

MODULE PRACTICE

`width` and `height`

```
function setup() {  
  createCanvas(400, 800);  
  console.log(width); // Logs 400 to console  
  console.log(height); // Logs 800 to console  
}
```

`width` is a built-in variable that returns the width of the canvas, and the `height` variable returns the height of the canvas.

The p5.js Library

p5.js is a JavaScript library for creative coding. A collection of pre-written code, it provides us with tools that simplify the process of creating interactive visuals with code in the web browser.

The `noStroke()` Function

```
function draw(){  
  // Draws a circle with blue fill color and no  
  stroke/outline  
  noStroke();  
  fill(0, 0, 255);  
  circle(50, 50, 25);  
}
```

The `noStroke()` function disables the stroke of a shape. It must be called before drawing the shape.

The `stroke()` Function

```
function draw(){  
  // Sets stroke color of the square to green  
  stroke(0, 255, 0);  
  square(50, 50, 25);  
}
```

The `stroke()` function sets the stroke color used for a shape to the specified color. It must be called before drawing the shape. The default stroke color is black.

The `draw()` Function

```
function setup(){  
  // Runs once at the start of the program  
}  
function draw(){  
  // Loops infinitely after setup() is run  
}
```

The `draw()` function is automatically called after the `setup()` function, which runs once at the program's start. The `draw()` loop infinitely runs the code block inside the function from top to bottom.

Order of Shapes

```
function draw(){  
  // The square will appear on top of the circle  
  circle(100, 100, 100);  
  square(50, 50, 100);  
}
```

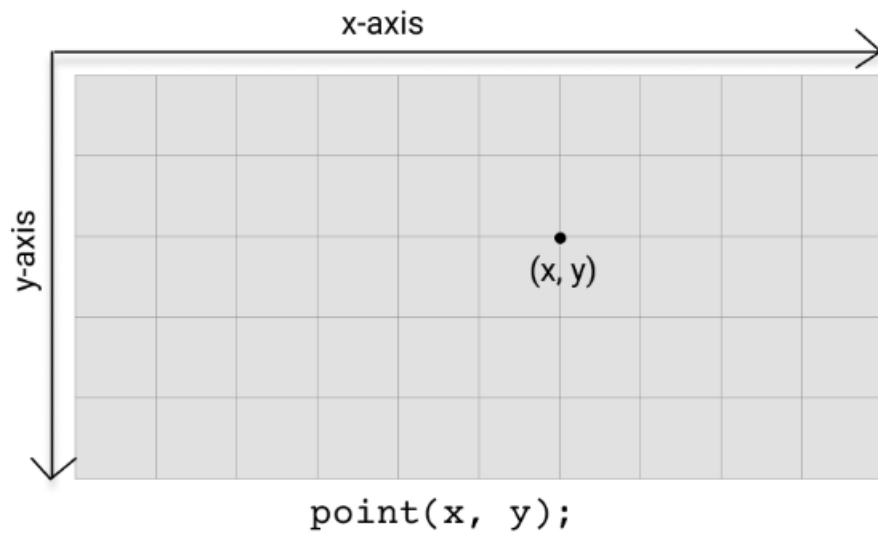
The order in which shape functions are called is important, as the shape function called last will be rendered on top of previously drawn shapes.

Using `background()` with One Argument

```
function setup(){  
  // Sets the background color to white  
  background(255);  
}
```

When the `background()` function is called with a numeric argument between 0 and 255, the background color will be set to a grayscale value, with 0 being pure black and 255 being pure white.

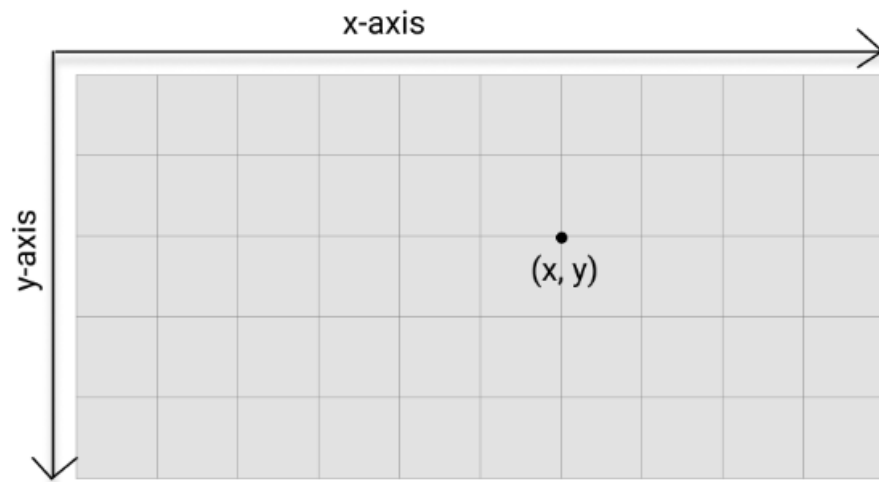
The `point()` Function



The `point()` function draws a single pixel at specified coordinates. It takes two arguments where the first argument is the x coordinate, and the second argument is the y coordinate.

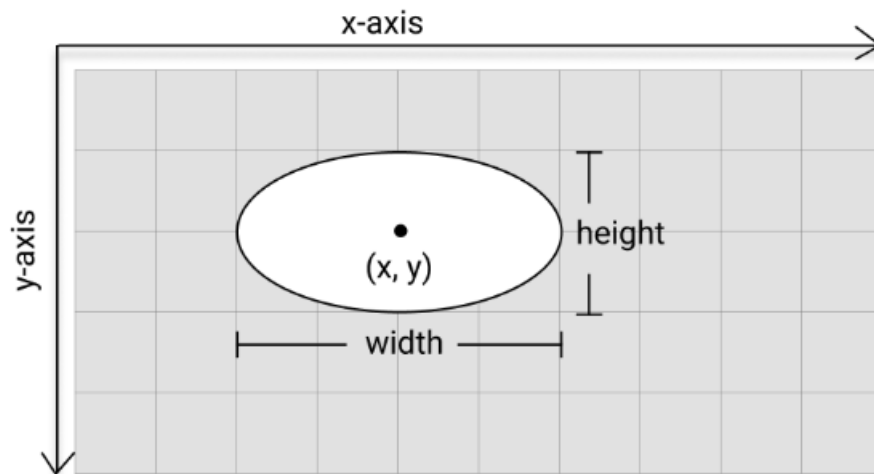
The color of the point can be changed with the `stroke()` function. The size of the point can be changed with the `strokeWeight()` function.

The Coordinate System



The canvas coordinate system is described using ordered pairs, (x, y) , where the x coordinate is the distance from the left edge of the canvas and the y coordinate is the distance from the top edge of the canvas.

The `ellipse()` Function



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

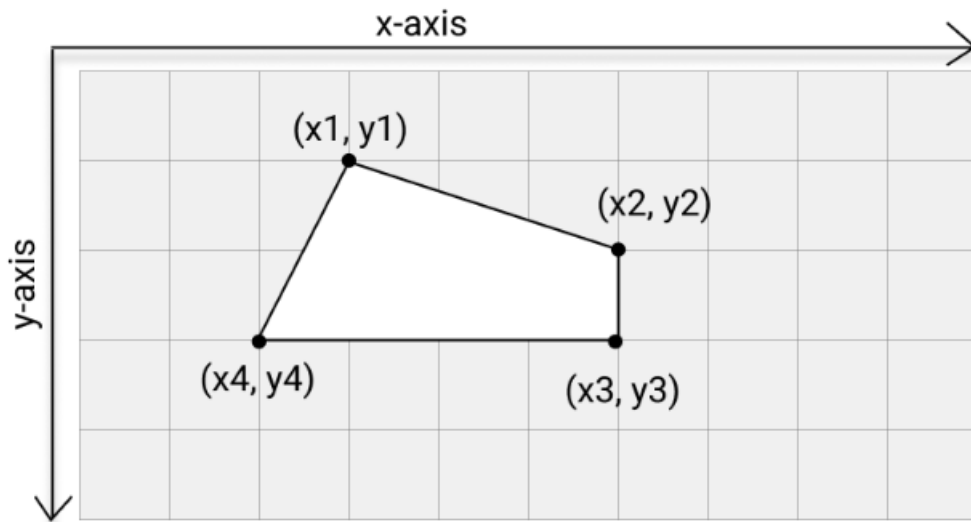
The `ellipse()` function draws an ellipse to the canvas. It requires four arguments where the first and second arguments are the x and y positions of the center of the ellipse. The third and fourth arguments are the width and height of the ellipse.

The `background()` Function

```
function setup(){  
  // Sets background to a gray color  
  background(127);  
}
```

The `background()` function sets the background color of the p5.js canvas. The background of a p5.js canvas is transparent by default.

The `quad()` Function



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

The `quad()` function draws a quadrilateral to the canvas. It has eight required arguments: the x and y positions for each of the four vertices.

Uses of the `setup()` Function

```
let beginSize;

// Initializing the canvas size, background color and
beginSize value
function setup() {
  createCanvas(800, 600);
  background(220);
  beginSize = 5;
}
```

The `setup()` function typically contains code that defines the initial state of the sketch, such as the canvas size, background color, and initial values of global variables.

The `noFill()` Function

```
function draw(){
  // Sets the square to have transparent fill
  noFill();
  square(50, 50, 25);
}
```

The `noFill()` function sets the fill color of a shape as transparent. It must be called before drawing the shape.

The `fill()` Function

```
function draw(){  
  // Sets the fill color of the circle to blue  
  fill(0, 0, 255);  
  circle(100, 100, 25);  
}
```

The `fill()` function sets the color used to fill a shape with the specified color. It must be called prior to drawing the shape. The default fill color is white.

The `setup()` Function

```
function setup() {  
  // Runs once at the beginning of the p5.js sketch  
}
```

At the beginning of a p5.js program, the p5.js library automatically executes the `setup()` function. The `setup()` function should not be explicitly called in the sketch.

The `createCanvas()` Function

```
function setup(){
  // Creates a canvas with 800px width and 600px height
  createCanvas(800, 600);
}
```

The `createCanvas()` function creates an HTML canvas on the web page, taking the desired canvas width and height as arguments. Typically, it is one of the first functions called in the `setup()` function. The `createCanvas()` function can only be called once within a p5.js sketch.

Including the p5.js Library

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <!-- Include p5.js library -->
    <script src="p5.js"></script>
    <link rel="stylesheet" type="text/css" href="style.css">
    <meta charset="utf-8" />
  </head>
  <body>
    <script src="sketch.js"></script>
  </body>
</html>
```

The p5.js library must be included using a `<script>` tag in the `<head>` section of an HTML document. Only then, the p5.js library can be used in a JavaScript file.