1. You have created a Motorcycle class that has a constructor with no parameters. Which of the following statements will construct an object of this class?
   a) Motorcycle myBike;
   b) Motorcycle myBike = new Motorcycle();
   c) myBike.new(Motorcycle);
   d) Motorcycle.new(myBike);

2. You should declare all instance variables as ________.
   a) protected
   b) class
   c) public
   d) private

3. Given the following class:
   ```java
   public class Coin {
       private String coinName;
       private double coinValue;
       . . .
       public void setValue(double val) {
           coinValue = val;
       }
   . . .
   }
   ```

   and consider the following code snippet that utilizes the Coin class:
   ```java
   Coin coin1 = new Coin("dime", 0.10);
   Coin coin2 = coin1;
   coin2.setValue(0.15);
   ```

   Which of the following statements is correct?
   a) coin1 has a value of 0.10 and coin2 has a value of 0.15.
   b) coin1 and coin2 both have the value of 0.10.
   c) coin1 and coin2 both have the value of 0.15.
   d) coin2 does not have any data in the coinName variable

4. Consider the Account class from the textbook. What balance will be stores in acct1, acct2, and acct3 after the following statements have executed?
   ```java
   Account acct1 = new Account(500.00);
   Account acct2 = new Account(1000.00);
   Account acct3 = acct1;
   acct1.deposit(500.00);
   acct2.withdraw(250.00);
   acct3.deposit(100.00);
   ```

   acct1: ___1100__ acct2: ____750__ acct3: ___1100__
5. Consider the following code snippet:

```java
Coin coin1 = new Coin("dime", 0.10);
Coin coin2 = new Coin("dime", 0.10);
```

Which of the following statements is correct?

a) `coin1` and `coin2` contain references to the same object.
b) `coin1` and `coin2` refer to the same object.
c) `coin1` and `coin2` contain the same memory location.
d) `coin1` and `coin2` each have their own set of instance variables.

6. The study of the efficiency of algorithms is called the ____ of algorithms.

a. design  

b. analysis  

c. Implementation  

d. Testing

7. The worst case in binary search occurs ____.

a. when the object to be searched is in the middle of the list  

b. when the object to be searched is at the end of the list  

b. when the object to be searched is at the beginning of the list  

d. when the object to be searched is not in the list

8. (TRUE/FALSE) If we were to run the sequential search algorithm many times, with random input values occurring at various places in the list, we would find the average number of comparisons done to be approximately \( n/2 \).

TRUE

9. (TRUE/FALSE) Binary search uses significantly more space than sequential search.

FALSE

10. (Short Answer) What is the definition of order of magnitude \( n \)?

The number of key operations performed by the algorithm is linearly dependent upon the number of input values that the algorithm receives.