Functionality to Calculate the Area for Different Geometric Dimensions for Mathematics Project.

Source code

```
package java_fundamentals;
import java.util.Scanner;
public class GeometryCalculator {
          public static double calculateRectangleArea(double length, double
width) {
               return length * width;
          }

          public static double calculateCircleArea(double radius) {
               return Math.PI * Math.pow(radius, 2);
          }

          public static double calculateTriangleArea(double base, double
height) {
               return 0.5 * base * height;
          }

          public static void main(String[] args) {
               Scanner scanner = new Scanner(System.in);

               System.out.println("Choose a geometric shape:");
               System.out.println("1. Rectangle");
               System.out.println("2. Circle");
               System.out.println("3. Triangle");

               System.out.print("Enter the number of the shape: ");
               int choice = scanner.nextInt();

               double area = 0;

               if (choice == 1) {
                    System.out.print("Enter the length of the rectangle: ");
                    double length = scanner.nextDouble();
                    System.out.print("Enter the width of the rectangle: ");
                    double width = scanner.nextDouble();
                    area = calculateRectangleArea(length, width);
               } else if (choice == 2) {
                    System.out.print("Enter the radius of the circle: ");
                    double radius = scanner.nextDouble();
                    area = calculateCircleArea(radius);
               } else if (choice == 3) {
                    System.out.print("Enter the base of the triangle: ");
                    double base = scanner.nextDouble();
                    System.out.print("Enter the height of the triangle: ");
                    double height = scanner.nextDouble();
                    area = calculateTriangleArea(base, height);
               } else {
                    System.out.println("Invalid choice. Please enter a number
between 1 and 3.");
                    System.exit(0);
               }

               System.out.println("The area is: " + area);
          }
}
```

Sample Output

```
2. Circle
3. Triangle
Enter the number of the shape: 3
Enter the base of the triangle: 1
Enter the height of the triangle: 2
The area is: 1.0
```