

Assignment 4

For each question, except the last, you must write a **Main class** with a **main method** that shows your answer code running **on some sensible example input**.

Submit the input and the output of your program along with your code (all the classes that you used including your **Main** class).

Question 1

Write a method that takes 4 doubles as arguments, **x1, y1, x2, y2**, and returns the distance (as a double) from the point (**x1, y1**) to the point (**x2, y2**).

Question 2

Write a method that takes 8 doubles as arguments, **x1, y1, x2, y2, x3, y3, x4, y4**, being the corner points of a rectangle (given clockwise starting from the top left corner), and returns the area (as a double) of that rectangle.

Question 3

Write a method that takes 2 doubles as arguments, a radius **r**, and a height **h**, and returns the volume (as a double) of a cylinder of those dimensions.

Question 4

Write a **main** program that reads from the keyboard:

- A double, **P**, representing the principal of the investment (i.e. the initial amount of the investment).
- An integer, **N**, representing the term of an investment (i.e. the number of years for the investment).
- A double, **R**, representing the rate of return of the investment per year as a percentage (e.g: an input of 25.5 means you earn 25.5% interest per year).

Write a method **interest** that returns the interest earned (as a double) given an initial investment **I** (a double), and an interest rate **R** (a double).

Use **this method** to show, **for each year** of the investment, the value of the investment at the beginning of the year, the interest earned that year, and the value of the investment at the end of the year.

Question 5

Write a method that takes an integer argument **N** (assume **N** is positive), and returns the smallest positive integer, **M**, such that $1+2+3+\dots+M > N$.

Question 6

Consider the following method and method call:

```
public static int inc(int a) {  
    a++;  
    return a;  
}
```

```
int a = 10;  
int b = inc(a + 12);  
int c = inc(a);  
System.out.println(a);  
System.out.println(b);  
System.out.println(c);
```

What is the output from this code? **Carefully** explain your answer (i.e. carefully show how the method **inc** is called).