



Assignment Guide for Problem 1.3

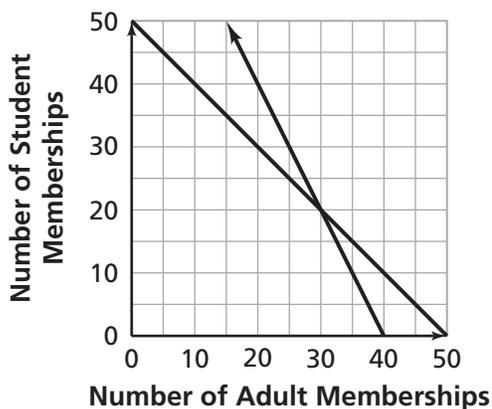
Applications: 22–27 | Connections: 51–62

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Answers to Problem 1.3

- A.**
- $10a + 5s = 400$; $10a$ is the number of adult members a times the \$10 membership fee per adult. $5s$ is the number of student members s times the \$5 membership fee per student. 400 is the total amount of membership fees collected.
 - Possible solutions include $(0, 80)$, $(40, 0)$, and $(20, 40)$.
 - $a + s = 50$; a is the number of adult members, s is the number of student members, and 50 is the total number of booster club members.
 - Possible solutions include $(0, 50)$, $(50, 0)$, and $(20, 30)$.
 - Yes, the common solution pair is $(30, 20)$.

B.



The placement of the variables does not make a difference. If the graph and its coordinates were in terms of the ordered pair (s, a) instead of (a, s) , the solution pair will still represent 30 adult and 20 student memberships. It will, however, change the appearance of the graph.

- The intersection point is $(30, 20)$, which means that a combination of 30 adult and 20 student memberships satisfy both equations.
 - There cannot be another common solution because two lines can only intersect at one point.
 - Problems 2.1 of *Moving Straight Ahead*, *Henri and Emile's Race: Finding the Point of Intersection*, and 3.2 of *Say It With Symbols, Comparing Costs: Solving More Linear Equations*, are two examples of when students solved a system of equations. Both Problems feature equations in the $y = mx + b$ form.
- C.**
- The solution pair is $(1, 3)$ because $1 + 3 = 4$ and $1 - 3 = -2$.
 - The solution pair is $(1, -3)$ because $2(1) + (-3) = -1$ and $1 - 2(-3) = 7$.
 - The system has an infinite number of solutions because the equations for the lines are equivalent. Every term in the second equation is two times every term in the first equation.
 - The system has no solution because the lines are parallel. That is, they have the same slope and different y -intercepts.