Unit 3 Review Answers

Lesson 10

1. Default parameter values let you leave out one or more parameters when calling a function.
2. References have an advantage over pointers in that they are always initialized and can't be uninitialized.
3. A reference is declared like this: `int &reference = someOtherInteger;`
4. The difference between passing a parameter by value and passing one by reference is that when a parameter is passed by value, a copy of the parameter is given to the function. This allows the function to change the parameter given to it without changing the variable that was passed to it.
5. Declaration A is for a function pointer

Lesson 11

1. An enumerated type is one whose value is one of a set of specified values.
2. By specifying an integer value for an identifier in an enumerated type, it is possible to use the enumerated type for `case` values in a `switch` statement.
3. A variable inside a struct is accessed using the dot operator or the arrow operator. The form is like this: `myStruct.someVariable` or `myStructPtr->someVariable`.
4. The dot operator is used for structures allocated on the stack and the arrow operator is used for structures allocated on the heap.

Lesson 12

1. Object-oriented programming is a programming paradigm which thinks in terms of the interaction of objects as a means to accomplish a task.
2. A class is a C++ object definition which consists of a name, inheritance, and a list of methods and properties.
3. A method is a function which belongs to a class.
4. A property is a data variable which belongs to a class.
5. A class' constructor is for initializing its properties and allocating memory for heap-allocated properties. The destructor is for freeing pointers and performing any other tear-down for an object before it is freed.
6. `new` and `delete` are the C++ counterparts to `malloc()` and `free()`.
7. If `malloc()` is used to allocate an object, its constructor is never called. If `free()` is used to free an object, its destructor is never called.
8. A public method can be called by functions outside the object. A private method can only be called by other methods owned by the class.
9. Arrays allocated with `new` are properly freed by calling `delete []` on the array pointer.
10. Data abstraction is the practice of using hiding properties from public access using methods.

Lesson 13

1. Inheritance is the practice of creating a class by extending another one.
2. Private methods and properties can be accessed from within the class' methods. Protected methods and properties can be accessed from the class' methods and those of any child classes.
3. A virtual function is one whose behavior can be redefined by a child class.
4. A static function is one which can be called without having an instance of its owning class.

5. Function overloading is the practice of declaring and implementing more than one function with the same name and different parameter lists.
6. Protected inheritance forces all public methods and properties of the parent class to have protected access in the child class, restricting outside access but allowing access from its methods and those of its child classes.