

Lesson 5 Assignment

Try using the program from the lesson as a basis for some other formula or formulas. I'll suggest three examples, and you can choose the one that appeals to you.

Calculating Circumference, Area, or Surface Area

Here's the easiest one: Ask for a radius, and calculate either a circle's circumference or area or a sphere's surface area.

In case it's been a long time since you've studied algebra and geometry, here are the formulas and values you'll need:

- π is 3.141592653589793, or you can use Java's variable `Math.PI`
- The variable r in the formulas stands for the circle's or sphere's radius
- A circle's circumference is $2\pi r$ (two times pi times r)
- A circle's area is πr^2 (pi times r squared)
- A sphere's surface area is $4\pi r^2$ (four times pi times r squared)

Give it a try, and if you have problems, you can compare it with my solution, which is available here.

See my answer

Calculating Perimeter and Surface Area

If you're looking for something a little more challenging, ask for two values, like width and height, and calculate the perimeter and area of the rectangle. If w stands for the width and h for the height, then the perimeter of a rectangle is $2(h + w)$ and its area is hw (that's height times width).

Again, if you have questions after trying this, take a look at my solution, which is available here.

See my answer

Calculating the Roots of a Quadratic Equation

If you're *really* a glutton for punishment, take three values (such as -1, 2, and 5), and use them in the quadratic formula to calculate the roots of a quadratic equation. In case you don't remember it from algebra, the two roots of the quadratic equation

$$ax^2 + bx + c = 0$$

are given in the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

To do this one, you'd need to use Java's square root function, which is called as follows:

Math.sqrt(value)

It takes a numeric variable, literal, or expression in the place of the argument value in the above statement. It returns the square root of the value a user gives it.

This problem also would require trying to get two answers, since there may be two roots to the equation. The last caution about this assignment is that the value sent to the sqrt() function must be greater than or equal to zero, or you'll get weird results.

After you try it, if you want to compare it to my solution, you can see that here.

[See my answer](#)

After you play around with this assignment, drop by the Discussion Area and share you outcome!