

# Draw □□□□□□

□□

1. □□	2
2. Draw□□□□	2
2.1. Line	3
2.2. Triangle	3
2.3. Box	3
2.4. Polygon	4
2.5. Circle	4
2.6. Ellipse	4
2.7. Arc	4
2.8. Curve	5
2.9. Spline	5
2.10. Image	6
2.11. Text	6
2.12. Font	7
2.13. Pen	7
2.13.1. Color pen	7
2.13.2. Linear gradient pen	7
2.13.3. Radial gradient pen	8
2.13.4. Diamond gradient pen	8
2.13.5. Pattern pen	8
2.13.6. Bitmap pen	9
2.13.7. Turning off the pen	9
2.14. Fill-pen	9
2.14.1. Color fill	9
2.14.2. Linear gradient fill	10
2.14.3. Radial gradient fill	10
2.14.4. Diamond gradient fill	11
2.14.5. Pattern fill	11
2.14.6. Bitmap fill	11
2.14.7. Turning off the filling	12
2.15. Line-width	12
2.16. Line-join	12
2.17. Line-cap	13
2.18. Anti-alias	13
2.19. Matrix	13
2.20. Reset-matrix	14

2.21. Invert-matrix	14
2.22. Push	14
2.23. Rotate	15
2.24. Scale	15
2.25. Translate	16
2.26. Skew	16
2.27. Transform	16
2.28. Clip	17
3. Shape	17
3.1. Move	18
3.2. Line	18
3.3. Arc	18
3.4. Curve	19
3.5. Curv	19
3.6. Qcurve	19
3.7. Qcurv	20
3.8. Hline	20
3.9. Vline	20
3.10. Line-width	20
3.11. Line-join	21
3.12. Line-cap	21
3.13. Pen	21
3.14. Fill-pen	21
4.	21
5.	21
6.	21
7. Draw	22
8. API	22
9.	23

## 1.

DrawRed DSL Draw block

Draw draw draw View

## 2. Draw

Draw Draw

- X座標を指定する
- Y座標を指定する

座標系を指定する

[Coord-system] | ../images/coord-system.png

## 2.1. Line

例

```
line <point> <point> ...
<point> : 座標 (pair!).
```

例

座標系を指定する

## 2.2. Triangle

例

```
triangle <point> <point> <point>
<point> : 座標 (pair!)
```

NOTE:座標系を指定する

例

座標系を指定する

## 2.3. Box

例

```
box <top-left> <bottom-right>
box <top-left> <bottom-right> <corner>

<top-left>      : box座標 (pair!)
<bottom-right> : box座標 (pair!)
<corner>       : (整数) 隅の半径 (integer!)
```

例

座標系を指定するtop-left座標1隅の半径bottom-right座標2隅の半径radius座標系を指定する

## 2.4. Polygon

00

polygon <point> <point> ...

```
<point> : 00000 (pair!)
```

11

[illegible]

□ □

## 2.5. Circle

00

```
circle <center> <radius>  
circle <center> <radius-x> <radius-y>
```

```
<center> : 0000000 (pair!)
<radius> : 0000 (integer! float!)
<radius-x> : (00000) X0000000000 (integer! float!)
<radius-y> : (00000) Y0000000000 (integer! float!)
```

11

```

center radius
2 3 X Y

```

## 2.6. Ellipse

00

```
ellipse <top-left> <size>
```

```
<top-left> : □□□□□□□□□□(pair!)
<size>      : □□□□□□□□□□ (pair!)
```

00

XXXXXXXXXXXXXXXXXXXXXXXX size    XXYYXXXXXXXXXXXXXXXXX    NOTE:    ellipse    circle

## 2.7. Arc

11

```
arc <center> <radius> <begin> <sweep>  
arc <center> <radius> <begin> <sweep> closed
```

```
<center> : 000000 (pair!)
<radius> : 0000 (pair!)
<begin> : 000000000000 (integer!)
<sweep> : 000000000000 (integer!)
```

11

```

center radius
#####
#####2#####

```

closed

## 2.8. Curve

11

curve <end-A> <control-A> <end-B>  
curve <end-A> <control-A> <control-B> <end-B>

```
<end-A>      :  A (pair!)
<control-A>   :  A (pair!)
<control-B>   :  B (pair!)
<end-B>       :  B (pair!)
```

11

[illegible]

- 3000020000100000000000
- 400000000000000000000000

4□□□□□□□□□□□□□□□□□□□□□□□□□□□□

## 2.9. Spline

00

```
spline <point> <point> ...  
spline <point> <point> ... closed
```

```
<point> : [] (pair!)
```

11

**B-3** closed

NOTE: 2D image objects are mutable

## 2.10. Image

□□

```
image <image>
image <image> <top-left>
image <image> <top-left> <bottom-right>
image <image> <top-left> <top-right> <bottom-left> <bottom-right>
image <image> <top-left> <top-right> <bottom-left> <bottom-right> <color>
image <image> <top-left> <top-right> <bottom-left> <bottom-right> <color> border
image <image> <top-left> <top-right> <bottom-left> <bottom-right> <color> crop
<offset> <size>
```

```
<image>      : 2D image (image! word!)
<top-left>   : 2D image (pair!)
<top-right>  : 2D image (pair!)
<bottom-left> : 2D image (pair!)
<bottom-right> : 2D image (pair!)
<color>      : 4-tuple (tuple! word!)
<offset>     : 2D image (pair!)
<size>       : 2D image (pair!)
```

□□

2D image objects are mutable. 0x0 image has no color.

NOTE:

- 4-tuple (tuple! word!) 4-tuple (tuple! word!)
- border** 2D image (pair!)

## 2.11. Text

□□

```
text <position> <string>

<position> : 2D image (pair!)
<string>   : string (string!)
```

□□ 2D image objects are mutable

**NOTE** | 2D image objects are mutable. **none** is the default pen color.

## 2.12. Font

11

font <font>

```
<font> : [] (object! word!)
```

11

font!

## 2.13. Pen

[illegible]

### 2.13.1. Color pen

11

```
pen <color>
```

```
<color> :  (tuple! word!)
```

11

pen off

### 2.13.2. Linear gradient pen

00

```
pen linear <color1> <offset> ... <colorN> <offset> <start> <end> <spread>
```

```
<color1/N> :  (tuple! word!)
```

```
<offset>      : 000000000000000000000000 (float!)
```

```
<start>      : 00000000 (pair!)
```

```
<end>      : []<start>[] (pair!)
```

<spread> : 単語 (word!)

00

```

padrepeatreflectWindowspad
drepeat

```

[illegible]

### 2.13.3. Radial gradient pen

□□

```
pen radial <color1> <offset> ... <colorN> <offset> <center> <radius> <focal> <spread>
```

```
<color1/N> :  (tuple! word!)
<offset>    :  (float!)
<center>    :  (pair!)
<radius>    :  <center>  (integer! float!)
<focal>     :  (pair!)
<spread>    :  (word!)
```

□□

spreadpadrepeatreflectWindowspadrepeat

focalcenterradius

### 2.13.4. Diamond gradient pen

□□

```
pen diamond <color1> <offset> ... <colorN> <offset> <upper> <lower> <focal> <spread>
```

```
<color1/N> :  (tuple! word!)
<offset>    :  (float!)
<upper>     :  (pair!)
<lower>     :  <upper>  (pair!)
<focal>     :  (pair!)
<spread>    :  (word!)
```

□□

spreadpadrepeatreflectWindowspadrepeat

focalupperlower

### 2.13.5. Pattern pen

□□

```
pen pattern <size> <start> <end> <mode> [<commands>]
```

```
<size>      : <command>  (pair!)
<start>     :  (pair!)
```



```
<end>      :  (pair!)
<mode>     :  (word!)
<commands> :  Draw
```

Shape mode tile flip-x flip-y flip-xy clamp

start 0x0 end <size>

### 2.13.6. Bitmap pen

```
pen bitmap <image> <start> <end> <mode>
```

```
<image> :  (image!)
<start> :  (pair!)
<end>    :  (pair!)
<mode>   :  (word!)
```

mode tile flip-x flip-y flip-xy clamp

start 0x0 end

### 2.13.7. Turning off the pen

```
pen off
```

## 2.14. Fill-pen

Shape mode tile flip-x flip-y flip-xy clamp

### 2.14.1. Color fill

```
fill-pen <color>
```

<color> : tuple! word!.

□□

fill-pen off

## 2.14.2. Linear gradient fill

□□

fill-pen linear <color1> <offset> ... <colorN> <offset> <start> <end> <spread>

<color1/N> : tuple! word!  
<offset> : float!  
<start> : pair!  
<end> : <start> pair!  
<spread> : word!

□□

spread pad repeat reflect Windows pad repeat

start end

## 2.14.3. Radial gradient fill

□□

fill-pen radial <color1> <offset> ... <colorN> <offset> <center> <radius> <focal> <spread>

<color1/N> : tuple! word!  
<offset> : float!  
<center> : pair!  
<radius> : <center> integer! float!  
<focal> : pair!  
<spread> : word!

□□

spread pad repeat reflect Windows pad repeat

focal center radius

## 2.14.4. Diamond gradient fill

□□

```
fill-pen diamond <color1> <offset> ... <colorN> <offset> <upper> <lower> <focal>
<spread>
```

```
<color1/N> : list of colors for the gradient (tuple! word!)
<offset>   :  (float!)
<upper>    :  (pair!)
<lower>    :  <upper>  (pair!)
<focal>    :  (pair!)
<spread>   :  (word!)
```

□□

spreadpadrepeatreflectWindowspadrepeat

focalupperlower

## 2.14.5. Pattern fill

□□

```
fill-pen pattern <size> <start> <end> <mode> [<commands>]
```

```
<size>      : <commands> (pair!)
<start>     :  (pair!)
<end>       :  (pair!)
<mode>      :  (word!)
<commands> :  Draw
```

□□

modetileflip-xflip-yflip-xyclamp

start 0x0 end <size>

## 2.14.6. Bitmap fill

□□

```
fill-pen bitmap <image> <start> <end> <mode>
```

```
<image> :  (image!)
<start> :  (pair!)
<end>   :  (pair!)
```

```
<mode> : 0 (word!)
```

□□

mode tile flip-x flip-y flip-xy clamp

start 0x0 end

## 2.14.7. Turning off the filling

□□

```
fill-pen off
```

□□

## 2.15. Line-width

□□

```
line-width <value>
```

```
<value> : (integer!)
```

□□

## 2.16. Line-join

□□

```
line-join <mode>
```

```
<mode> : (word!)
```

□□

- **miter**
- **round**
- **bevel**



11

```

#####pre-multiplied#####

```

matrix-setup 6number!

```
matrix [a b c d e f]
```

[illegible]
$$\begin{vmatrix} a & c & e \\ b & d & f \\ 0 & 0 & 1 \end{vmatrix}$$

## 2.20. Reset-matrix

11

reset-matrix

11

□ □

$$\begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix}$$

## 2.21. Invert-matrix

11

invert-matrix

11

□ □

## 2.22. Push

11

```
push <draw-block>
```

```
<draw-block> : Draw (block!).
```

11

**PUSH**

**PUSH**

## 2.23. Rotate

11

```
rotate <angle> <center> [<commands>]  
rotate pen <angle>  
rotate fill-pen <angle>
```

```
<angle>      : 整数 (integer! float!)
<center>     : 座標のペア (pair!)
<commands>   : 描画コマンドのリスト
```

11

**center**

pen fill-pen word pen fill-pen

## 2.24. Scale

□ □

```
scale <scale-x> <scale-y> [<commands>]
scale pen <scale-x> <scale-y>
scale fill-pen <scale-x> <scale-y>
```

```
<scale-x> : Xxxxxxxxxx (number!)
<scale-y> : Yxxxxxxxxx (number!)
<commands> : xxxxxxxDrawxxxxxxxxxx
```

11

[illegible]

penfill-penwordpenfill-pen

## 2.25. Translate

11

```
translate <offset> [<commands>]
translate pen <offset>
translate fill-pen <offset>
```

```
<offset> : 000 (pair!)
<commands> : 000000Draw0000000000
```

11

[illegible]

penfill-penwordpenfill-pen

## 2.26. Skew

11

```
skew <skew-x> <skew-y> [<commands>]
skew pen <skew-x> <skew-y>
skew fill-pen <skew-x> <skew-y>
```

```
<skew-x>      : XXXXXXXXXX (integer! float!)
<skew-y>      : YYYYYYYY (integer! float!)
<commands>    : XXXXXXXDrawXXXXXXXXXX
```

11

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

<skew-y>

[illegible]

penfill-penwordpenfill-pen

## 2.27. Transform

11

transform <angle> <center> <scale-x> <scale-y> <translation> [<commands>]

```
<angle>      : 角度 (integer! float!)
<center>     : 位置 (pair!)
<scale-x>    : X 方向のスケール (number!)
<scale-y>    : Y 方向のスケール (number!)
<translation> : 変位 (pair!)
<commands>   : 描画コマンドのリスト
```



11

11

[illegible]

- 11

11

17

- 使用fill-pen填充
- Draw

## NOTE

lit-word

## 3.1. Move

```
move <position>      移动
'move <position>     移动

<position> : 坐标 (pair!)
```

## 3.2. Line

```
line <point> <point> ... 画线
'line <point> <point> ... 画线

<point> : 坐标 (pair!)
```

## 3.3. Arc

```
arc <end> <radius-x> <radius-y> <angle> sweep closed 画弧
'arc <end> <radius-x> <radius-y> <angle> sweep closed 画弧

<end>      : 坐标 (pair!)
<radius-x> : X坐标 (integer! float!)
<radius-y> : Y坐标 (integer! float!)
<angle>    : 角度 (integer! float!)
sweep      : 扫掠方向
large      : 大弧 'sweep
```

radius angle

## 3.4. Curve

```
curve <point> <point> <point> ...  
'curve <point> <point> <point> ...  
  
<point> : (pair!)
```

3

## 3.5. Curv

```
curv <point> <point> ...  
'curv <point> <point> ...  
  
<point> : (pair!)
```

3

**NOTE** <http://www.w3.org/TR/SVG11/paths.html>

## 3.6. Qcurve

```
qcurve <point> <point> ...  
'qcurve <point> <point> ...  
  
<point> : (pair!)
```

2

## 3.7. Qcurv

□□

```
qcurv <point>   □□□□□□
'qcurv <point>   □□□□□□

<point> : □□□□ (pair!)
```

□□

□□□□□□□□□□□□□□□□□□□□2□□□□□□□□□□□□

**NOTE**    □□□□□□□□□□□□□□ <http://www.w3.org/TR/SVG11/paths.html>

## 3.8. Hline

□□

```
hline <end-x>   □□□□□□
'hline <length> □□□□□□

<end-x> : X□□□□□□ (integer! float!)
<length> : □□□□□ (integer! float!)
```

□□

□□□□□□□□□□□□□□□□□□

## 3.9. Vline

□□

```
vline <end-y>   □□□□□□
'vline <length> □□□□□□

<end-y> : Y□□□□□□ (integer! float!)
<length> : □□□□□ (integer! float!)
```

□□

□□□□□□□□□□□□□□□□□□

## 3.10. Line-width

Draw□□□□□□□□□□□□

## 3.11. Line-join

Draw

## 3.12. Line-cap

Draw

## 3.13. Pen

Draw

## 3.14. Fill-pen

Draw

## 4.

Draw

Property	Value
background	white
pen color	black
filling	off
anti-alias	on
font	none
line width	1
line join	miter
line cap	flat

## 5.

Draw

## 6.

Set-word Draw

### NOTE

set-word Draw set-word

## 7. Draw

`draw` Draw

```
draw <size> <spec>
draw <image> <spec>
```

```
<size> : (pair!).
<image> : (image!).
<spec> : Draw (block!).
```

Draw

## 8. API

`Fill-pen` `Rebol/Draw` API `Red`

```
fill-pen linear <grad-offset> <grad-start-rng> <grad-stop-rng>
              <grad-angle> <grad-scale-x> <grad-scale-y> <grad-color> <offset>
              <grad-color> <offset> ...
```

```
fill-pen radial <grad-offset> <grad-focal> <grad-radius>
                <grad-angle> <grad-scale-x> <grad-scale-y> <grad-color> <offset>
                <grad-color> <offset> ...
```

```
fill-pen diamond <grad-offset> <grad-focal> <grad-radius>
                 <grad-angle> <grad-scale-x> <grad-scale-y> <grad-color> <offset>
                 <grad-color> <offset> ...
```

```
<grad-type>      : (word!)
<grad-offset>    : (pair!)
<grad-start-rng> : (integer!)
<grad-stop-rng>  : (integer!)
<grad-focal>     : (pair!)
<grad-radius>    : (integer!)
<grad-angle>     : (integer! float!)
<grad-scale-x>   : (integer! float!)
<grad-scale-y>   : (integer! float!)
<grad-color>     : (tuple! word!)
```

linear radial diamond

```
fill-pen linear 0x100 0 400 red green blue box 0x100 400x300
```

[Grad-pen] | [../images/grad-pen.png](#)

**NOTE** | 256

## 9.

Red Draw Red

```
Red [  
  Title: "Graphics generator for Draw documentation"  
  Author: "Nenad Rakocevic"  
  File: %draw-graphics.red  
  Needs: View  
]
```

```
Arial: make font! [name: "Consolas" style: 'bold]  
small: make font! [size: 9 name: "Consolas" style: 'bold]
```

```
save %line-cap.png draw 240x240 [  
  font Arial  
  text 20x220 "Flat"  
  text 90x220 "Square"  
  text 180x220 "Round"  
  
  line-width 20 pen gray  
  line-cap flat line 40x40 40x200  
  line-cap square line 120x40 120x200  
  line-cap round line 200x40 200x200  
  
  line-width 1 pen black  
  line 20x40 220x40  
  line 20x200 220x200  
]
```

```
save %line-join.png draw 500x100 [  
  font Arial  
  text 10x20 "Miter"  
  text 170x20 "Round"  
  text 330x20 "Bevel"  
  
  line-width 20 pen gray
```

```

line-join miter line 140x20 40x80 140x80
line-join round line 300x20 200x80 300x80
line-join bevel line 460x20 360x80 460x80

line-join miter
line-width 1 pen black
line 140x20 40x80 140x80
line 300x20 200x80 300x80
line 460x20 360x80 460x80
]

save %coord-system.png draw 240x240 [
    font small
    text 5x5 "0x0"
    line-width 2
    line 20x20 200x20 195x16
    line 200x20 195x24

    line 20x20 20x200 16x195
    line 20x200 24x195

    font Arial
    text 205x12 "X"
    text 12x205 "Y"
]

save %grad-pen.png draw 400x400 [
    pen off
    fill-pen linear 0x100 0 400 red green blue box 0x100 400x300
]

save %grad-pen-more.png draw 600x400 [
    pen off
    fill-pen linear 0x0 0 200 red green blue box 0x0 200x200
    fill-pen linear 200x0 0 200 255.0.0 255.255.0 0.255.0 0.255.255 0.0.255 box 200x0
400x200
    fill-pen linear 400x0 0 200 255.0.0 0.1 255.255.0 0.2 0.255.0 0.4 0.255.255 0.8
0.0.255 .9 255.0.255 1.0 box 400x0 600x200
    fill-pen blue box 0x200 200x400 fill-pen radial 100x300 0 100 255.0.0 0.255.0
0.0.255 box 0x200 200x400
    fill-pen blue box 200x200 400x400 fill-pen diamond 300x300 0 100 30 255.0.0
0.255.0 0.0.255 box 200x200 400x400
    fill-pen diamond 500x300 0 100 30 3.0 1.5 255.0.0 0.255.0 0.0.255 box 400x200
600x400
]

```