PS 1: Part I

Problem 1: Java programming basics
1-1)

```java
/*
 * Problem1.java
 *
 * A program with lots of syntax errors!
 */

import java.util.*;

public class Problem1 {
    /*
     * This static method should take an integer x and return:
     *    - the opposite of x when x is negative
     *    - 10 more than x when x is non-negative and even
     *    - the unchanged value of x when x is non-negative and odd
     */
    public static int adjust(int x) {
        if (x < 0) {
            return -1 * x;
        } else if (x % 2 == 0) {
            return x += 10;
        } else {
            return x;
        }
    }

    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);

        System.out.print("Enter an integer x: ");
        int x = console.nextInt();

        System.out.println("adjust(x) = " + adjust(x));
    }
}
```

1-2)
a) 5.75
b) 5
c) 27.0
d) "xy"
e) 5
f) true
g) 14
h) 12
i) "13CS"
j) "CS112"

Problem 2: Conditional execution

2-1)
a)
```
Terriers
Crimson
Let's go!
```

b)
```
Terriers
Crimson
Let's go!
```

c)
```
Bears
Let's go!
```

d)
```
Big Green
Big Red
Bulldogs
Let's go!
```

e)
```
Huskies
Let's go!
```

f)
```
Big Green
Bulldogs
Let's go!
```

2-2)
The statement "Lions" will not be executed for any inputs. When "else if $(b < a)$" is executed, it means that "if $(a <= c)$" is false. Therefore, we know that in this case, $a > c$, which contradicts the condition of the statement "Lions" that "if $(a < c)$".
The statement "Quakers" will also not be executed for any inputs. When "else" is executed, it means that both the conditions "if $(a <= c)$" and "else if $(b < a)$" are false. So, we infer that in this case, $b >= a > c$, which contradicts the condition of the statement "Quakers" that "if $(!(b > c))$".

Problem 3: Static methods

3-1

variables that belong to main()

x	y
1	3
4	3
4	27

variables that belong to compute()

x	y
1	3
4	3
4	2
3	3
6	0
3	4
6	4
6	2

output (the lines printed by the program)
```
1 3
4 2
4 3
6 0
4 3
6 2
4 27
```

3-2)

```java
public static double bmi(int w, int h) {
    double result = (double)720 * w / h / h;
    return result;
}
```

Problem 4: Loops
4-1)

```java
for (int i = 1; i <= 2022; i++) {
    System.out.println("Twenty two!");
}
```

4-2)

```java
public static void countDown(int n) {
    while (n >= 1) {
        System.out.println(n);
        n--;
    }
}
```

4-3)

```java
for (int i = 1; i < 4; i++) {
    System.out.println("** " + i + " **");
    for (int j = 3; j > i - 1; j--) {
        System.out.println(i + " " + j);
    }
}
```