

Student Name **Answer Key**

Section ___ Date _____

Input, Process and Output

Select the correct answer.

- (1) Match the phrase on the left with the correct description on the right.
- | | | |
|-------------------------|-----|---|
| (c) constants | (a) | data that travels from the machine to the user |
| (i) double | (b) | one statement generates many machine actions |
| (b) high level language | (c) | values that may not be modified during execution |
| (d) input | (d) | data that travels from the user to the machine |
| (f) int | (e) | values that may be modified during execution |
| (j) logic error | (f) | C++ arithmetic data type often stored approximately |
| (h) low level language | (g) | caused by an error in C++ translation |
| (a) output | (h) | one statement generates one machine action |
| (g) syntax error | (i) | C++ arithmetic data type always stored exactly |
| (e) variables | (j) | caused by an error in your algorithm |
- (2) Match the components of the software life cycle with the appropriate description.
- | | | |
|-----------------|-----|--|
| (c) Design | (a) | Implementing an algorithm in a language such as C++ |
| (d) Maintenance | (b) | Checking that a program is correct |
| (a) Coding | (c) | Identifying data objects, operations and resulting in an algorithm |
| (b) Testing | (d) | Modifying software to add new features or support hardware changes |
- (3) Find all of the pieces of software in the following.
- (a) Operating System
 - (b) Compiler
 - (c) Printer
 - (d) Web browser
 - (e) Memory
 - (f) Disk Drive
 - (g) Your C++ program
 - (h) Central Processing Unit
 - (i) Monitor
 - (j) Editor
- (4) Indicate 5 correct C++ identifiers in the following.
- (a) real
 - (b) double
 - (c) appreci8
 - (d) compile+execute
 - (e) r2d2
 - (f) CAT_SCAN
 - (g) 3kings
 - (h) -Sum
 - (i) C++
 - (j) feet_per_second

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(5) Of the following constants, which are legal C++ constants of type `char` or `string`?

- (a) +12
- (b) 'QRS'
- (c) "%'
- (d) &
- (e) 54.321
- (f) 1.3e-9
- (g) -444
- (h) .321
- (i) 't'**
- (j) "x"**

(6) Of the following constants, which are legal C++ constants of type `double`?

- (a) +12
- (b) 'QRS'
- (c) "%'
- (d) &
- (e) 54.321**
- (f) 1.3e-9**
- (g) -444
- (h) .321**
- (i) 't'
- (j) "x"

(7) Of the following constants, which are legal C++ constants of type `int`?

- (a) +12**
- (b) 'QRS'
- (c) "%'
- (d) &
- (e) 54.321
- (f) 1.3e-9
- (g) -444**
- (h) .321
- (i) 't'
- (j) "x"

(8) Evaluate the following C++ expression. **12.0**

`18.0 / 3.0 + 6.0`

(9) Evaluate the following C++ expression. **7000**

`1e3 * sqrt(49.0)`

(10) Evaluate the following C++ expression. **1 (the remainder)**

`5 * 3 * 21 % 2`

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- (11) Evaluate the following C++ expression. **25 - 18 - 0 = 7**
 $25 - 9 * 2 - 3 / 7$
- (12) Evaluate the following C++ expression. **false || true = true**
 $1 == 5 || !false$
 (a) false **(b) true**
- (13) Evaluate the following C++ expression. **true && true = true**
 $2 > 0 \ \&\& \ !false$
 (a) false **(b) true**
- (14) Assuming the following variable declarations, indicate which of the following statements is a valid assignment statement.

```
int IntVal = 2, Large;
double Real;
char Code;
```

 (a) Code = "WLS";
(b) Real = -5E0;
(c) Code = '\t';
 (d) IntVal % 2 = 1;
(e) IntVal += Large = 7;
- (15) What output is produced by the following program's execution?

```
int main()
{
    int x = 3, y, z;

    y = x++;           //y = 7 and x = 7
    x *= 3;           //x = 21
    z = ++x;          //z = 22 and x = 22
    cout << z;        //22
}
```
- (16) Write a complete C++ program that prompts the user for two values: the number of feet (`double`) and the number of seconds (`int`) for an automobile traveling through a street. After displaying the input values, the program should output the number of feet per second (`double`) and the equivalent number of meters per second (`double`) that represent the auto's speed. To convert feet to meters, divide feet by the constant 3.281. Comments and functions are optional, but all output should be displayed with appropriate labels. You may assume that invalid data will not be entered in response to your prompts.

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```
int main()
{
double feet, meters_to_feet, seconds;
cout << "please enter the number of feet and number of
seconds\n";
cin >> feet >> seconds;
meters_to_feet = feet / 3.281;
cout << "number of feet per second is:"
    << meters_to_feet << endl;
return 0;
}
```

For problems (17) through (20), refer to the following program, which involves file input and output.

```
#include <fstream>
#include <iostream>

using namespace std;

int main()
{
    char str[10];
    //Create an instance of ofstream and open example.txt
    ofstream a_file("example.txt");
    //Output to example.txt through a_file
    a_file << "this text will be inside of example.txt";
    //Close the file stream explicitly
    a_file.close();
    //Open for reading the file
    ifstream b_file("example.txt");
    //Read one string from the file
    b_file >> str;
    //Should output 'this'
    cout << str << "\n";
    //wait for a keypress
    cin.get();
    //b_file is closed implicitly here
}
```

(17) How would you output to an open file named `a_file`?

- (a) `a_file.out("Output");` (b) `a_file = "Output";`
(c) `a_file << "Output";` (d) `a_file.printf("Output");`

(18) What header file contains C++ file I/O instructions?

- (a) `iostream` (b) `fstream`
(c) `ifstream` (d) `ostream`

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(19) How would you receive input from an opened file named `b_file`, via the contents of the variable named `str`.

- (a) `b_file.out(str);` **(b) `b_file >> str;`**
(c) `b_file << str;` (d) `b_file.printf(str);`

(20) Assume that the files `a_file` and `b_file` are open. What would be the statement to close just the `a_file` file.

- (a) `close().a_file;` (b) `close();`
(c) `b_file.close;` **(d) `a_file.close();`**