empty folder, empty folder
FILES: non-empty folder/text file.txt

time
Returns local date, time, and day as list - REQUIRES TIME.PY

SUN
MAR 20

Data

change_col
Replace a column with modified data or add new one

country	month	average sales
India	January	707.87
India	February	516.48
India	March	473.97
Brazil	January	795.39
Brazil	February	1000.00
Brazil	March	600.00

country	month	sales
India	January	708
India	February	516
India	March	474
Brazil	January	795
Brazil	February	1000
Brazil	March	600

diff_table
Given tables A and B, returns rows with items in A but not B, B but not A, or both A and B

Fruit: apples, oranges, kiwis, carrots
Fruit: apples, kiwis, carrots, grapefruit, bananas
Fruit: oranges
Fruit: grapefruit, bananas
Fruit: apples, kiwis, carrots

distribution
Makes distribution table from a source table, key, and range of possible values

heads	total
0	2
1	9
2	37
3	114
4	211
5	224
6	229
7	117
8	36
9	10
10	2

drop_cols
Drop or keep a subset of columns

country	month	apples	oranges	bananas
India	January	707	395	53
India	February	516	335	130
India	March	250	220	127
Brazil	January	135	74	86
Brazil	February	20	53	95
Brazil	March	38	112	17

country	month	bananas
India	January	53
India	February	130
India	March	127
Brazil	January	86
Brazil	February	95
Brazil	March	17

font_table
Returns a table of system fonts - REQUIRES FONT_TABLE.PY

family name	name
.AppleSystemUIFont	SFNS.ttf
.AppleSystemUIFontMonospaced	AppleGothic-Regular
.AppleSystemUIFontTheMonospaced-Regular	AppleSystemUIFontMonospaced-Regular
Abadi MT Condensed Extra Bold	AbadiMT-CondensedExtraBold
Academy Engraved LET	AcademyEngravedLetPlain
Academy Engraved LET	AcademyEngravedLetPlain
Adobe Caslon Pro	ACaslonPro-Bold
Adobe Caslon Pro	ACaslonPro-BoldItalic
Adobe Caslon Pro	ACaslonPro-Italic
Adobe Caslon Pro	ACaslonPro-Regular
Adobe Caslon Pro	ACaslonPro-Semibold
Adobe Caslon Pro	ACaslonPro-SemiboldItalic
Adobe Fangsong Std	AdobeFangsongStd-Regular
Adobe Garamond Pro	AGaramondPro-Bold
Adobe Garamond Pro	AGaramondPro-BoldItalic
Adobe Garamond Pro	AGaramondPro-Italic
Adobe Garamond Pro	AGaramondPro-Regular
Adobe Heiti Std	AdobeHeitiStd-Regular
Adobe Kaiti Std	AdobeKaitiStd-Regular
Adobe Ming Std	AdobeMingStd-Light

merge_table
Merges two tables

animal	color	number
cat	red	0.0
dog	blue	1.0
penguin	green	2.0

weight	height
146.19	4.39
48.11	1.44
127.48	3.82

animal	color	number	weight	height
cat	red	0.0	146.19	4.39
dog	blue	1.0	48.11	1.44
penguin	green	2.0	127.48	3.82

sum_cols
Make summary table categorized by row with totals across multiple existing columns

Sales by Country
Sales by Month

summarize
Make summary table with totals categorized by row and optionally partitioned into columns

transpose
Turn a set of columns into a new dimension

write_table
When triggered writes table to csv file and returns "file saved" - REQUIRES WRITE_TABLE.PY

FRUIT	COLOR
apple	red
orange	orange
banana	yellow

"file saved"

Other

clockwise
Returns true if points in a path are in clockwise order

xyz

colors
Returns a range of colors

concat_list
Concatenates a list of strings into a single string - REQUIRES CONCAT_LIST.PY

a ago all and and are brought conceived continent created dedicated equal fathers forth four in liberty men nation new onto our proposition score seven that the this to years

convert_base
Convert value from one base to another - REQUIRES CONVERT_BASE.PY

101010 --> 42
42 --> 2A
1be15dc --> hello

convert_date
Converts dates using Java SimpleDateFormat - REQUIRES DATEFORMAT.CLJ

Now: Sunday, March 20 6:42:34 PM
Since 1/1/19: 1174d 17:42:34

dec_to_bin
convert decimal to binary up to 32 bits

is_closed
Returns true if path is closed; paths with multiple contours treated as closed

false
true

Node Library 3.0

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