**AP Computer Science - Chapter 2-3 Test Review**

**Part I. Truth Tables** – You will see one Truth Table on your test.

Fill in all the combinations that return a value of true for the first example. Find all combinations that evaluate to false in the second example. You can assume that A, B, C and D are boolean variables.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **!A || B && C** |  | **A** | **B** | **C** | **D** | **(A || B) || (B || !C) && D** |
| F | F | F |  |  | F | F | T | T |  |
| F | F | T |  |  | F | F | T | F |  |
| F | T | F |  |  | F | F | F | F |  |
| F | T | T |  |  |  |  |  |  |  |
| T | T | T |  |  |  |  |  |  |  |

**Part II. Random Numbers** – You will see four problems of this type on the test.

Fill in the range of numbers that is possible with these random number expressions:

|  |  |  |
| --- | --- | --- |
| **Expression** | **Lowest** | **Highest** |
| int num = (int)(Math.random()\*39)+17; | 17 | 55 |
| int num = (int)(Math.random()\*10.5)+6; | 6 | 16 |
| int num = (int)(Math.random()\*26)-10; | -10 | 15 |
| int num = (int)(Math.random()\*96)+105; | 105 | 200 |

**Part III. Calculating Output** – You will see five questions like this.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression** | **Output** |  | **Expression** | **Output** |
| System.out.println(Math.pow(19 % 5, 34 % 4); | 16.0 |  | System.out.println(50 / 6 + (9 - 4) / 2.0); | 10.5 |
| int x = 15;int y =2;double z = x / (double) y;System.out.println(z); | 7.5 |  | int x = 19;x++;x %= 6;x \*= 3;System.out.println(x); | 6 |
| int x = 13;int y = 2;if(x % 2==0) System.out.println("Alpha");else if (x + y % 3==1) System.out.println("Beta");else System.out.println("Gamma"); | Gamma |  | int a =3; int b = 3;if(Math.pow(a, b) < 25) System.out.println("Hello"); System.out.println("Good-bye"); | Good-bye |

**Part IV. Handwrite Code –** Without the benefit of your computer, write the code for the following program on lined paper:

You will write a program that will receive the hours worked and an hourly wage from the user. The input should be read in as double values. The program will then calculate and output 2 things:

Gross Pay - Total earned without taxes. Output should be formatted with a dollar sign and no space at the beginning.

Net Pay - Total earned minus 20% for taxes. Again, output should be formatted a dollar sign.

Example: Hours Worked: 20 Hourly Wage: 7.50 Expected Output: $150 Gross

 $120 Net

**Part V. LiveLab** – There will be a LiveLab component as well, which you can be assured will focus on if statements and some computational mathematics. This will be similar to the Chapter 3 exercises.

**Practice Stuff**

Given a boolean variable, *done*, write two different condition statements to check to see if its value is false.

What is wrong with the following expressions?

if( a = 12) System.out.println("You have a dozen!"); Should be (a == 12)

if(gpa==0) System.out.println("You have never passed a class.");

else if (gpa > 2) System.out.println("D average"); Reverse the order of the else if statements.

else if (gpa > 3) System.out.println("C average");

else if (gpa > 4) System.out.println("B average");

else System.out.println("A average");

if(bloodAlcohol > .08);

 System.out.println("You are going to jail!");

 No semicolon after the if statement.