

2-D Drawing

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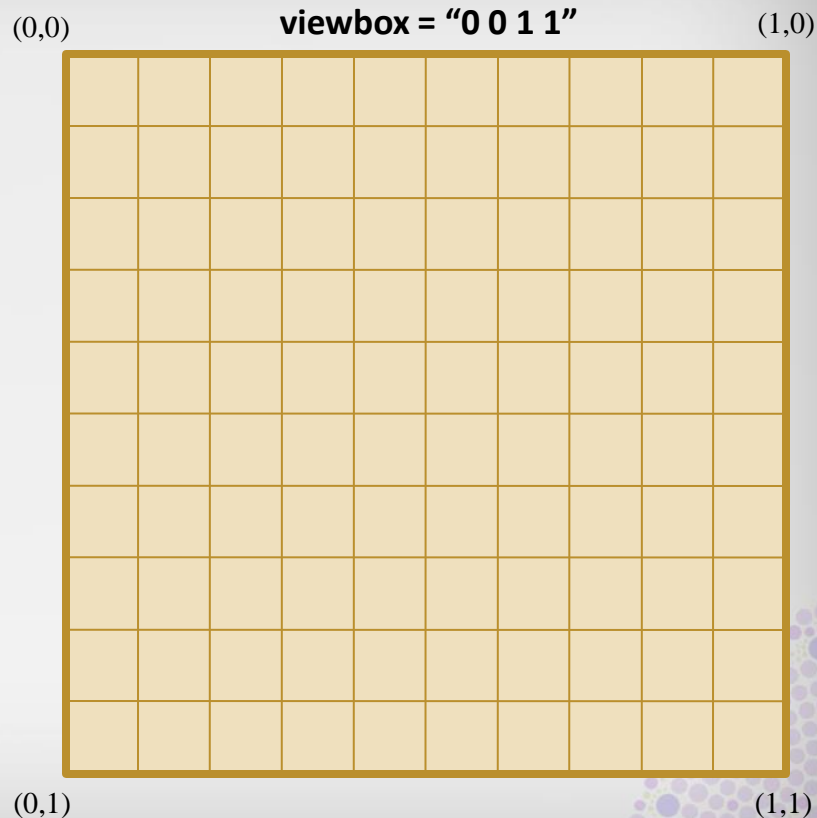
What Will We Learn?

- How do I set up a 2-D drawing canvas?
- How do I draw things on it?

Scalable Vector Graphics

- Format specification for describing 2-D graphics
- Embedded in HTML with `<svg>` tag

```
<svg width=pw height=ph  
  viewBox="x y w h"> ... </svg>
```
- Creates a display region of `pw x ph` pixels in screen coordinates
- Creates a drawing canvas `w x h` units in canvas coordinates
- Origin always upper-left corner



SVG Graphing Coordinates

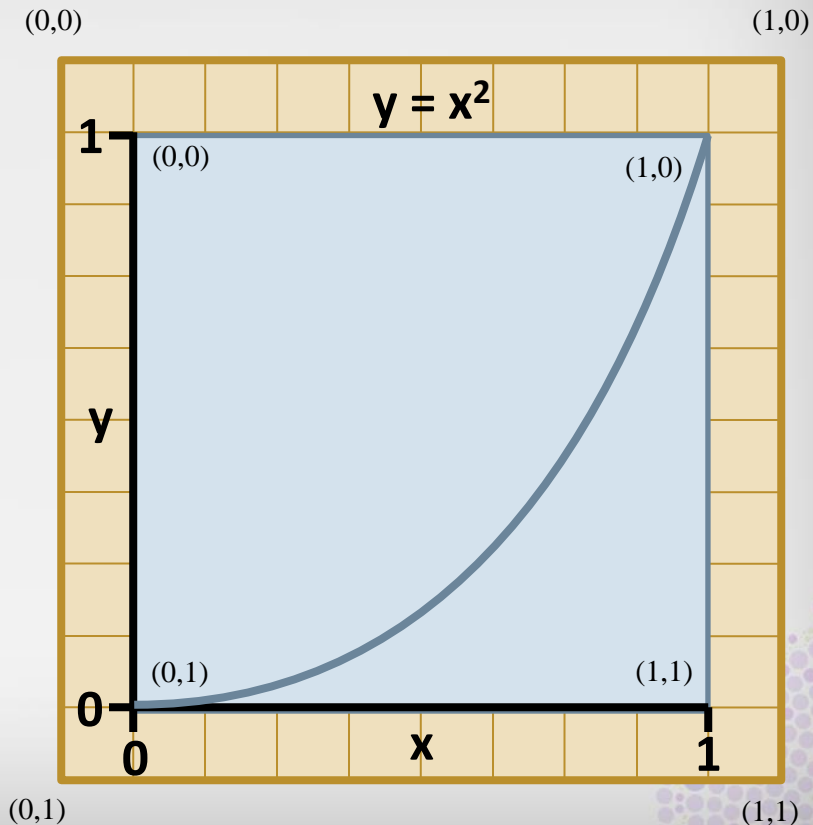
```
<svg width=... height=...  
  viewBox "0 0 1 1">
```

*draw axes, title and
other decorations*

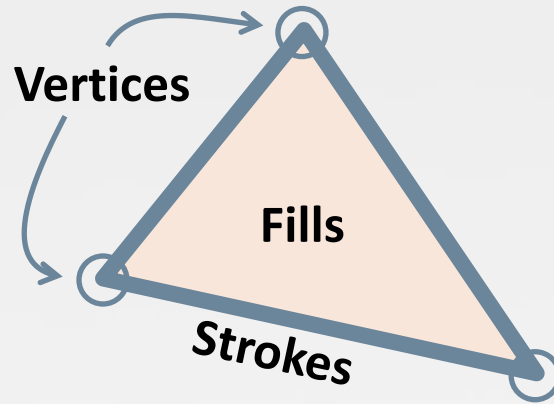
```
<svg x="10%" y="10%"  
  width="80%" height="80%"  
  viewBox "0 0 1 1">
```

plot the data as (x,1-y)
</svg>

```
</svg>
```

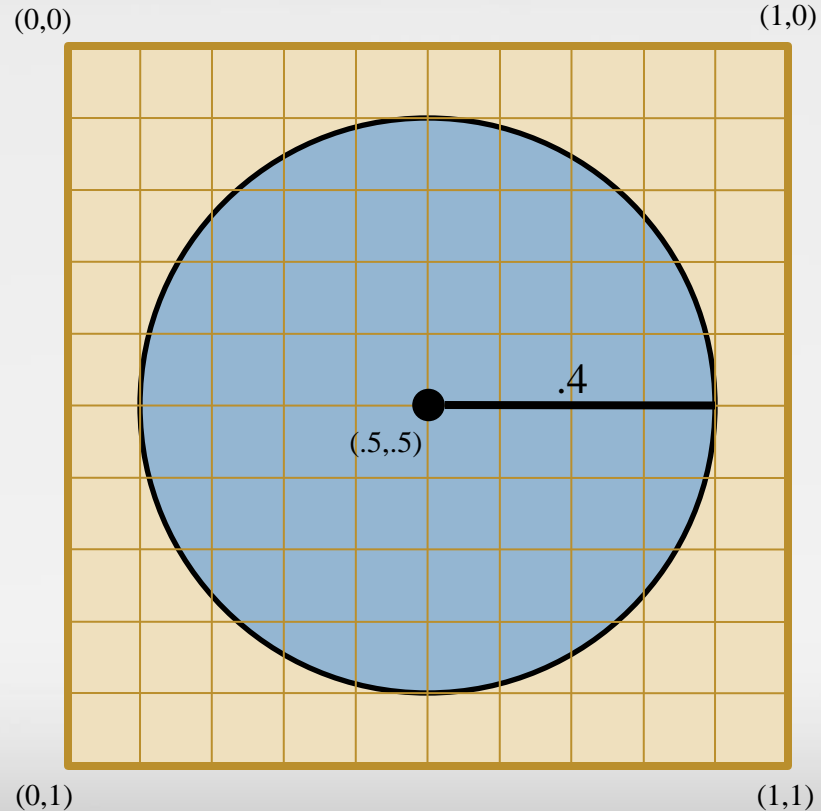


SVG Drawing



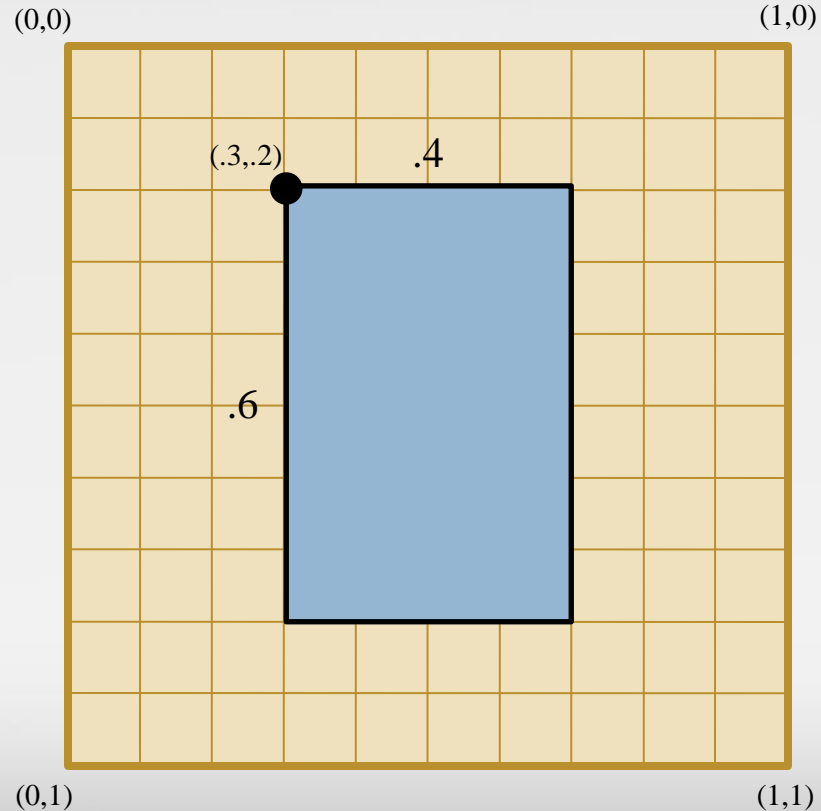
Circle

```
<svg height=... width=...  
  viewBox="0 0 1 1">  
  
  <circle cx = 0.5  
    cy = 0.5  
    r = 0.4  
    stroke = black  
    fill = blue  
  />  
</svg>
```



Rectangle

```
<svg height=... width=...  
  viewBox="0 0 1 1">  
  
  <rect x = 0.3  
        y = 0.2  
        width = 0.4  
        height = 0.6  
        stroke = black  
        fill = blue  
  />  
</svg>
```



Path

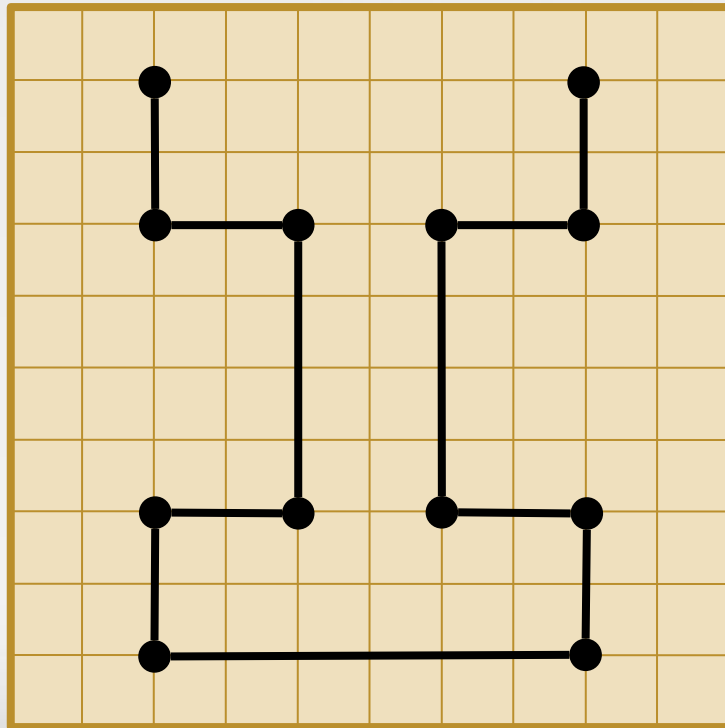
```
<svg height=... width=...  
  viewBox="0 0 1 1">
```

```
  <path d = "M 0.2 0.1  
    L 0.2 0.3  
    L 0.4 0.3  
    L 0.4 0.7  
    L 0.2 0.7  
    L 0.2 0.9  
    L 0.8 0.9  
    L 0.8 0.7  
    L 0.6 0.7  
    L 0.6 0.3  
    L 0.8 0.3  
    L 0.8 0.1"
```

```
  />  
</svg>
```

(0,0)

(1,0)



(0,1)

(1,1)

Closed Path

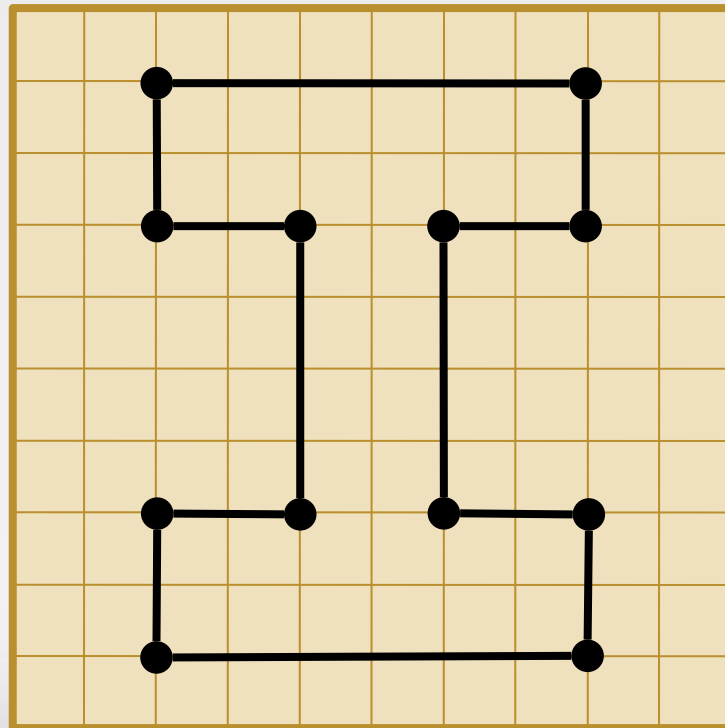
```
<svg height=... width=...  
  viewBox="0 0 1 1">
```

```
  <path d = "M 0.2 0.1  
    L 0.2 0.3  
    L 0.4 0.3  
    L 0.4 0.7  
    L 0.2 0.7  
    L 0.2 0.9  
    L 0.8 0.9  
    L 0.8 0.7  
    L 0.6 0.7  
    L 0.6 0.3  
    L 0.8 0.3  
    L 0.8 0.1  
    Z"
```

```
  />  
</svg>
```

(0,0)

(1,0)



(0,1)

(1,1)

Filled Closed Path

```
<svg height=... width=...  
  viewBox="0 0 1 1">
```

```
  <path d = "M 0.2 0.0  
            L 0.2 0.2  
            L 0.4 0.2  
            L 0.4 0.8  
            L 0.2 0.8  
            L 0.2 1.0  
            L 0.8 1.0  
            L 0.8 0.8  
            L 0.6 0.8  
            L 0.6 0.2  
            L 0.8 0.2  
            L 0.8 0.0  
            Z"
```

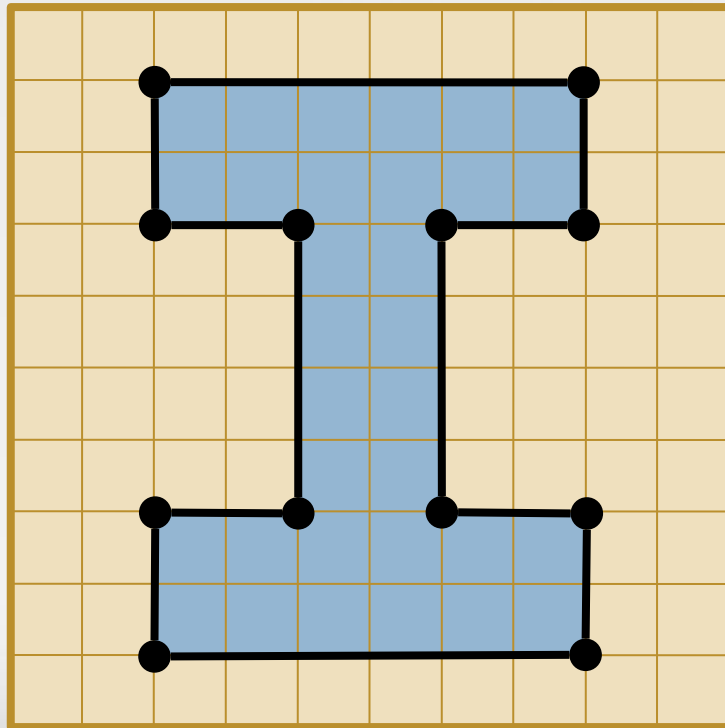
```
    fill = blue
```

```
  />
```

```
</svg>
```

(0,0)

(1,0)



(0,1)

(1,1)

What Did We Learn?

- How to use SVG to make your own line art for web pages
- How to set up an SVG drawing canvas
- How to draw a circle, rectangle and any polygonal shape using the SVG path command