CS 121 - Week 11 Worksheet Part 2 - More Pointers Practice

Questions:

1. Declare a pointer to a float and a pointer to a char.

2. What do we use the *sizeof()* operator for? If we have two integers, *ax* and *bx*, defined one after the other, how can we simulate the purpose of the *sizeof()* operator?

3. Explain, in words, what the following code snippet does. Make sure to use the words “dereference”, “pointer” and “reference (&)” inside your explanation.

```
double num1 = 7.0;
double& num2 = num1;
double* dptr = &num1;

cout << num1 << endl;
cout << &num1 << endl;

num2 = 33.4;
*dptr = 1234.567;

cout << num2 << endl;
cout << &num2 << endl;
```

4. Suppose the operating system you were working on defines a pointer to an int as 8 bytes (64 bits) wide. How wide would a pointer to a short be? A string pointer? Explain.

5. Explain, using your knowledge of the relationship between pointers and arrays, on why the following code produces its output.

Syntax	Output

`#include <iostream>`
`using namespace std;`
 	
`void printArrayMultByTwo(int * int_list, const int SIZE)`
`{`
`  for(int i = 0; i < SIZE; ++i)`
`  {`
`    int_list[i] *= 2;`
`    cout << int_list[i] << " ";`
`  }`
`  cout << endl << endl;`
`}`
 	
`int main()`
`{`
`  const int LIST_SIZE = 5;`
`  int my_list[] = {27, 32, 55, 1, 3752};`
 	
`  printArrayMultByTwo(my_list, LIST_SIZE);`
`  printArrayMultByTwo(my_list, LIST_SIZE);`
`  printArrayMultByTwo(my_list, LIST_SIZE);`
 	
`  return 0;`
`}`
	54 64 110 2 7504
	
	108 128 220 4 15008
	
	216 256 440 8 30016

6. Using the code on the left, make a main function that creates a pointer that dynamically creates a Rectangle, sets its width to 3.0 and height to 4.0, prints out the rectangle, and deletes the Rectangle afterwards. Assume all the methods are well-defined.

Given Code	Your Main Function

`class Rectangle`
`{`
`    double width, height;`
`  public:`
`    Rectangle();  // defaults width = height = 1.0`
`    Rectangle(double w, double h);`
 	
`    // getters`
`    double getWidth();`
`    double getHeight();`
 	
`    // setters`
`    void setWidth(double w);`
`    void setHeight(double h);`
 	
`    // miscellaneous`
`    double getArea();`
`    void printSelf();`
`};`	