Last Name: _____   First Name: _____

Multiple Choice   *(40 items @ 2.5 point each)* <u>Select the letter in front of the most correct answer, and mark your scantron accordingly</u>.

1. What is the output of the following code?
```
int p = 1;
do {
     System.out.print(p + " ");
     p++;
} while (p >= 2 && p <= 7);
```
    a. 2 3 4 5 6 7
    b. 1 2 3 4 5 6 7
    c. 2 3 4 5 6
    d. 1
    e. No output is produced by the loop above

2. What reserved word can be used to end execution of a loop?
    a. continue
    b. final
    c. break
    d. this
    e. complete

3. Objects of which of the following types are iterators?
    a. String
    b. int
    c. Comparable
    d. Scanner
    e. All of the above

4. Which of the following is an infinite loop?
```
a.  for (int i = 2; i < 1; i++) {}
b.  for (int i = 1; i <= 2; i++) {}
c.  for (int i = -1; i > -4; i--) {}
d.  for (int i = 3; i > 2; i++) {}
e.  for (int i = -1; i < 2; i++) {}
```

5. Which of the following is a logical operator (i.e. one that must have boolean operands)?
    a. >
    b. !=
    c. =
    d. %
    e. None of the above

6. Suppose that the array groupList has a value of null. Which of the following will generate a run-time error?
```
a.  if (groupList != null) { }
b.  if (groupList == null) { }
c.  if (groupList != null && groupList.length > 0) { }
d.  if (groupList.length > 0 && groupList != null) { }
```
    e. None of the above cause a run-time error

7. Which of the following lines correctly instantiates an array?
   a. int values[];
   b. int[] values;
   c. int values[] = new int[3];
   d. int[] values = new array[3];
   e. int values[] = new ArrayList(3);

8. What is the output of the following loop?
```
int k = 2;
while (k < 8) {
    System.out.print(k + " ");
    k += 2;
}
```
   a. 2 4 6
   b. 2 4 6 8
   c. 2 3 4 5 6 7
   d. 2 3 4 5 6 7 8
   e. 3 4 5 6 7

9. Suppose that a method has a single formal parameter of type String and that the method is invoked with a String variable. Which of the following is true about the actual and formal parameter?
   a. They must be referenced using the same variable name
   b. They must be referenced using two different variable names
   c. They reference the same object
   d. They reference two separate memory addresses
   e. Both b and d

10. Constant class fields are declared with the following two reserved words:
   a. final, static
   b. public, final
   c. private, final
   d. static, void
   e. public, static

11. Which of the following lines of code cannot be placed in a static method?
   a. `return new String();`
   b. `this.count++;`
   c. `System.out.print("Enter a number: ");`
   d. `int[] nums;`
   e. All of the above code can be placed in a static method.

12. Suppose that variable x has a value of 200. What is the value of y after the following statements are executed (hint: be sure to take into consideration operator precedence)?
```
y = x <= 100 && x >= 0 || x % 2 == 0;
```
   a. 100
   b. 0
   c. 50
   d. true
   e. false

13. Suppose that the Stock class has a static int called agtAmt that is initialized to zero. If the constructor of Stock is defined as follows

```
public Stock (String repIn) {
    rep = repIn;
    cost = 1;
    agtAmt += repIn.length();
}
```

    then what is the value of agtAmt after the following three Stock objects are created?

```
Stock s1 = new Stock("ABC");
Stock s2 = new Stock("ABCD");
Stock s3 = new Stock("EFGH");
```

    a. 0
    b. 3
    c. 6
    d. 11
    e. The value of agtAmt cannot be determined by the given information

14. Static methods are also called _____ methods.
    a. class
    b. instance
    c. constant
    d. overloaded
    e. abstract

15. The main method cannot directly access _____ variables of the class containing main.
    a. private static
    b. public static
    c. static
    d. instance
    e. class

16. Which of the following items is most likely to be provided by the client rather than the developer for a software project?
    a. Requirements
    b. Design
    c. Code
    d. Tests
    e. Both a and b

17. If the Trajectory class uses the static methods found in the Math class, then what is the relationship between Trajectory and Math in a UML class diagram?
    a. general dependency
    b. inheritance
    c. aggregation
    d. static
    e. There is no relationship between the two classes in this case

18. Which of the following lines in a JUnit test correctly tests the getAmt method which returns a double?
    ```
    a.  Assert.assertEquals("Wrong amount", 4.2, st.getAmt());
    b.  Assert.assertEquals("Wrong amount", 4.2, .1, st.getAmt());
    c.  Assert.assertEquals(4.2, st.getAmt(), .1, "Wrong amount");
    d.  Assert.assertEquals(st.getAmt(), 4.2, "Wrong amount", .1);
    e.  Assert.assertEquals("Wrong amount", 4.2, st.getAmt(), .1);
    ```

19. The following command runs the Java program ItemCheck from the command line and passes it three arguments (balloon 2.0 5.6).
    > java ItemCheck balloon 2.0 5.6
    Which of the lines of code below correctly stores the second command line argument (i.e., 2.0) in variable res?
    a. String res = args[2];
    b. int res = args[1];
    c. String res = args[1];
    d. int res = args[2];
    e. int res = args[3];

20. An aggregate object always contains which of the following:
    a. static variables
    b. constant fields
    c. overloaded methods
    d. reference variables
    e. none of the above

21. If an array is sent as a parameter to a method and modified within that method, the modifications to the array will be lost once the invoked method has ended execution.
    a. true
    b. false

22. Which statement below is true concerning the following array?
    String[] names = new String[5];
    a. names.length would return a value of 4
    b. names[0] would cause an ArrayIndexOutOfBoundsException
    c. names contains 5 empty String objects
    d. names contains 5 null values
    e. names is instantiated using an initializer list

23. What is the output of the following lines of code?
    ```
    for(int i = 1; i < 7; i++){
        System.out.print(i % 2 == 0 ? i + " " : "");
    }
    ```
    a. 1 2 3 4 5 6
    b. 1 2 3 4 5 6 7
    c. 2 4 6 7
    d. 2 4 6
    e. 1 3 5 7

24. Which of the following statements is true?
    a. Static methods cannot be invoked until an object is created
    b. A class can have more than one constructor
    c. Tests in JUnit cannot test return types that are objects
    d. An ArrayList cannot hold objects of different types
    e. Casting must be used if a generic type is specified when returning an element of an ArrayList

25. Which of the following class headers correctly implements more than one interface?
    a. `public class Dice implements Rollable, Countable`
    b. `public class Dice implements Rollable implements Countable`
    c. `public class Dice implements Rollable & Countable`
    d. `public class Dice implements Rollable && Countable`
    e. `public class Dice implements Rollable Countable`

26. If you want to be able to compare two objects, then what <u>interface</u> should you implement?
    a. compareTo
    b. Compare
    c. Comparable
    d. compare
    e. Iterator

27. Two methods can have the same name in a class if they have different _____.
    a. return types
    b. visibility modifiers
    c. formal parameters
    d. code
    e. There cannot be more than one method with the same name in a class

28. Which of the following lines of code accesses an element from the ArrayList nameList?
    a. nameList[nameList.length]
    b. nameList[2]
    c. nameList[-4]
    d. nameList.get(2)
    e. nameList(2)

29. Suppose that an instance variable called length is in the Race class. How can the variable be accessed from within the class?
    a. new int length
    b. this.length
    c. Race.length
    d. length[0]
    e. None of the above

30. Interfaces can contain _____ methods and constants.
    a. void
    b. formal
    c. aggregate
    d. static
    e. None of the above

31. Method decomposition _____ the number of methods in a class.
    a. increases
    b. decreases
    c. doesn't affect
    d. keeps constant
    e. counts

32. Which of the following loops can be used to access all indices of array fileNames?
    a. `for(int i = fileNames.length; i > 0; i--)`
    b. `for(int i = 0; i <= fileNames.length; i++)`
    c. `for(int i = fileNames.length - 1; i >= 0; i--)`
    d. `for(int i = fileNames.length; i >= 0; i--)`
    e. `for(int i = 0; i < fileNames.length - 1; i++)`

33. A(n) _____ variable cannot be accessed by a _____ method in the same class.
    a. public, private
    b. private, public
    c. static, instance
    d. instance, static
    e. Any method in a class can reference any variable in that class

34. What is the value of number after the following code is executed?
```
int number = 0;
for (int i = 2; i < 4; i++) {
    for (int j = i; j > 0; j--) {
        number += j;
    }
}
```
    a. 3
    b. 4
    c. 5
    d. 7
    e. 9

35. What is the value of var after the following code is executed?
```
int var = 2;
switch(var) {
    case 1:
        var += 1;
    case 2:
        var += 3;
    case 3:
        var += 5;
}
```
    a. 3
    b. 5
    c. 7
    d. 10
    e. 11

36. Which of the following types can be used as an initial expression in a switch statement?
    a. boolean
    b. double
    c. char
    d. String
    e. All of the above types

37. Suppose that obj1.compareTo(obj2) returns a value of -8. Given your knowledge of the compareTo method, what can you say about obj1 and obj2?
    a. obj1 is less than obj2
    b. obj1 is equal to obj2
    c. obj1 is greater than obj2
    d. obj1 minus obj2 is equal to 8
    e. The compareTo method can only return values of 1, -1, and 0

38. Given the following statement, what is the return type of the getMore method?
    ```
    int output = getMore() ? 2 : 0;
    ```
    a. int
    b. boolean
    c. double
    d. char
    e. void

39. Which of the following values for char ch causes num to be set to 2 after the following code is executed?
    ```
    int num = 0;
    if (ch > 'b') {
        if (ch < 'p') {
            num = 1;
        }
        else {
            num = 2;
        }
    }
    ```
    a. 'a'
    b. 'b'
    c. 'p'
    d. 'q'
    e. Either c or d

40. Which of the following completes the if statement below so that Equal is printed if the Strings referenced by str1 and str2 contain the same characters?
    ```
    if(_____) {
        System.out.println("Equal");
    }
    ```
    a. str1 == str2
    b. str1.compareTo(str2)
    c. str1.equals(str2)
    d. both a and c are valid
    e. both b and c are valid