

Name: _____

1. (1 pt.)

- **Read all material carefully.**
- *If in doubt whether something is allowed, ask, don't assume.*
- You may refer to your books, papers, and notes during this test.
- E-books may be used *subject to the restrictions* noted in class.
- Computers are not permitted, except when used strictly as e-books or for viewing ones own notes.
- Network access of any kind (cell, voice, text, data, ...) is not permitted.
- Write, and draw, carefully. Ambiguous or cryptic answers receive zero credit.
- Use class and textbook conventions for notation, algorithmic options, etc.

Write your name in the space provided above.

WAIT UNTIL INSTRUCTED TO CONTINUE TO REMAINING QUESTIONS.

Do not write on this page.
(It is for use in grading only.)

Q	Full Score
1	1
2	9
3	15
4	20
total	45

2. (4 pts.) Find at least one significant error in the following C++ program. Explain why it is an error and how best it may be fixed.

```
1  const int x = 5;  
2  cin >> y;  
3  if (y = 3) x *= x**2;
```

3. (5 pts.) Provide a *single C++ statement* that will read, from *standard input*, appropriate values into the variables **x**, **y**, and **z** (in that order) where the variables are defined as follows:

```
1  int x, z;  
2  float y;
```

4. (15 pts.) Provide **well-formatted source code of a complete C++ program** that:
1. Prints a prompt “First name: ” to *standard error* (note, not standard output).
 2. Waits for a response on *standard input*, terminated by a newline.
 3. Stores what is read as a string-valued first name in a suitably defined variable. (Note that the name may contain spaces, for names such as Mary Jane.)
 4. Repeats the above three steps for the middle name and then again for the last name (modifying the prompt and variable name suitably).
 5. Writes the following to **standard output**, with `fName mName lName` replaced by the first, middle, and last names as read earlier:
`Hello, fName mName lName!`

Explain your answer briefly, especially to qualify for partial credit.

[additional space for earlier material]

5. (20 pts.) This question is about writing a **program that produces a specified number of bars of random lengths**, where a bar is a contiguous sequence of * characters on a line by itself. (Each line is terminated by single newline.) In more detail, provide **well-formatted source code of a complete C++ program** that:

1. Reads two non-negative integers (separated by one or more white-space characters) from *standard input* and stores them in suitably defined variables `numBars` and `maxLength` (in that order).
2. Writes `numBars` bars to *standard output*, with the length of each bar being a random integer between 0 and `maxLength` (both inclusive).

For example, if the two numbers in the input are 5 and 70, then the program should output 5 bars (so 5 lines) with each line containing a random number of *s between 0 and 70. It would look something like the following (depending on the random numbers produced):

```
*****  
*****  
*****  
*****  
*****
```

Explain your answer briefly, especially to qualify for partial credit.

[additional space for earlier material]