**4.3 – Understanding Object**

**Oriented Programming Theory**

For this assignment we will be using A Guide to Programming in JAVA by Beth Brown. Please type your answers in this document. When you are done, upload the file to your GitHub account in a repo called “Assignment 4-3” available at:

<https://bbarrettchs.weebly.com/uploads/3/7/7/8/37782575/lvp_java_text.pdf>

**Who are you?**

0. What is your name? Xavier St-Jacques

**What is an Object?**

Read page 179-180 and answer the following questions:

1. The textbook describes an object as a collection of state and behaviour. What is meant by state and behaviour? The Data and Action of the code

2. Define Encapsulation / Information Hiding. Hiding code from classes outside

3. Define client code. Application that uses one or more classes

**Designing and Writing a Class**

Read page 180-182 and answer the following questions:

4. Define Functional Decomposition. Creating a defined function for a class.

5. What three things does the class declaration contain? Method, Class Constructor, Class

6. What three things does the class body contain?

Variables, Constructors and Methods

7. Access levels: what does it mean to make a variable or method public? What does it mean to make a variable or method private?

If public, it is readable by other classes while if private only accessible through that class

8. What is an interface?

How client code interacts with an object.

9. Define accessor method, modifier method, and helper method. Which one of these types of methods is NOT part of the interface?

Accessor are called to determine the value of variables; Modifiers change the value of a variable. Helper methods are used to complete tasks and access private methods.

Helper is not accessible by interface

10. Do the problem "Review: Circle - part 1 of 4" on page 182

Public circumference(int radius) {

}

**Writing Constructors**

Read page 183 and answer the following questions:

11. What does it mean for an object to be instantiated?

Concrete occurrence of an object

12. What is a constructor method and what does it do?

The don’t return and allow variables to have values that can be changed

13. What two things are always true about constructor methods?

Always named after the class, They can be overloaded

13. What does it mean to "overload" a constructor method?

So you can instantiate more objects.

14. Do the problem "Review: Circle - part 2 of 4" on page 184

**Instance and Class Members**

Read page 184-185 and answer the following questions:

15. What is the difference between an instance variable and a class variable? How do you declare a variable as an instance variable? How do you declare a variable as a class variable? Give an example of each from the Circle class.

Class variables are declared with static.

16. What is the difference between an instance method and a class method? How do you declare a method as an instance method? How do you declare a method as a class method? Give an example of each from the Circle class.

Instance change the state of a method and class methods are declared with static

17. Do the problem "Review: Circle - Part 3 of 4" on page 185.