CSC 108 Quiz # 2 Name _____

Multiple Choice: /* 2 points each */

C 1. How could the mathematical test radius ≤ 100 be written in a Processing if statement?

A) `if ( radius < 100) {`
B) `if (radius =< 100 ) {`
C) `if ( radius <= 100) {`
D) `if ( radius < || = 100) {`
E) None of these

B 2. What does the test in the statement `if ( x != 0 )` mean?

A) x is equal to zero
B) x is not equal to zero
C) x might or might not be equal to zero
D) x is REALLY REALLY equal to zero
E) None of these

Short Answer:

1. Type up this code in Processing and run the program. Explain, line by line, what Processing is doing: /* 6 points */

```
int score = 15*4;
```
declares integer variable `score` and gives it value 60

```
String grade = "Fail";
```
declares `grade` and gives it value "Fail"

```
if ( score >= 60 ) {
```
if statement – condition is `score` is greater than or equal to 60

```
  grade = "Pass"; }
```
sets contents of `grade` to "Pass" (^evaluates true)

```
print( "Grade is " );
```
prints "Grade is " to console

```
println( grade );
```
prints contents of `grade`, which is "Pass"

2. Explain why Processing prints what it does for each of the following code fragments. Start by typing in what comes after a) and then typing in the if statement with the rest of the code. Then remove the first two lines and replace them with the two lines from part b). /* 2 points for each part */

a)
```
int a = 2;
int b = 6;

if ( a <= 5 ) {
  b = b + a;
}
print("b = ");
println(b);
```

Part a:
Prints "b = 8" to console. The "if" statement evaluates true, so the value of b is updated to b + a (6+2).

b)
```
int a = 7;
int b = 3;

if ( a <= 5 ) {
  b = b + a;
}
print("b = ");
println(b);
```

Part b:
Prints "b = 3" to console. The "if" statement evaluates false, so the value of b stays the same (3).

Short Answer (continued):

3. Fill in the blank in this program so that it prints whether or not the value of the variable age is at least 21. /* 3 points */

```
if ( age >= 21) {
    print( age );
    println(" is at least 21");
}
else {
     print( age );
     println(" is under 21");
}
```

4. Answer the questions about the following Processing code: /* 4 points */

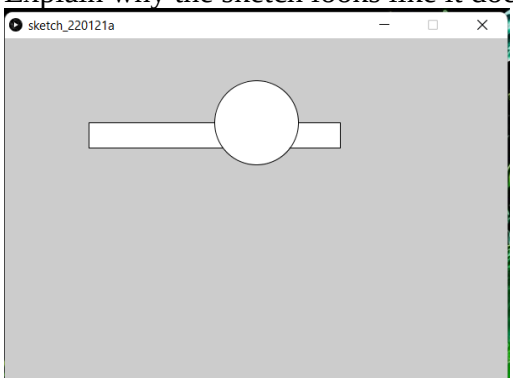
```
int x1, x2, x3;
x1 = 100;
x2 = 2 * x1 - 20;
x3 = x2 / 10 + 10;
if ( x1 > x2 ) {
    ellipse(100, 100, 100, 100);
}
else if ( x2 < x3 ) {
     rect(100, 100, 100, 100);
}
else {
     rect(100, 100, 300, 30);
}
ellipse(300, 100, 100, 100);
```

a) What is the value of `x2`?
2 * 100 – 20 = 180

b) What is the value of `x3`?
180/10 + 10 = 28

c) Which of the if-else options will execute?
The `else`; a 300 x 30 rectangle is drawn

d) Explain why the sketch looks like it does.



First, a 300 x 30 rectangle with top left corner at (100, 100) is drawn because Processing will execute the line after "`else`." Then an ellipse with width and height of 100 (circle with diameter=100) and center at (300, 100) is drawn.

5. Shirts are on sale for $10 each if more than three are purchased, and $12 each otherwise. Write an if statement that prints the total amount of money due for the sale of `numSold` shirts. SAVE THIS IN A PROCESSING .PDE FILE AND UPLOAD TO D2L. /* 4 points */

```
int numSold=4;
print("Total cost is $");
if (numSold > 3) {
  println(numSold*10);
}
else {
  println(numSold*12);
}

```