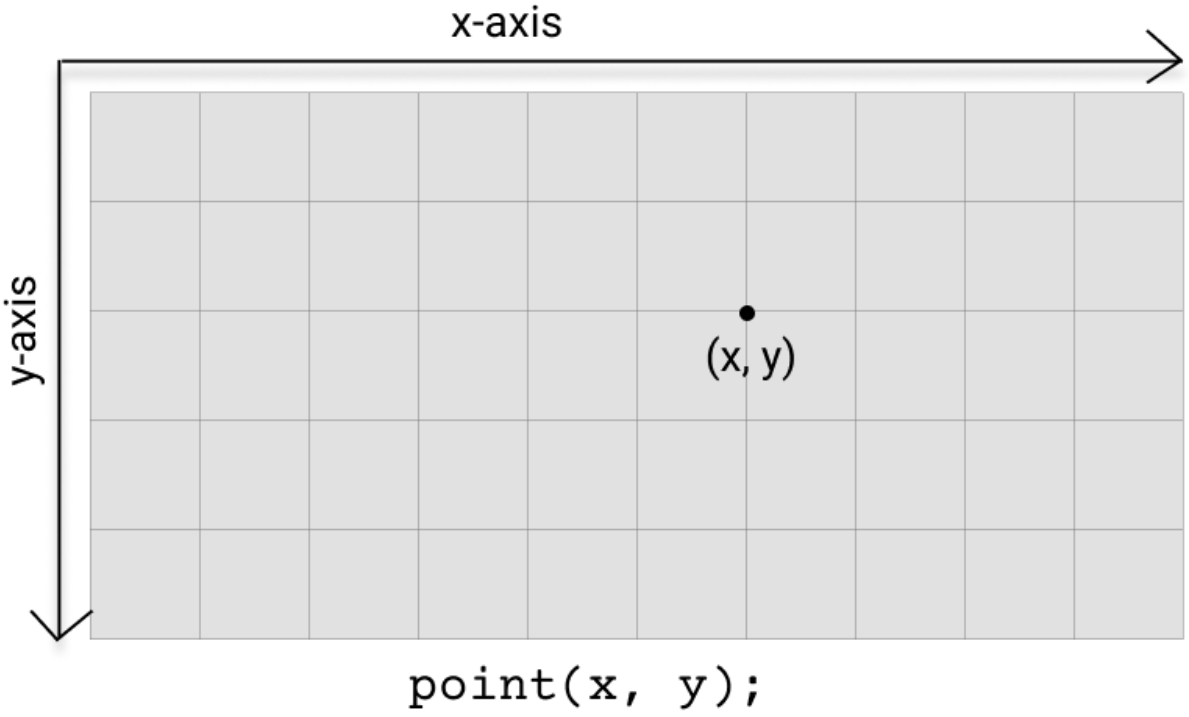
Point and Line

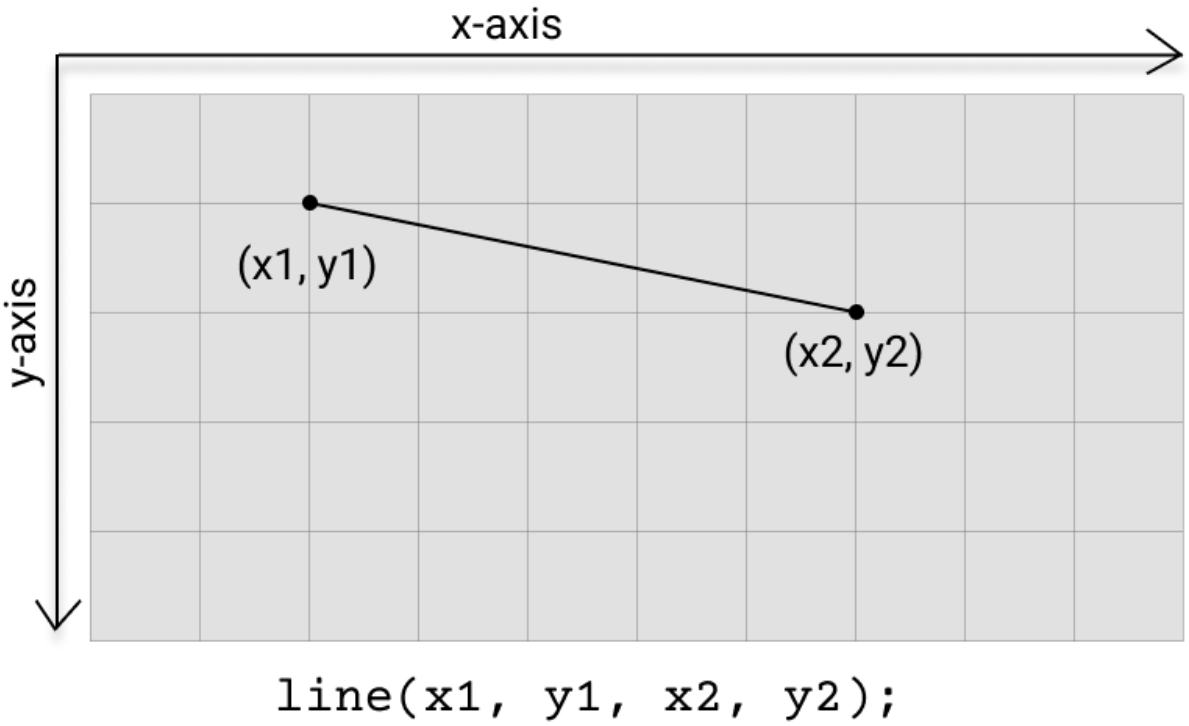
7 min

The p5.js library provides many built-in functions to interact with the canvas with easy-to-remember drawing functions for shapes. While you can call drawing functions in the `setup()` function, it is typical to use drawing functions in the eponymous `draw()` function. Let's begin with the basics by drawing a point to the canvas!

The p5.js library provides the `point()` function, which draws a single pixel to the canvas. This function requires two arguments: an x coordinate for the horizontal position and a y coordinate for the vertical position of the point.



The built-in `line()` function draws a direct path between two points. To draw a single line, we need four arguments: x and y coordinates of the starting point and x and y coordinates of the endpoint.



Instructions

1.

Inside the `draw()` function, use the `point()` function to draw a pixel at the center of the 400px by 400px canvas.

Hint

You can draw a pixel to the p5.js sketch using the `point()` function with the following syntax:

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

To draw a point at (100, 50), your code would be:

```
point(100, 50);
```

2.

Next, try drawing a point that is 100 pixels to the left of the center point.

Hint

The x coordinate describes the canvas from left to right in pixels. Try subtracting 100 from the x position of the center of the canvas.

3.

Great! Now let's practice drawing lines! Use the `line()` function to draw a diagonal line between two points at coordinates (20, 40) and (320, 120).

Hint

Lines are drawn with the `line()` function, which takes 4 arguments. The function uses the following syntax:

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

To draw a line from (100, 50) to (300, 200), your code would look like this:

```
line(100, 50, 300, 200);
```

4.

Draw a vertical line that goes across the center of your canvas. This line will equally divide the left and right sides of your canvas.
Hint
The x coordinates for the two endpoints of a vertical line is the same. The y coordinate of one endpoint is at the top of the canvas, and the other is at the bottom of the canvas.

It's p5.js convention to use the numbers provided in the `createCanvas()` function when referring to the full width or height of the canvas.

5.

Lastly, draw a diagonal line that starts at the bottom left corner and ends at the top right corner of your canvas.
Hint
Remember that the width and height of the canvas are 400 pixels and the origin (0, 0) of the canvas is at the top-left corner. This means that the coordinates of the bottom-right corner of the canvas are (400, 400).

sketch.js

```
function setup(){
  // Your setup code goes here
  createCanvas(400, 400);
  background(200);
}

function draw(){
  // Your drawing code goes here
  // TODO: Draw a point at the center of the canvas
  point(200, 200);
  // TODO: Draw a point 100px to the left of the center
  point(100, 200);
  // TODO: Draw a line between (20, 40) and (320, 120)
```

```
  line(20, 40, 320, 120);
  // TODO: Draw a vertical line
  line(200, 0, 200, 400);
  // TODO: Draw a diagonal line
  line(0, 400, 400, 0);
}
```