1. *x* = new people *y* = old people

Function for dollars earned in terms of old and new members who work:

**f(*x*, *y*) = 10*x* + 8*y***

1. Restrictions:
   1. ***x* ≥0** ***y* ≥ 0**
   2. ***x* ≤9 *y* ≤8**
   3. ***y* ≥ -*x* + 6 *y* ≤ -*x* + 15**
   4. ***y* ≥ 3**
   5. ***y* ≥ 1/2*x* *y* < 3*x***
2. See graph paper
3. No, because the feasible region does not intercept the x-axis, so the number of old members can never reach zero.
4. **10*x* + 8*y* ≤ *100***

**8*y* ≥ -10*x* + 100**

***y* ≥ -5/4*x* + 12.5**

1. **10*x* + 8*y* = 160**

**8*y* = -10*x* + 160**

***y* = -5/4*x* + 20**

No, it is not feasible, because the line does not pass through the feasible region.

1. Test points for maximum: **(7, 8)**and **(9, 6)**

(7, 8): **f(7, 8) = 10(7) + 8(8)**

**f(7, 8) = 70 + 64**

**f(7, 8) = $134**

(9, 6): **f(9, 6) = 10(9) + 8(6)**

**f(9, 6) = 90 + 48**

**f(9, 6) = $138**

**The maximum possible amount of money earned is $138.**

1. Test points for minimum: **(2, 4)**and **(3, 3)**

(2, 4): **f(2, 4) = 10(2) + 8(4)**

**f(2, 4) = 20 + 32**

**f(2, 4) = $52**

(9, 6): **f(3, 3) = 10(3) + 8(3)**

**f(9, 6) = 30 + 24**

**f(9, 6) = $54**

**The minimum possible amount of money earned is $52.**

1. Test points for maximum: **(7, 8)**and **(9, 6)**

(7, 8): **f(7, 8) = 10(7) + 12(8)**

**f(7, 8) = 70 + 696**

**f(7, 8) = $166**

(9, 6): **f(9, 6) = 10(9) + 12(6)**

**f(9, 6) = 90 + 72**

**f(9, 6) = $162**

The maximum feasible amount when new members earn $12 and old members get $10 is $166, which would require 7 new members and 8 old members.

End of Report Questions

1. For me, the hardest part of the assignment was typing it up and making sure that all of the math was neatly formatted.
2. I felt that I did well when answering questions G, H, and I, and showed my process clearly.
3. This process could be useful when trying to determine the number of students who could come on a field trip with consideration to mode of transportation and any special accomodations that some students need and others do not.