# Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# AP Computer Science A

# Test - Control Structures & printf

**I. Find the output for the following code segments:**

1. **int** a = 10;

**int** b = 47;

**int** c = 85;

**if**((a < 30) && (c >= 85))

System.out.println("Hello");

**else**

**if** ((b > 50) || (a > 25))

System.out.println("Goodbye");

**else**

System.out.println("I can't make up my mind!");

1. **boolean** one, two, three;

one = true;

two = false;

three = false;

**if** (!one || two)

System.out.println("Snow Boarding is great!");

**else**

**if** (one && !three)

System.out.println("I'd rather ski");

**else**

System.out.println("I prefer water sports");

1. **int** pocket = 5;

**int** bucksNeeded = 20;

**boolean** late = true;

**if** (!late && (pocket < bucksNeeded))

System.out.println("Let's go home");

**else**

System.out.println("Let’s have some fun!");

4. int x = 10, y = 12, z = 0;

z = x > y ? x : y;

System.out.println("z : " + z);

5. Given the following values for the Boolean variables x, y and z:

x = false, y = true and z = false

**Evaluate the following expressions.**

\_\_\_\_\_\_ a. x || y && z

\_\_\_\_\_\_ b. (x && !y) || (!x && y)

\_\_\_\_\_\_ c. x && y || z

\_\_\_\_\_\_ d. !(x || y) || z

\_\_\_\_\_\_ e. !y

6. Given these values for the int variables a, b, c, and d:

a = 1 b = 3 c = 4 d = 8

What is the output of the following code? Print it out in the box.

System.out.println(“Harry”);

if(a < b){

if(c == d)

System.out.println(“is”);

else

System.out.println(“always”);

}

System.out.println(“in”);

if(c >= d)

System.out.println(“double”);

else

System.out.println(“trouble”);

7. Given the int variables x, y and z where x is 5, y is 10 and z is 12, what is the output from each of the following code fragments?

* 1. if( x > 10)

System.out.print( x + y );

System.out.print( x \* 2 );

System.out.println(“ is the answer”);

* 1. if(x != 5)

System.out.println(“x = “ + x);

else

System.out.println( “ y = “ + y);

9. What value is returned by the call to compute(15,3,7) for the method compute below?

public int compute(int one, int two, int three){

if(one == two + three)

return one - two;

else if(one – three == 8){

if(two > three)

return two;

else

return three;

}

return 0;

}

10. What value is returned by the code segment below?

int month = 8;

switch (month) {

case 1: System.out.println("January"); break;

case 2: System.out.println("February"); break;

case 3: System.out.println("March"); break;

case 4: System.out.println("April"); break;

case 5: System.out.println("May"); break;

case 6: System.out.println("June"); break;

case 7: System.out.println("July"); break;

case 8: System.out.println("August"); break;

case 9: System.out.println("September"); break;

case 10: System.out.println("October"); break;

case 11: System.out.println("November"); break;

case 12: System.out.println("December"); break;

default: System.out.println("Invalid month.");break;

**II. What is the output of the following printf statements? Remember to use b for spaces.**

1. out.printf("%f $%f #%d", 8.9, 12.56, 7)

2. out.printf("%05d %s, 198, "Programmers love pizza.")

3. out.printf("%.8s" "Computer Science is cool!")

**String s = "Java"; int x = 39; int z = 62 double y = 12.89**

4. out.printf("\*%6.1f\*%5d”,y, x")

5. out.printf("\*%6.1f\*%5d”,y, x")

6. out.printf("3$d\*\*%2$f\*\*%1$s", s, y, x)

7. out.printf("x%x %.2s %4.1f", x, s, y)

8. out.printf("%o\*\*%x\*\*%e\*\*%f %08d", x, x, y, y, z)

9. out.printf("\*\*%2$05d %x %d", x, z )

10. out.printf("\*%-8s\*\*%9s", s, s)

11. out.printf("%s 105%6d99%d %.5f", s+2010, z, x, 2056.399)

12. out.printf("%s %2$d %2$#0 %d",s, z, 59, 28)

**BONUS QUESTIONS (3 points each)**

1. The island of Elbonia has a rather eccentric postal system. Postage for an item can be anything from 1 dinar to 15 dinari, and you must use exact postage. Frustratingly, there is only space on the envelopes in Elbonia to attach a maximum of three stamps. What is more, they only have three different denominations of stamps, can you work out what they are?
2. On my local railway track there is a tunnel which is 5 miles long. A train, which was 440 yards long, entered the tunnel at a speed of 50 miles per hour. How long did it take for the whole of the train to pass completely through the tunnel? [Note: there are 1760 yards in a mile].