

COP 3223 Quiz #1 9/5/2025

Last Name: _____, First Name: _____

1) (5 pts) Evaluate each of the following expressions as a C compiler would evaluate them.

(a) $13 + 2 \cdot 3$ _____

(b) $8/(2+4\%3)$ _____

$$(c) (1 + 16/3)/5.0$$

(d) $1234\%2345 - 1000$

$$(e) (1 - 2/3 + 5\%4) * (35\%8)$$

2) (5 pts) Write a single printf statement that produces the following output:

＼＼＼＼＼
" * "
(---)

3) (6 pts) What is the output of the following program?

```
#include <stdio.h>
int main() {
    int x = 3, y = 5;
    int z = x*y;
    printf("%d x %d = %d\n", x, y, z);
    x = x + 1;
    y = y + 1;
    printf("%d x %d = %d\n", x, y, z);
    return 0;
}
```

4) (8 pts) Complete the following program so that it reads in the number of apples the user wants to buy and the number of oranges the user wants to buy and prints out the cost, in cents, of buying the apples and oranges. The cost of each apple and the cost of each orange is provided as constants. No tax is applied.

```
#include <stdio.h>

#define COST_APPLE 89
#define COST_ORANGE 109

int main() {

    int numApples, numOranges;
    printf("How many apples do you want to buy?\n");
    _____;
    printf("How many oranges do you want to buy?\n");
    _____;

    int totalCost = _____;
    _____;

    printf("Your total cost will be %d cents.\n", totalCost);
    return 0;
}
```

5) (6 pts) There are 16 ounces in one pound. Complete the program below so that it converts the number of ounces inputted by the user to pounds and ounces. For example, if the user enters 60 ounces, the program should output 3 pounds and 12 ounces.

```
#include <stdio.h>
int main() {

    int numOz;
    printf("Enter the number of ounces.\n");
    scanf("%d", &numOz);

    int pounds = _____;
    int oz = _____;

    printf("Converted to %d pounds and %d ounces.\n", pounds, oz);
    return 0;
}
```

6) (5 pts) Assume that a, b, and c are double variables that are already declared. Write a single line of code to create a variable d of type double and set it equal to $a + b\sqrt{c}$. Assume the math library is included.

7) (6 pts) Write a segment of code to generate two random numbers in between 1 and 6, inclusive, representing independent rolls of two dice. Then print out both values individually, as well as their sum. (Your print out should be of the form, “You rolled x and y for a total of z.”)

8) (7 pts) The arithmetic mean of 3 positive real numbers, a, b and c is $\frac{a+b+c}{3}$. The geometric mean of the same 3 numbers is $\sqrt[3]{abc}$. The harmonic mean of the same three numbers is $\frac{3}{\frac{1}{a} + \frac{1}{b} + \frac{1}{c}}$. Complete the program below so that it prints out the arithmetic mean, geometric mean and harmonic mean of the three values inputted by the user. (Note: Carefully note the type of each variable in the input.)

```
#include <stdio.h>
#include <math.h>

int main() {

    int a, b, c;
    printf("Enter three positive integers.\n");
    scanf("%d%d%d", &a, &b, &c);

    double aMean = _____ ;
    double gMean = _____ ;
    double hMean = _____ ;

    printf("AM = %.3lf\n", aMean);
    printf("GM = %.3lf\n", gMean);
    printf("HM = %.3lf\n", hMean);

    return 0;
}
```

9) (2 pts) What animal is depicted on the logo of Red Bull Energy Drink?

C Language Reference

Math Library

```
// Returns the square root of x.  
double sqrt(double x);
```

```
// Returns the cube root of x.  
double cbrt(double x);
```

Standard Library

```
// Returns a random integer in between 0 and 32767 (RAND_MAX).  
int rand();
```