Circle True or False (1pt each)

1. T  F  Private members must be declared before public members.
2. T  F  Class members are private by default.
3. T  F  Members of a struct are private by default.
4. T  F  Classes and structures in C++ are very similar.
5. T  F  All private members of a class must be declared together.
6. T  F  All public members of a class must be declared together.
7. T  F  It is legal to define a pointer to a class object.
8. T  F  The "new" operator can dynamically allocate an instance of a class.
9. T  F  Constructors do not have to have the same name as the class.
10. T  F  Constructors may not have a return type.
11. T  F  Constructors cannot take arguments.
12. T  F  Destructors cannot take arguments.
13. T  F  Destructors may return a value.
14. T  F  Constructors may have default arguments.
15. T  F  Member functions may be overloaded.
16. T  F  Constructors may not be overloaded.
17. T  F  A class may have a constructor with all default values.
18. T  F  A class may only have one destructor.
19. T  F  The data members of a class cannot all be pointers.
20. T  F  A class with a pointer requires a destructor.

21. What feature of object oriented design does a class accomplish by combining data and code together in one object? (2pts)

   **encapsulation**

22. Setting data members of a class to private accomplishes what goal of object oriented design? (2pts)

   **data hiding**
23. Define a structure named PhoneRecord that has two member variables:
a character c-string just large enough to hold a 13-character phone number,
and another c-string large enough to hold a 50-character name. (4pts)

```cpp
struct PhoneRecord {
    char number[14];
    char name[51];
};
```

24. Write a void function named displayPhoneRecord that accepts a PhoneRecord
structure (from question #3) as an argument. The function will display the
member variables something like this: "Fred Foo..... 661 555-1234"
Do not write main(). (4pts)

```cpp
void displayPhoneRecord(PhoneRecord *pr)
{
    cout << pr->name << "........ ";
    cout << pr->number << endl;
}
```

25. Write the definition for a class that has one integer data member that is
private, and a constructor that will initialize the data member when the
following code is executed. (4pts)

```cpp
MyData data(100);
```
26. Given the following pointer declaration:

   int *ptr = new int;

Assume the address given to ptr is decimal value 100024. After the following code executes, what will the value of ptr be?

   ptr += 4;

   100024 + (4 * sizeof(int)) = 100024 + 16 = 100040

27. What is the exact output of the following code?
   Draw a box around your answer.

   char a[] = "SOMETHING";
a[5] = a[0];
cout << a + 5;

SING

28. Given an integer x, write a boolean expression that will evaluate to true if x is greater than 4 but not greater than 24.

   (x > 4 && x <= 24)   -or-   (x > 4 && !(x > 24))

29. What is the output of the following code?
   Draw a box around your answer.

   int a;
cout << (a = 2);

2

30. Write a for-loop that will fill the following array with the numbers 1 through 100.

   int arr[100];

   for (int i=0; i<100; i++)
      arr[i] = i+1;