Using Classes

Math Class

Lecture Contents

- The `Math` Class
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  - `Math` Methods

Math Constants

```
public class PlayWithMath {

   public static void main(String args[]) {
      System.out.println("The value of pi is: " + Math.PI);
      System.out.println("The value of e is: " + Math.E);
   }
}
```

```
The value of pi is 3.141592653589793.
The value of e is 2.718281828459045.
```

Write method `calculateCircumference()`

```
public static void main(String args[]) {
   double c = calculateCircumference(3.0);
   System.out.println("Circumference: " + c);
}
```

```
Circumference: 18.84955592153876
```

Write method `calculateCircumference()`

```
public static void main(String args[]) {
   double c = calculateCircumference(3.0);
   System.out.println("Circumference: " + c);
}

public static double calculateCircumference(double radius) {
   // your code here
}
```

```
Circumference: 18.84955592153876
```

Write method `calculateCircumference()`

```
public static void main(String args[]) {
   double c = calculateCircumference(3.0);
   System.out.println("Circumference: "+c);
}

public static double calculateCircumference(double radius) {
   return 2 * Math.PI * radius;
}
```

```
Circumference: 18.84955592153876
```

Write method `calculateCircleArea()`

```
public static void main(String args[]) {
   double c = calculateCircumference(3.0);
   double a = calculateCircleArea(3.0);
   System.out.println("Circumference: " + c);
   System.out.println("Area: " + a);
}

public static double calculateCircumference(double radius) {
   return 2 * Math.PI * radius;
}
```

```
Circumference: 18.84955592153876
Area: 28.274333882308138
```

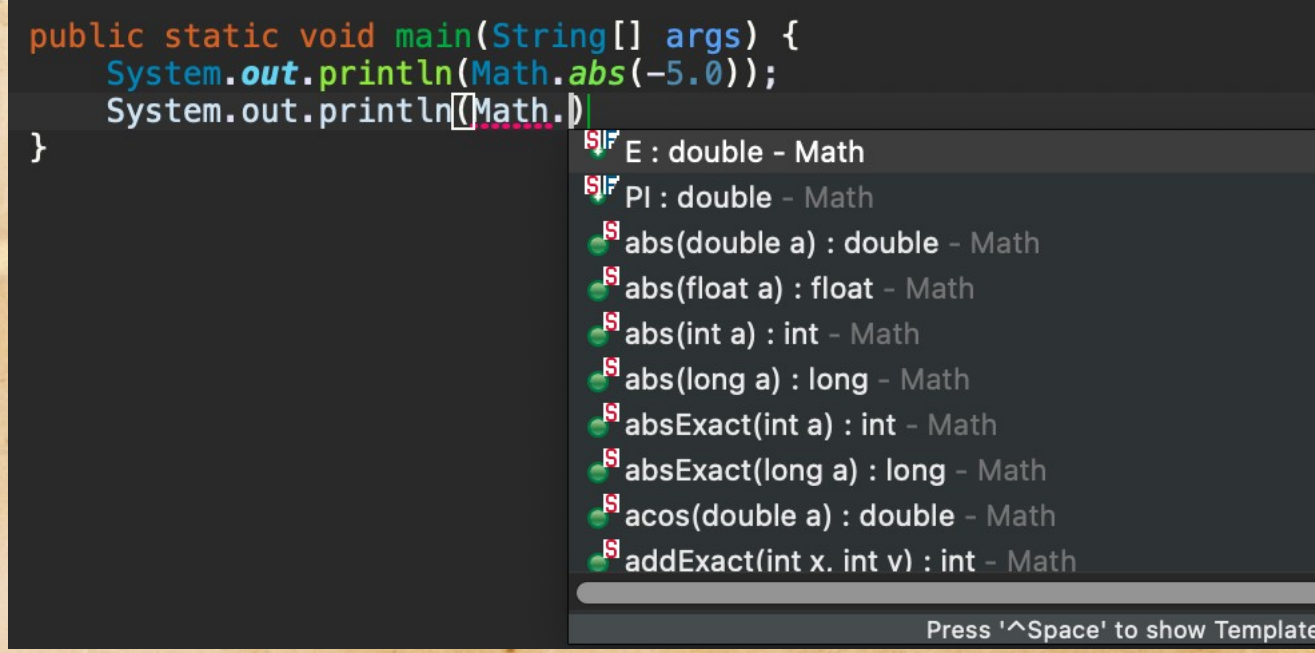
Write method `calculateCircleArea()`

```
public static void main(String args[]) {
   double c = calculateCircumference(3.0);
   double a = calculateCircleArea(3.0);
   System.out.println("Circumference: " + c);
   System.out.println("Area: " + a);
}

public static double calculateCircleArea(double radius) {
   return Math.PI * radius * radius;
}

public static d
   return 2 * M
}
```

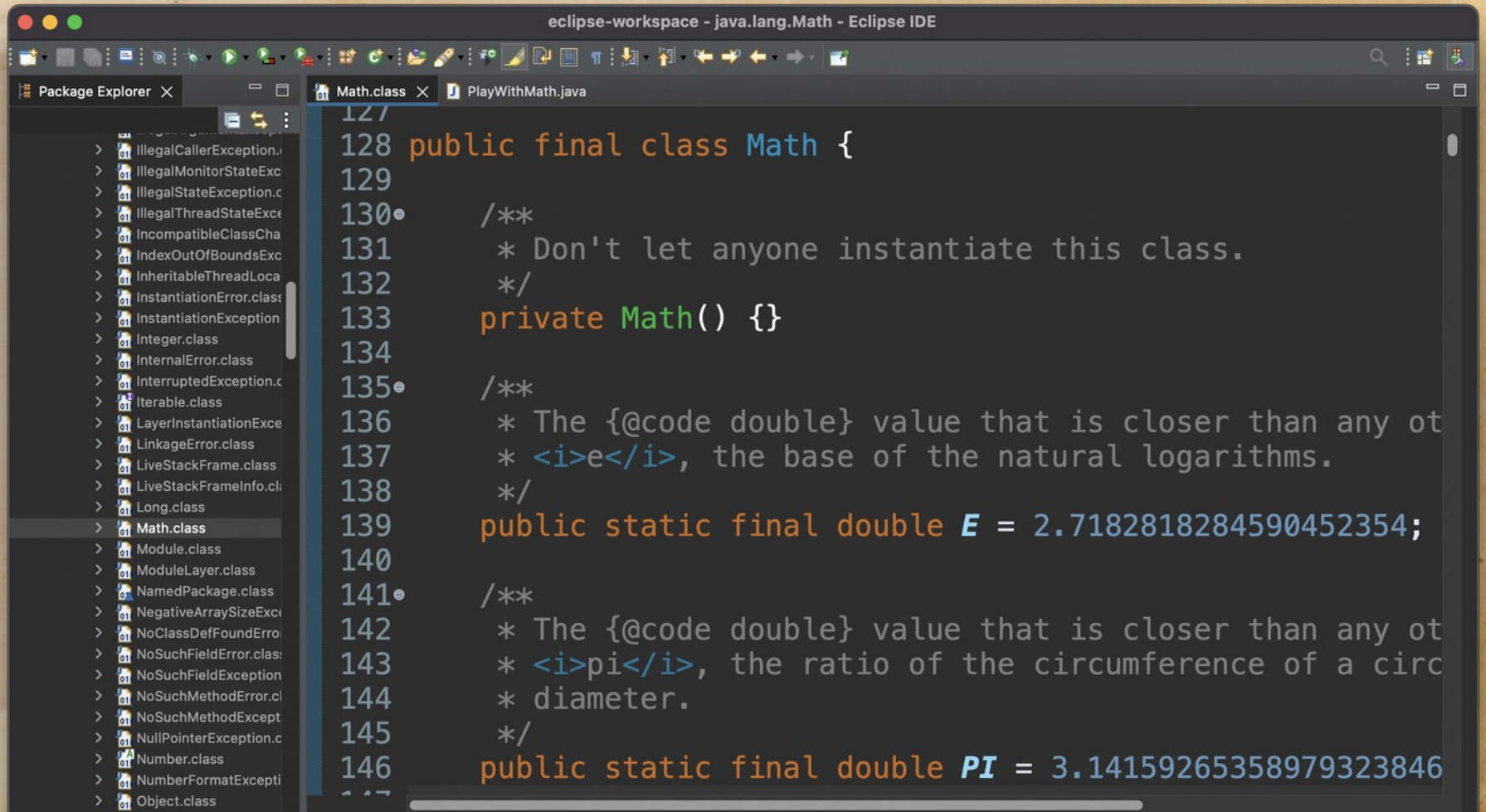
```
Circumference: 18.84955592153876
Area: 28.274333882308138
```

Math Methods

- **Math.abs(-5);**
- **Math.sqrt(2.0);**
- Math.min(3, 5);
- Math.max(3, 5);
- Math.sin(3.14);
- Math.asin(0.5);
- **Math.pow(2, 5);**
- **Math.random();**



- You can view the code of the `Math` class and compare it to the classes we write.



Java AP Subset

Math Class	
`static int abs(int x)`	Returns the absolute value of an `int` value
`static double abs(double x)`	Returns the absolute value of a `double` value
`static double pow(double base, double exponent)`	Returns the value of the first parameter raised to the power of the second parameter
`static double sqrt(double x)`	Returns the positive square root of a `double` value
`static double random()`	Returns a `double` value greater than or equal to `0.0` and less than `1.0`

Using Classes

Math Class