Signatures & Method Calls

```java
public class Graphics {
    ...
    public void setColor(Color newColor) {
    }
}
public class Rectangle {
    ...
    public void paint(Graphics g) {
        g.setColor(Color.GREEN);
    }
}
```

Signatures & Constructor

```java
public class Rectangle {
    ...
    public Rectangle(int x, int y, int width, int height, Color color) {
    }
}
public class DrawingProgram {
    ...
    public DrawingProgram() {
        rects = new Rectangle[5];
        rects[0] = new Rectangle(10, 20, 30, 40, Color.RED);
    }
}
```

Colors in Java

> A few colors have names:

- BLACK
- BLUE
- CYAN
- DARK_GRAY
- GRAY
- GREEN
- LIGHT_GRAY
- MAGENTA
- ORANGE
- PINK
- RED
- WHITE
- YELLOW
Using Colors in Java

```java
import java.awt.Color;

public class Drawing extends JComponent {
    public void paintComponent(Graphics g) {
        g.setColor(Color.RED);
        g.drawLine(5, 5, 10, 10);
    }
}
```

What is a Color?

- RGB - Red Green Blue
- 3 light sources, one of each color
- Specify how intense each light source should be
- Values range between 0 and 255
- Example: Red = 129, Green = 202, Blue = 60
- Example: Red = 245, Green = 248, Blue = 34
- What is black, white, gray?

Using Colors other than the Named Colors

```java
private static final Color TEXT_COLOR =
    new Color(254, 255, 212); // cream color
private static final Color BACKGROUND_COLOR =
    new Color(95, 83, 61); // dark brown
```
Using Colors in Java

```java
import java.awt.Color;

public class Drawing extends JComponent {
    public void paintComponent(Graphics g) {
        // maroon color
        Color lineColor = new Color(128, 0, 64);
        g.setColor(lineColor);
        g.drawLine(5, 5, 10, 10);
    }
}
```

Why 255???

- Computer memory uses binary
- In binary, there are just 2 values: 0 and 1
- Easy to implement physically: positive or negative magnetic charge
- A bit is a unit of memory that can hold a single binary digit (0 or 1)
- A byte is a unit of memory that can hold 8 bits, the values 00000000 to 11111111
- What is binary 00000000 in decimal?
- What is binary 11111111 in decimal?

Decimal & Binary

- Decimal:
  - Digits range from 0 to 9
  - Position determines power of 10
    - \(14 = 1 \times 10^1 + 4 \times 10^0\)
- Binary:
  - Digits range from 0 to 1
  - Position determines power of 2
    - \(101 = 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 5\) in decimal
    - \(1111111 = 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 255\) in decimal
Centering Shapes

Assuming the diameter of the circle is 1/2 the diameter of the rectangle, where should we draw the circle?