Java Circe's Circle Calculator Methods

Time required: 90 minutes

- Comment each line of code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

Pseudocode

1. Write pseudocode for the exercise
2. Submit with the assignment

Requirements

Circe is an enchantress and minor goddess of magic in ancient Greek mythology and religion. She loves circles! She would like you to create a circle calculator in Java for her to use whenever she takes a break from being a goddess.

This program will ask the user to enter the radius of a circle. Calculate and display the circle's diameter, area, and circumference.

1. Create a Java program named **CircleCalculatorMethods.java**
2. Allow user to choose to quit or run the program again.
3. Create the following methods.

programTitle() – Print a creative program title.

getRadius() - Get circle's radius from user. Return value as double.

getDiameter() - Accept radius as argument. Calculate diameter. Return value as double.
formula: d = 2r, where r = radius

getArea() - Accept radius as argument. Calculate area. Return value as double.
formula: a = πr2, where r = radius

getCircumference() - Accept radius as argument. Calculate circumference. Return value as double.
formula: c = 2πr, where r = radius

displayResults() - Accept radius, diameter, area, and circumference as arguments. Display results on the screen.

Convert Math Formula to Java Code

The following is an example of how to convert math formulas to Java code.

```
# Diameter of a circle: d = 2r
diameter = 2.0 * radius;
# Area of a circle: a = πr2
area = Math.PI * (radius * radius);
# Circumference of a circle: c = 2πr
circumference = (2.0 * Math.PI) * radius;
```

TODO Outline of Program

You can use the following TODO outline to get started with your program.

```
/**
 * Filename: CircleCalculatorMethods.java
 * Written by:
 * Written on:
 * Purpose: Java program to calculate
 * the diameter, area, and circumference of a circle
 */
# Import scanner for user input

# TODO: Create variables and call all methods from main method

# TODO: programTitle() Print creative program title

# TODO: getRadius() Get user input for radius as float

# TODO: getDiameter() Calculate diameter of circle
# formula: d = 2r, where r = radius
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# TODO: getArea() Calculate area of circle
# formula: a = πr2, where r = radius

# TODO: Calculate circumference of circle
# TODO: getCircumference() formula: c = 2πr, where r = radius


# TODO: displayResults()
# Echo user input
# Use printf to format numbers %,.2f\n
```

Example run:

```
************************************
*                                  *
*     Circe's Circle Calculator    *
*                                  *
************************************
Enter radius of circle: 114.25
  You entered: 114.25 radius
     Diameter: 228.50
         Area: 41,007.41
Circumference: 717.85
```

```
**************************************
*                                    *
*     Circe's Circle Calculator      *
*                                    *
**************************************
Enter radius of circle: 22.369
  You entered: 22.369 radius
     Diameter: 44.74
         Area: 1,571.97
Circumference: 140.55
```

Assignment Submission

1. Attach the pseudocode.
2. Attach the program files.
3. Attach screenshots showing the successful operation of the program.
4. Submit in Blackboard.