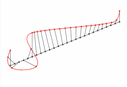
Math

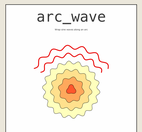
arc_measure
Measures the distance between start and end angles

n_choose_k
Calculate binomial coefficient k choose n

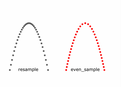
apply_ramp
Add a ramp to an array, changing values linearly from start to end



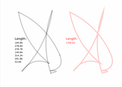
arc_wave
Wrap an array around an arc



even_sample
Distribute points evenly across a curve path, including any points once

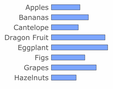


join
Join a list of paths into a single resolved path



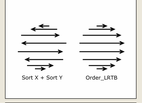
shutter
Create a rectangular camera shutter

align_labels
Align a column of labels



alt_grid
Create grid with alternating rows skipping columns and staggering

order_LRTB
Order points on shape left-right, top to bottom



concat_list
Concatenate a list of strings into a single string in ASCENDING CONCAT_LIST ORDER

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

change_col
Replace a column in the currently active row and new row

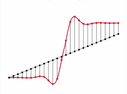
adjust_fill
Linearly interpolate fill color between two sets of objects

clockwise
Reverse the if points in a path are in clockwise order

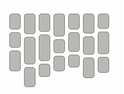
arccos
Inset cross between -1 and 1 returns proportion in radians (or degrees)

percentage
Returns percentage as number or formatted string

easing
Applies selected easing function to produce changing values over time



arrange
Arrange objects in tidy blocks



explode
Explodes path into individual lines and curves

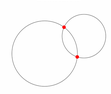
join_contours
Join contours into a single path - REQUIRES SHAPELY

soften
Soften the contours of a path

align_nums
Align and format a column of numbers centered on their decimal points

Q1	*475,350.23*
Q2	*20,885.50*
Q3	*(110,336.75)*
Q4	*930,512.92*
Total	*1,316,411.90*

circle_circle
Find intersections between two circles

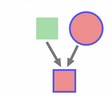


outer_points
Returns the points which form a boundary containing the rest - REQUIRES SCIPY, FALSE BY DEFAULT

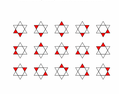
diff_list
Given lists A and B, returns items in A but not B, B but not A, and A and B

diff_table
Given tables A and B, returns rows with details in A but not B, B but not A, and A and B

apply_color
Change a shape's fill, stroke, and strokeweight based on a reference shape



combos
Generate a list of all possible ways to choose k items from n sets of n elements



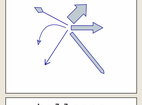
area
Returns area of a circle given

precision
Format a number to a specified precision

3
3.1
3.14
3.142
3.1416
3.14159

fade
Fade shapes in, out, or shapes in sequence

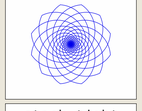
arrow
Return a shape with an arrow



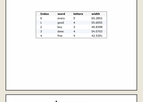
fancy_star
Create a star shape with many options for styling

mask
Remove shapes or paths within a certain area

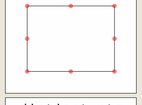
spiral
Create a spiral shape



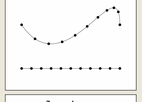
draw_table
Draw a table using the table data structure and font styles



corner
Return corners or a rectangle or polygon shape



point_in_path
Evaluate if a point is inside a closed path



drop_last
Drop the last item from a list

1 2 3 4

distribution
Display distribution of the x values (data), the y values (counts) of points

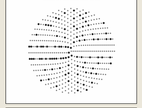
blend_color
Blend two colors together by a specified amount

convert_date
Convert between various date and timestamp formats - REQUIRES DATEUTIL LIB

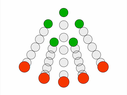
Now: Friday, January 5 2:56:47 PM
Since 1/1/19: 18306 14:56:47

attractor
Compute attractor distance and angle from points to a shape

primes
Return a list of prime numbers up to a given limit



rearrange
Move a list of points or shapes to a list of target positions



balloons
Shatter a bunch of balloons, cannon randomly if no colors are supplied

find_arc
Find an arc between two points

mesh
Create line segments connecting neighboring points

stack_tight
Arrange shapes tightly together in various ways on random curves

kern
Create a kerned text path

distinct_pts
Remove duplicate points within a given distance

rel_change
Show each point in a list and the amount it's changed by, with option negative to 0

find_item
Returns all values where a value occurs in a source list

red
blue
green
blue
yellow

drop_cols
Drop columns from a table of columns

change_color
Change shapes from one color to another color

int_part
Separate a list of numbers between the integer and the part of decimal integers

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

Index	Initial	Rotated
0	1	4
1	2	5
2	3	6
3	4	7
4	5	8
5	6	9
6	7	10

Mean: 5.33
Median: 5.5
Mode(s): 5.6
Mid-range: 5.0

products
Calculate the final or running products of a list of numbers

-2.0	(2.0)
-1.5	3.0
-1.0	(3.0)
-0.5	-1.5
0.0	1.5 *zero ignored*
0.5	0.75
1.0	0.75
1.5	1.125
2.0	2.25
2.5	5.625
3.0	16.875
3.5	59.0625
4.0	236.25

reshape
Evaluate, reshape and substitute path into another

bound_box
Create a bounding box around an object

fit_curve
Fit a curve that passes through all points in a path

metaballs
Returns shapes joining from centers of overlapping shapes

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

place_label
Fits and places a short label inside an arbitrary shape

good_center
Find a reasonable center point inside a shape

scatter_bias
Returns a biased distribution of points within a shape

find_substr
Returns all values of target substring within source string

That is a bold assertion!

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

write_table
Write a header and rows table to csv file and returns "file saved" - REQUIRES WRITE_TABLE.PY

PROJECT	COLOR
apple	red
orange	orange
banana	yellow

"file saved"

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

false
true

node_card
Create a graphical node card with a title, inputs, and outputs

dec_to_bin
Convert decimal to binary up to 32 bits

sign
Return the sign of a number (-1, 0, or 1)

77.79	**1**
-44.95	**-1**
14.86	**1**
0.0	**0**
52.23	**1**
-87.92	**-1**

factorial
Calculate factorial (the n! or n-bang) of n (n >= 0)

0! = 1
1! = 1
2! = 2
3! = 6
4! = 24
5! = 120
6! = 720
7! = 5,040
8! = 40,320
9! = 362,880
10! = 3,628,800

tangent
Return point and tangent (slope) at a position (0-1) for shape or path

find_radius
Find radius of a polygon with a given side length

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

gradual
Create a list of numbers that gradually change

clip
Clip to boundary, replacing fill and stroke colorization

hexagons
Create a grid of hexagons

parabola
Create parabola curve as Ax² + Bx + C for a distance (x) and h

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

style_text
Convert markup text into a list of styled word parts

intrsct_curve
Find intersections between a line and a cubic bezier curve

true_center
Calculate the true center of a regular polygon, line, or bezier shape

list_folders
Return folder path returns the two subfolders - REQUIRES LIST_FOLDERS.PY

FOLDERS	FILES
sam sampler flutter	sam sampler fretterchest file list

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

hcl_color
Create an hcl_color

partitions
Generate a list of all possible partitions of a list with n elements

curve
Create a quadratic curve with two control points

image
Open an image file and returns square or cropped portion as point group - REQUIRES IMAGES.PY

ramp_curve
Create a curve shaped ramp for ease-in or ease-out

waveform
Create four types of waves

diamonds
Create a grid of diamonds

inscribe
Inscribe a shape centered inside another shape

rev_dir
Reverse direction of a complex path

donut
Create a donut, pie, or segment of one

iso_paper
Create isometric paper and grids

scale_true
Resize one bounds to match another

style_text
Convert markup text into a list of styled word parts

text_circle
Create curved text around a circle or arc

text_svg
Create a curved shape for text path based on text font - REQUIRES FONTTOOLS.TTLIB

true_arc
Creates an ellipse/circle, curved arc path for hand lettering

true_spoke
Create a true spoke shape or path

wind_letters
Wrap letters around a spiral

intrsct_curve
Find intersections between a line and a cubic bezier curve

intrsct_line
Find intersections between lines

intrsct_path
Find intersections between a line and a path

mix
Mix multiple lists or text

this_or_that
If value is a boolean then, if value is a boolean that

470.65
(176.38)
923.58
82.95
698.37

transpose
Turn a list of columns into a list of rows

write_table
Write a header and rows table to csv file and returns "file saved" - REQUIRES WRITE_TABLE.PY

luma
Normalize a color to a luma value between 0 and 1

luma_colors
Generate a palette of colors with a specified luma value

morph_color
Interpolate between an ordered list of colors, or between two colors in different spaces

palette
Display and save a palette of colors

Node Library 3.3

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