

CS 115 Exam 1, Spring 2011

Your name: _____

Rules

- You may use one handwritten 8.5 x 11" cheat sheet (front and back). This is the only resource you may consult during this exam.
- Explain/show work if you want to receive partial credit for wrong answers.

Grade (instructor use only)

	Your Score	Max Score
Problem 1		35
Problem 2		35
Problem 3		30
Total		100

Problem 1: 35 points.

What will print to the screen when each of the following snippets of code is executed?

Assume that each snippet of code is inside `main ()` and that all necessary libraries have been included.

(a)

```
int a = 10;
cout << a << endl;
```

(b)

```
string s1 = "lol";
string s2 = "omg";
cout << s1;
cout << s2;
```

(c)

```
int a = 10;
int b = 4;
cout << a / b << endl;
```

(d)

```
int a = 7;
if (a != 7 or a != 8) {
    cout << a << endl;
}
```

(e)

```
int a = 2;
if (a < 0) {
    a = a + 5;
}
else {
    a = a - 5;
}
cout << a << endl;
```

(f)

```
int a = 2;
int b = 3;
while (a == b) {
    cout << b << endl;
}
cout << a << endl;
```

(g)

```
bool x = (2 < 3);
bool y = (3 != 4);
cout << (x and y) << endl;
```

Problem 2: 35 points.

Write snippets of code to do the following.

You can assume that all your snippets are enclosed within `main()`. You can also assume that the `iostream` and `cmath` libraries have been included at the beginning of the program.

In your snippets of code, *DO NOT* use return statements to end the program!

(a) Prompt the user to type a word, and repeat that word back to them.

(b) *Assume:*

- Two floating-point variables r and h have been declared and defined for you.

Your task:

Print the surface area of a cylinder whose radius is r and whose height is h .

The formula for the surface area of a cylinder is:

$$2\pi r^2 + 2\pi r h$$

You can use 3.14 for pi.

(c) *Assume:*

- An integer variable a has already been declared and defined for you.

Your task:

Print the absolute value of a without modifying the value of the variable a .

(d) *Assume:*

- A string s has already been declared and defined for you. The string will not be empty (will contain at least one character).

Your task: Ask the user to guess your word. If they type in a string identical to s , congratulate them. Otherwise, make them guess again until they get it right.

Remember not to use a return statement in this snippet of code.

(e) *Assume:*

- Two floating-point variables a and b have been declared and defined for you.

Your task: If these two variables (in any order) could be the side length and area of a square, print

The side length is ____.

The area is ____.

with the values of your two variables filled in the blanks. Otherwise, print nothing.

Remember that the side length and area of a square should be *positive* (greater than 0).

Problem 3: 30 points.

For this problem, you must write a **complete program**. To write *a complete program*, you must write the `#include` statements, the `int main()`, etc. in your solution to receive full credit. You may use return statements in this program.

Read the instructions carefully before you start coding!

Your program should do the following:

1. Prompt the user to enter the price of an item.
2. If the user enters a non-negative number, keep asking the user to enter more prices.
3. If the user enters something that cannot be read as a floating-point number, the program should print an error message and exit immediately.
4. If the user enters a negative number or 0, print the amount the user owes:

You owe ____ .

The amount the user owes is the total of all the (non-negative) prices the user has entered with an additional sales tax of 9.25%.

