**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: jack luft

**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: that is can have a state telling what action it performs and behaviour is what it does. The behaviour would be the methods

2. Define Encapsulation / Information Hiding: hiding a variable or a method with private or protected.

3. Define client code. Client code is the class that is creating an object of some class.

**Designing and Writing a Class**

Read page 180-182 and answer the following questions:

4. Define Functional Decomposition. The process of creating clearly defined functions, or behavior for a class is call Function Decomposition.

5. What three things does the class declaration contain: access level, class keyword and class name.

6. What three things does the class body contain? Variables, Methods, constructors

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 you have a variable or method private it is only available for that class and no where else. If you have a variable or method public it is available to any class.

8. What is an interface: is how client code can interact with the class.

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

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

**Writing Constructors**

Read page 183 and answer the following questions:

11. What does it mean for an object to be instantiated: for the object to be created.

12. What is a constructor method and what does it do: it setts up the object and define the starting methods.

13. What two things are always true about constructor methods: they must be called for the object to be created, you can make as many constructors as you want.

13. What does it mean to "overload" a constructor method: to have the same name but different parameters for the method or constructor.

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. A instance variable is a variable only for that one object, defining it is just normal defining a variable. Class variables are variable that are for the class and they are defined by using the static keyword.

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. A instance method is a method only for that object as you would normal define a method. A class method is a method that has the keyword static in it and that method is for the whole class not just for one object.

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