**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?

**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?

2. Define Encapsulation / Information Hiding.

3. Define client code.

**Designing and Writing a Class**

Read page 180-182 and answer the following questions:

4. Define Functional Decomposition.

5. What three things does the class declaration contain?

6. What three things does the class body contain?

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?

8. What is an interface?

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?

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

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

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

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.

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.

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