

APPLETS

Applets

- Programs delivered over the Web and executed through a browser.
 - An applet is embedded into an HTML file using a tag that references the bytecode of the applet.
 - The bytecode is transported across the Web and executed by a Java interpreter that is part of the browser.
- No main method
- Use a coordinate space
 - Origin is in the top-left corner.
 - x-values increase to the right
 - y-values increase down

Applets and Inheritance

- When you write an applet, you extend `Applet` or `JApplet`
- `JApplet` handles all the details about applet creation and execution, including:
 - How to interact with a Web browser
 - How to accept applet parameters through the HTML file (width, height, etc.)
 - How to enforce security restrictions
- You get all of this through inheritance and then you just specify what relates to your own program

Applet Template

```
import javax.swing.*;
import java.awt.*;

public class PracticeApplet extends JApplet {

    public void init() {
        // code that occurs once when the applet is loaded
    }

    // use the page object to draw on the coordinate space
    public void paint(Graphics page) {
        // code occurs each time the applet is displayed
    }
}
```

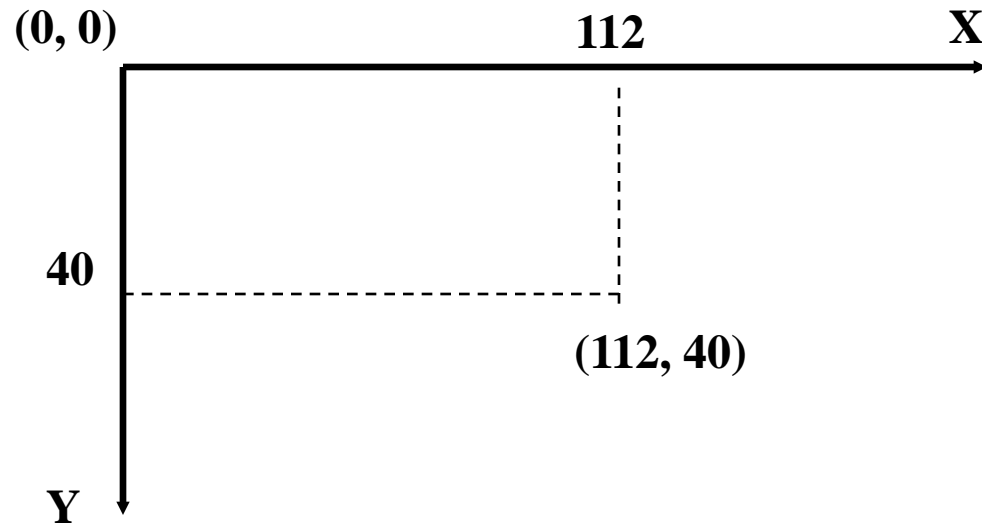
Applet Methods

- `init`
 - Executes once when the applet is first launched
- `paint`
 - Executes every time the applet's contents are drawn
 - Examples: when first launched, when browser window resized, etc.
 - Has a `Graphics` object that can be used to draw shapes and text
- The applet is like the paper. The `Graphics` object is like the pen.

Java Coordinate Space

- Use a coordinate space
 - Origin is in the top-left corner.
 - x-values increase to the right
 - y-values increase down

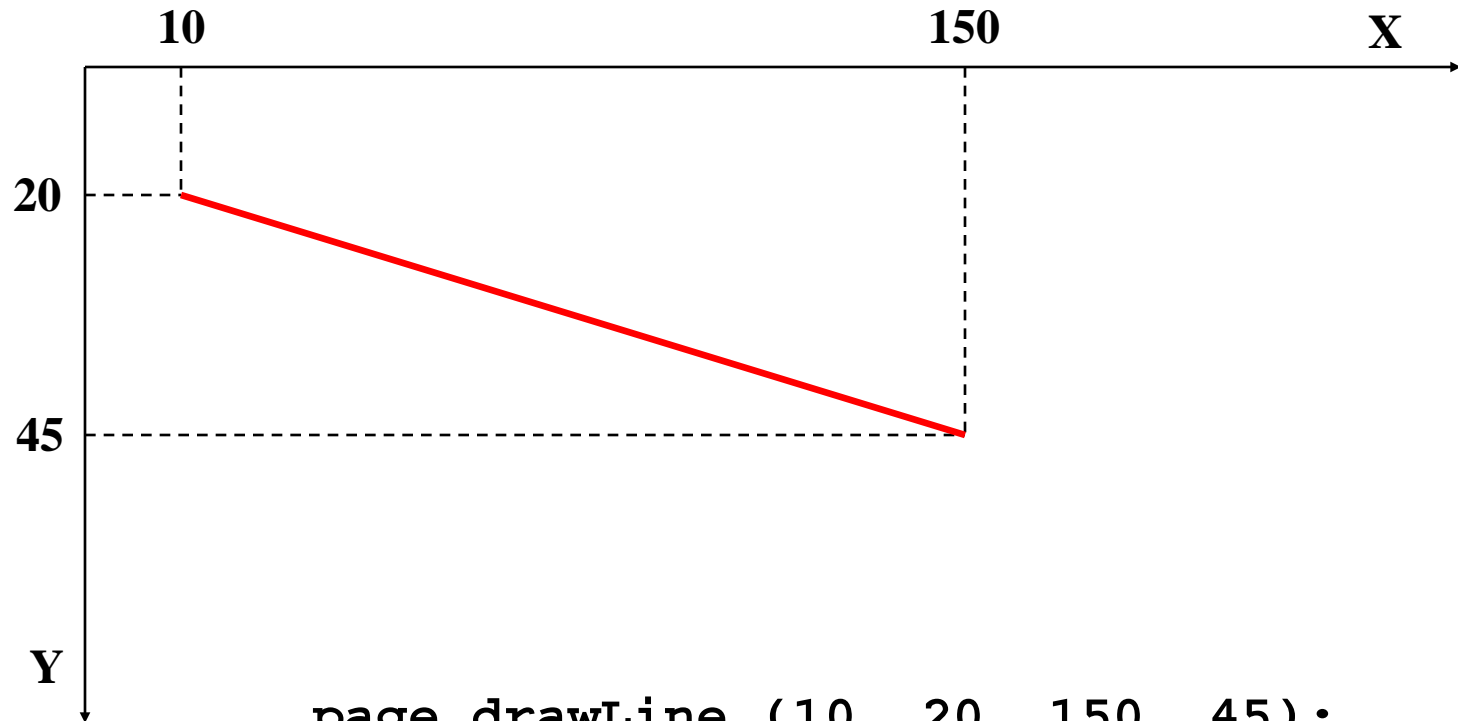
Java Coordinate System



Drawing Shapes

- The `Graphics` class allows you to draw shapes using various methods.
 - The method parameters specify coordinates and sizes.
- A shape can be filled or unfilled.
- Shapes with curves are usually drawn by specifying that shape's *bounding rectangle*.
- Every drawing surface (like an applet) has a *background color* and every graphics object has a *foreground color*.

Drawing a Line



```
page.drawLine (10, 20, 150, 45);
```

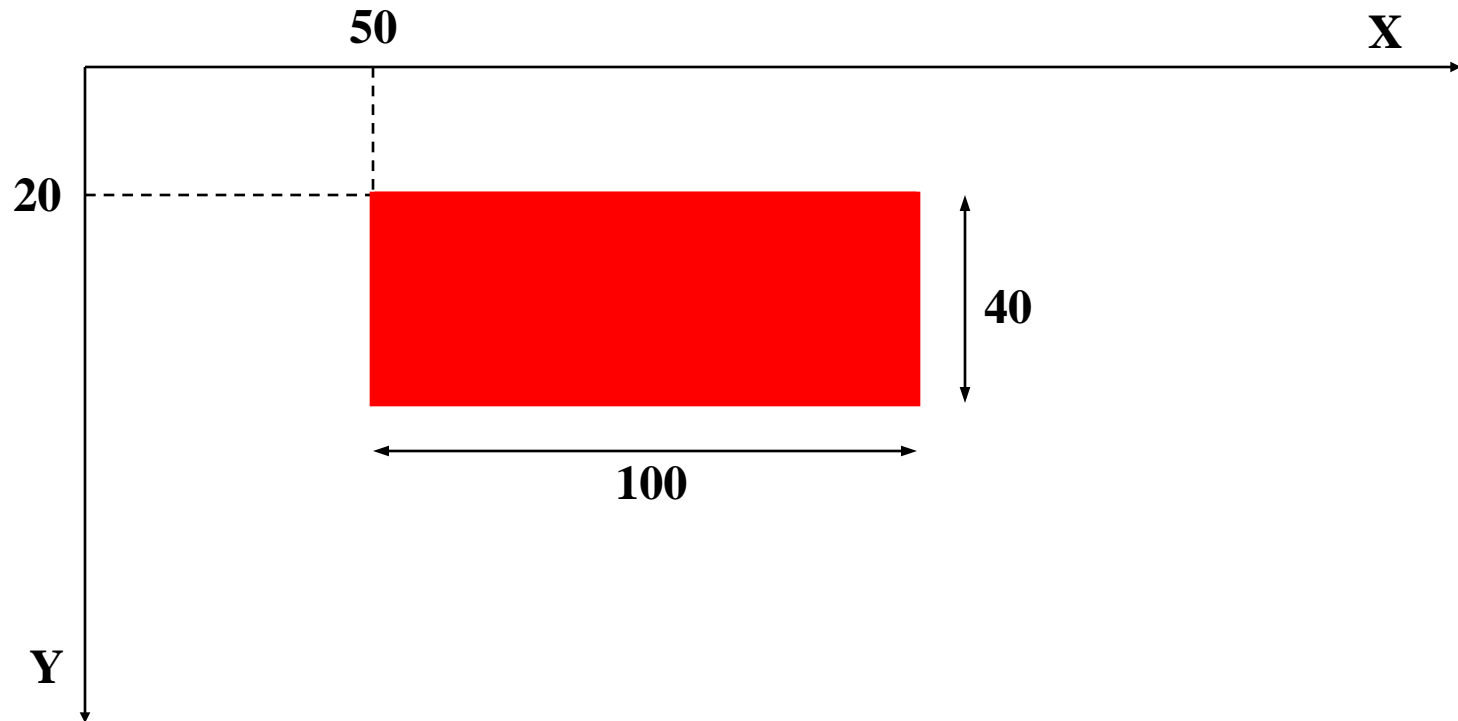
or

```
page.drawLine (150, 45, 10, 20);
```

starting point

ending point

Drawing a Rectangle



```
page.fillRect (50, 20, 100, 40);
```

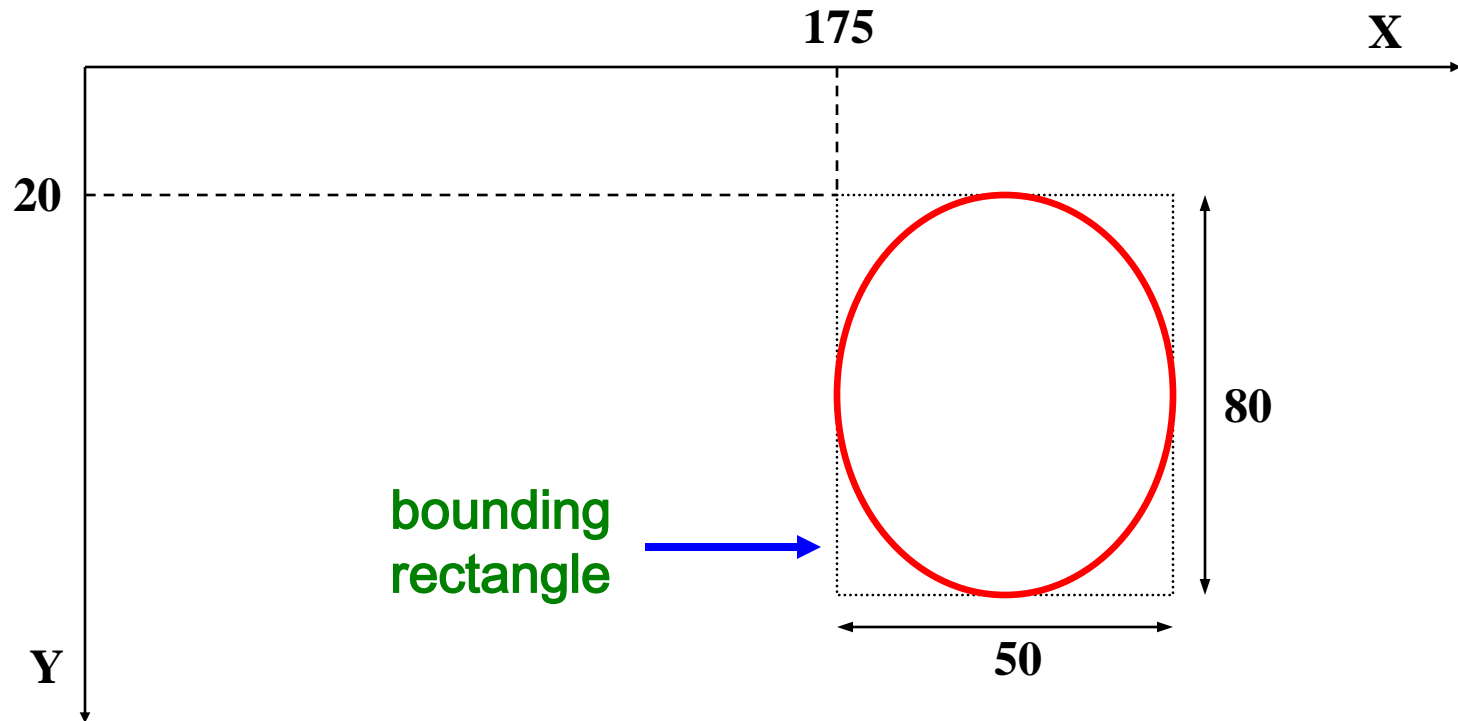
```
page.drawRect (50, 20, 100, 40);
```

starting point

width

height

Drawing an Oval



```
page.drawOval (175, 20, 50, 80);
```

Displaying Applets in HTML

```
<html>

  <head>
    <title>HTML Page Title</title>
  </head>

  <body>
    <applet
      code="AppletTemplate.class"
      width=300
      height=300
    ></applet>
  </body>

</html>
```

<http://hills.ccsf.cc.ca.us/~jlmaster/AppletTest.html>