Lesson_04.2

Why does the main method need to be “public”? What does this mean?
The main method must be public in order for the computer to find the main. The computer will not be able to run the main() function if it wasn’t public. Public tells java that the method is public and can be used from any classes within that java project.

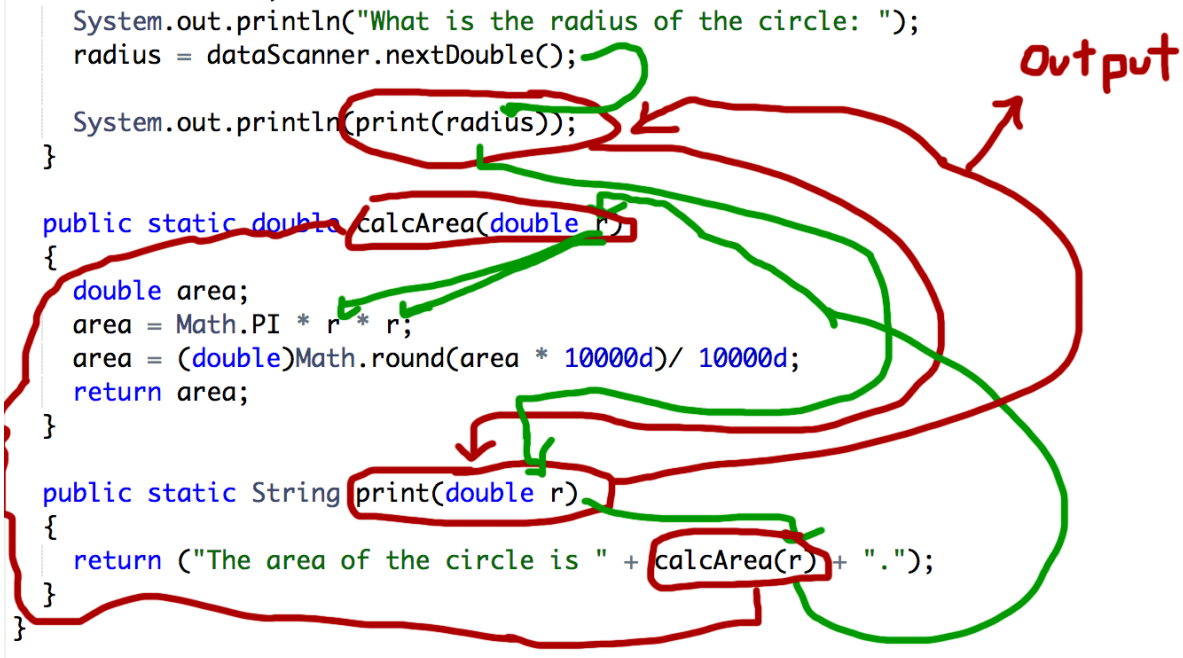
Why does the main method need to be “static”? What does this mean?
The main method is static so that the method can be directly invoked via the class.

Why do we need parameters? How do they enhance our use of methods? What do they enable use to do?
Parameters enable us to use non static variables in order to perform a function, without affecting the original variable.

What are the differences between static and non-static methods. Why do we need to create an object to use a method that is nonstatic?
Static methods are ones we use in order to access static instance variables. Non static methods are methods that don’t necessarily require instance variables and don’t use static objects/methods/variables. We need to create an object to call a function in order to access non static variables.

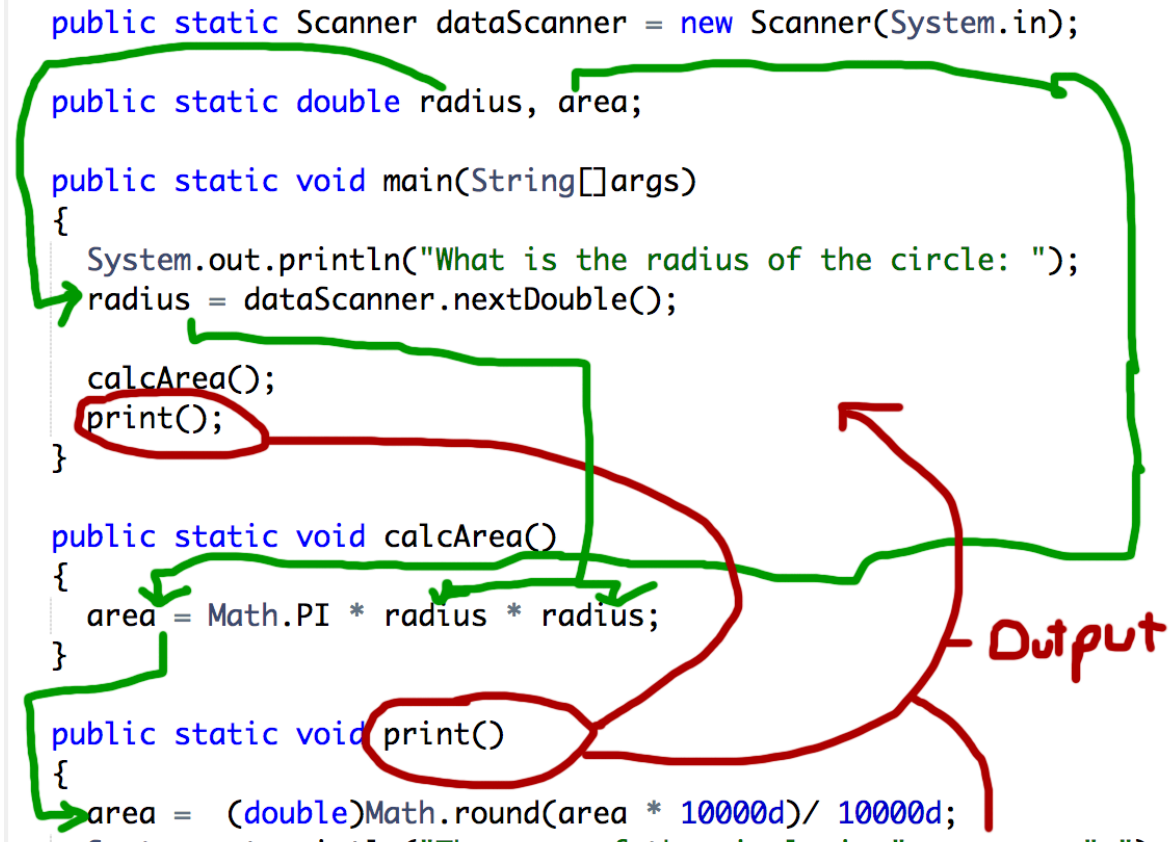
Return Methods diagram

```
import java.util.Scanner;
import java.lang.Math;

public class ReturnCircle
{
  public static Scanner dataScanner = new Scanner(System.in);

  public static void main(String[]args)
  {
    double radius;
    System.out.println("What is the radius of the circle: ");
    radius = dataScanner.nextDouble();

    System.out.println(print(radius));
  }

  public static double calcArea(double r)
  {
    double area;
    area = Math.PI * r * r;
    area = (double)Math.round(area * 10000d)/ 10000d;
    return area;
  }

  public static String print(double r)
  {
    return ("The area of the circle is " + calcArea(r) + ".");
  }
}
```



Void Methods diagram

```
import java.util.Scanner;
import java.lang.Math;

public class Circle
{
  public static Scanner dataScanner = new Scanner(System.in);

  public static double radius, area;

  public static void main(String[]args)
  {
    System.out.println("What is the radius of the circle: ");
    radius = dataScanner.nextDouble();

    calcArea();
    print();
  }

  public static void calcArea()
  {
    area = Math.PI * radius * radius;
  }

  public static void print()
  {
    area =  (double)Math.round(area * 10000d)/ 10000d;
    System.out.println("The area of the circle is " + area + ".");
  }
}
```



What is a single point of failure?
A single point of failure is when one point of the code fails, and the entire program breaks down.

Lesson_04.3

What is a return function?
A return function is a function that returns a datatype. Functions like these can be helpful when you are using using non static variables, and can just use parameters to move variables around.

What is a void function?
A void function is a function does not need to return a datatype. Functions like these can be useful when you are trying to perform stuff with instance variables.