Homework/Program #2 Solutions

1. What are the values of the following expressions?

a. 4 + 3 * 8 / 2 – 3 = 4+24/2-3
= 4+12-3
=16-3
=13

b. (4 + 3) * 8 / 2 – 3 = 7*8/2-3
= 56/2-3
= 28-3
= 25

c. 4 + (3 * 8) / 2 – 3 = 4+24/2-3
= 4+12-3
= 16-3
= 13

d. 4 + 3 * 8 / (2 – 3) = 4+24/(2-3)
= 4+24/(-1)
= 4-24
= -20

e. (4 + 3) * 8 / (2 – 3) =7*8/(2-3)
=56/(-1)
=-56

f. (4 + 3 * 8) / 2 – 3 =(4+24)/2-3
=(28)/2-3
=14-3
=11

2. What is the value of y at the end of the following code segment?

```
int x, y;
x = 34;
y = 10;
if (x >= 20 && (y = 18) == 18) {
y = 17;
}
```

x >= 20 evaluates to true as 10 >=20
In expression (y=18) 18 is assigned to y
So (y=18)== 18 evaluates to true
True **AND** True evaluates to True
Hence, test expression (x >=20) && (y=18) == 18 evaluates to true
so y is assigned 17

The value of y at the end of code segment is 17

3. What is the value of y at the end of the following code segment? And What is printed on the console? Why?

```
int x, y;
x = 34;
y = 10;
if (x >= 20 && (y++ > 10)) {
System.out.println(“Welcome to CSE11!”);
}
```

The value of y at the end of the code segment is 11
Nothing is printed on the console as the test expression given for the if statement evaluates to false

x >= 20 evaluates to True because 34 >20
y++ > 10 evaluates to False because value of y is assigned first and then incremented.
So 10> 10 evaluates to False

True **AND** false evaluates to false , so the print statement is not executed.

4. What are the values of the following expressions if x = 8, y = -5 and z = 2.
(1 point for each correct answer)

a. x + y != z
=8-5 != 2
=3 != 2
TRUE

b. !(2 * x + 3 * y >= z)
=!(16-15>=2)
=!(1>=2)
=!(FALSE)
TRUE

c. (x - z) * 2 < z - 2 * y
= (8 -2)*2 < 2-2 * -5
= 6*2 < 2-(-10)
= 12 < 2 + 10
= 12 < 12
FALSE

d. y - z + x >= 0
= -5-2 +8
= -7+8>=0
= 1> =0
TRUE

e. x - 4 * z + 1 == y
=8 – 4*2 +1 == -5
= 8-8 +1 == -5
= 1== -5
FALSE

5. Assume that x = 2, y = -3 and z = 5. What are the values of x, y and z after the following code has been executed?

a. if (3 * x + y <= z - 1)
x = y + 2 * z;
else
y = z - y;
z = x - 2 * y;

Test Expression: 3*2 – 3 <= 5 - 1
= 6-3 < 4
= 3 < 4
TRUE
x= y + 2 * z
x= -3 + 2 *(5)
x= -3 +10
= 7

y= -3
z= x – 2*y
z= 7 – 2*(-3) (Updated value of x is used)
= 7 +6 =13

Value of y doesnt change because it is in else part of the if statement

b. if (3 * x + y <= z - 1) {
x = y + 2 * z;
}else {
y = z - y;
z = x - 2 * y;
}

Test Expression: 3*2 – 3 <= 5 - 1
= 6-3 < 4
= 3 < 4
TRUE

x= y + 2 * z
x= -3 + 2 *(5)
x= -3 +10
= 7

y= -3
z= 5

Values of y and z doesnt change because they are in the else part of the if statement

c if (x > y + z)
y--;
x++;

Test Expression: 2> -3 +5
FALSE

x is incremented
x= 3
y= -3
z= 5

d if (x > y + z) {
y--;
x++;
}

Test Expression: 2> -3 +5
FALSE

y and x are not executed because the test expression is False

x=2
y=-3
z=5