1. Students going to zoo = Z = 90

Hamburger = H = 24

Cake = C = 38

Milk = M = 20

Had all three = (H ∩ M ∩ C) = 3

Had Milk and Hamburger = (M ∩ H) = 5

Had Cake and Milk = (C ∩ M) = 10

Had Cake and Hamburger = (C ∩ H) = 8

Had either H, M, or C = (H ∪ M ∪ C) = H + M + C - (H ∩ C) - (C ∩ M) - (M ∩ H) + (H ∩ M ∩ C)

= 24 + 38 + 20 - 8 - 10 - 5 + 3

= 62

a. Students who had **nothing** = $Z - (H \cup M \cup C) = 90 - 62 = 28$

b. Students who **only had cake** = C - (C ∩ H) - (C ∩ M) + (H ∩ M ∩ C)

= 39 - 8 - 10 + 3

= 23

c. Students who **only had milk** = M - (M ∩ H) - (C ∩ M) + (H ∩ M ∩ C)

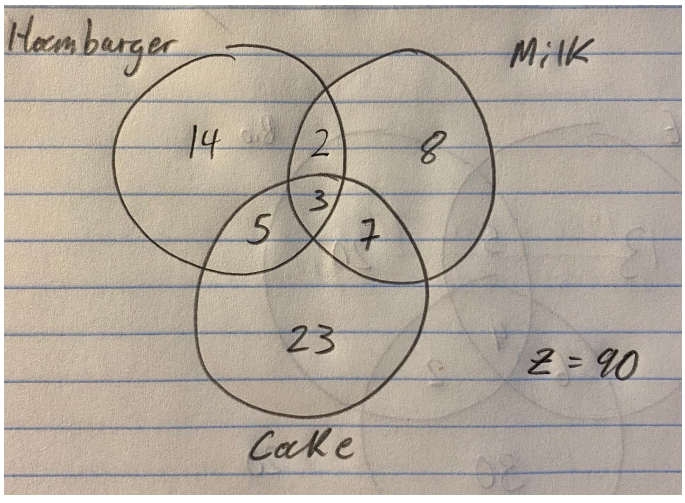
= 20 - 5 - 10 + 3

= 8

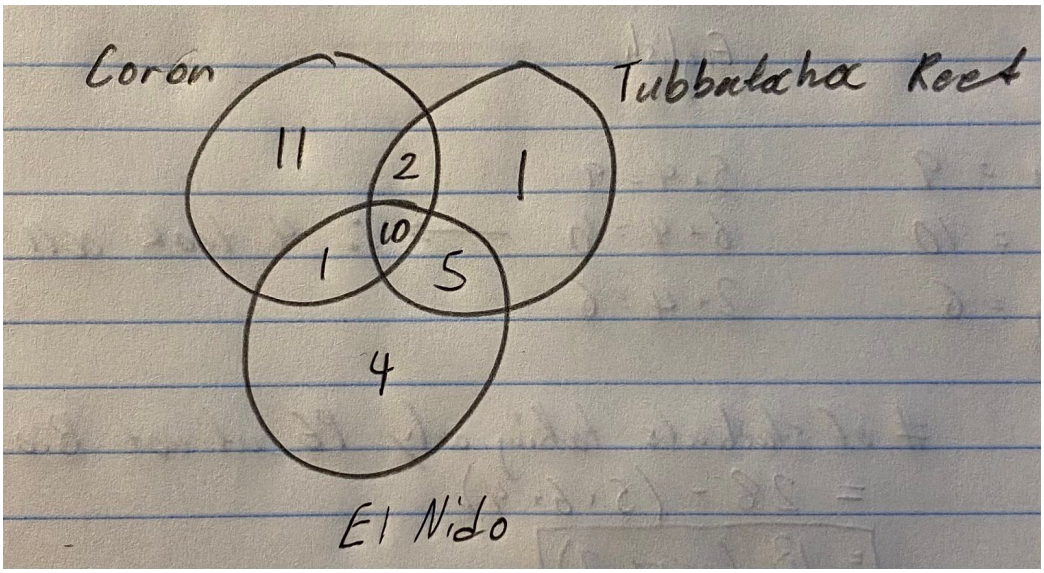
d. Students who **only had hamburgers** = H - (M ∩ H) - (C ∩ H) + (H ∩ M ∩ C)

= 24 - 5 - 8 + 3

= 14



2.



3. See separate duplicates.java file for code. Outputs:

Set 1
First Set: [1, 2, 3, 4, 5]
Second Set: [1, 2, 3, 4, 5]
Are both sets equal? true

Set 2
First Set: [34, 89, 64564, 5, 62]
Second Set: [1, 148, 9, 21, 10]
Are both sets equal? false

Set 3
First Set: [12, 64, 77, 130, 3]
Second Set: [3, 64, 12, 77, 130]
Are both sets equal? true