

Drawing Primitives

Processing is built around the idea of a sketchbook. To reenforce this idea, Processing titles each new project **sketch** by default. Just like a traditional drawing sketchbook, initial sketches are made up of primitive shapes that are assembled into higher levels of complexity.

Display Window

The first step is to decide how large of a page you want to work with. The sketchbook page is called the **display window** in Processing.

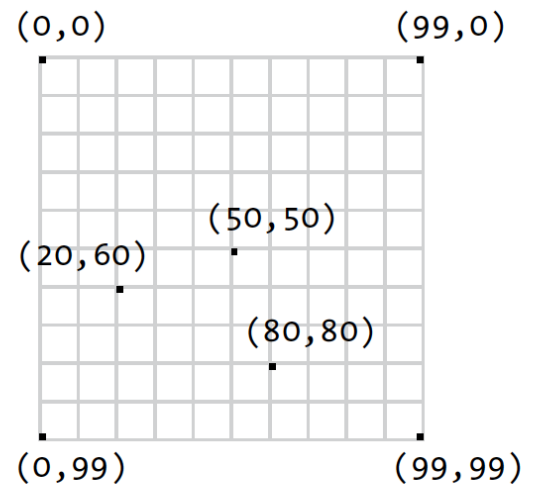
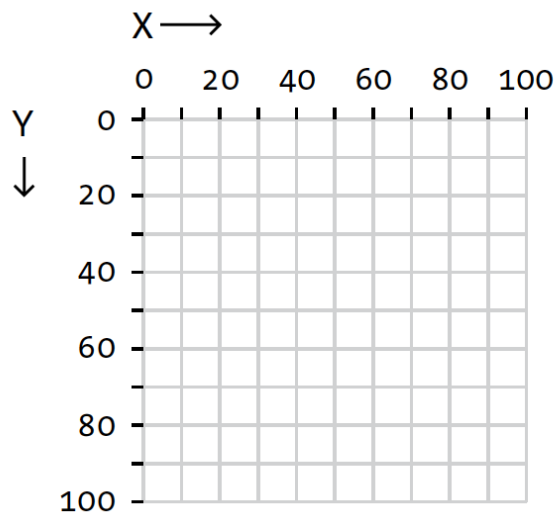
The display window is controlled by the `size()` function which takes two parameters that set the width and height.

```
size(width,height);
```

To create a display window of 100 x 100 pixels.

```
size(100,100);
```

The display window uses the Cartesian coordinate system. The origin of $(0,0)$ is located at the top right corner of the screen.



In digital images we use pixels as containers for color information. Each pixel will either store a brightness value when you have a black and white image or red, green, or blue values when you have a color image. Each value will always be a whole number (0,1,2,3,4,5,...).

Each position in the display window stores a pixel value.

Primitive Shapes

Point

The simplest element you can draw is a point. The point sets the color value of a pixel in the display window. You use the `point()` function which takes two parameters.

```
point(x, y);
```

Line

A simpler way is to use the `line()` function. This function takes four parameters for the two end points of the line.

```
line(x1, y1, x2, y2);
```

Triangle

The `triangle()` function takes six parameters for each point.

```
triangle(x1, y1, x2, y2, x3, y3);
```

Quad

The `quad()` function produces a four-sided polygon which takes eight parameters.

```
quad(x1, y1, x2, y2, x3, y3, x4, y4);
```

Rectangle

The rectangle and the ellipse functions work differently than the previous shapes. There are four parameters set the position and dimensions of the shape.

For a rectangle the first two parameters set the top left hand corner and the second two the width and height.

```
rect(x, y, width, height);
```

Ellipse

The `ellipse()` function takes four parameters. The first two set the location of the center of the ellipse and the second two set the width and the height.

```
ellipse(x, y, width, height);
```

Curve (bezier)

The `bezier()` function draws curved lines. The bezier takes eight parameters, two points and two control points.

```
bezier(x1, y1, cx1, cy1, cx2, cy2, x2, y2);
```

The curve is drawn between the first and fourth points.