Writing Systems of Equations from Word Problems

For each problem:

- Define your variables (Let x = , and Let y =)
- Write your equations (are there some totals involving both variables?)
- Use Desmos to solve your system of equations
- What does your solution mean in the context of the problem?

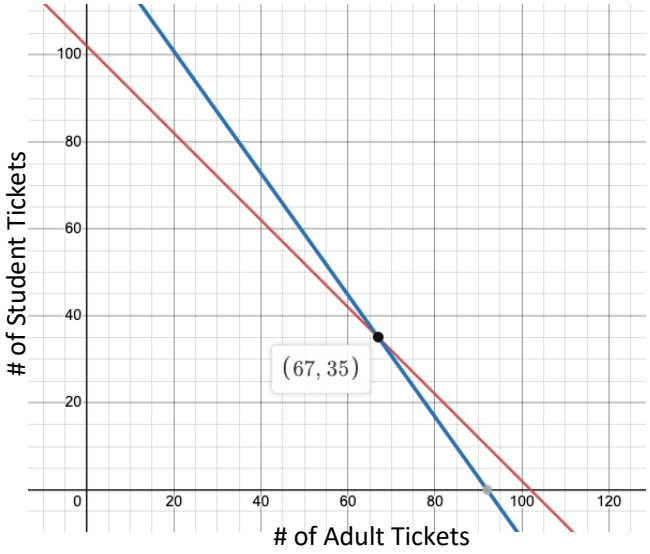
1. A theater production charges $21 for adult tickets and $15 for student tickets. If the production sold 102 tickets for its opening night and made $1,932 in ticket sales, how many of each type of ticket were sold?

Let x = # of adult tickets
Let y = # of student tickets

x + y = 102
21x + 15y = 1932

Common Solution: (67, 35)

They sold **67** adult tickets and **35** student tickets.



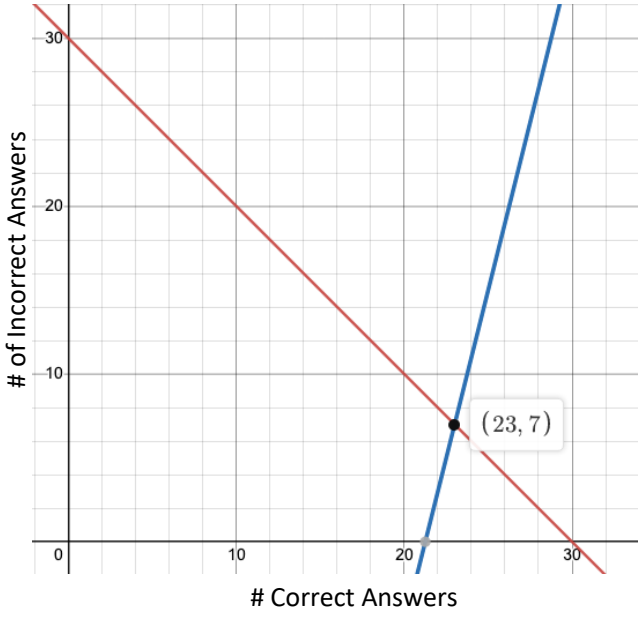
2. The player of a trivia game receives 100 points for each correct answer and loses 25 points for each incorrect answer. Leona answered a total of 30 questions and scored a total of 2125 points. How many questions did she answer correctly?

Let x = # of correct answers
Let y = # of incorrect answers

x + y = 30
100x - 25y = 2125

Common Solution: (23, 7)

They answered **23** questions correctly and **7** questions incorrectly.



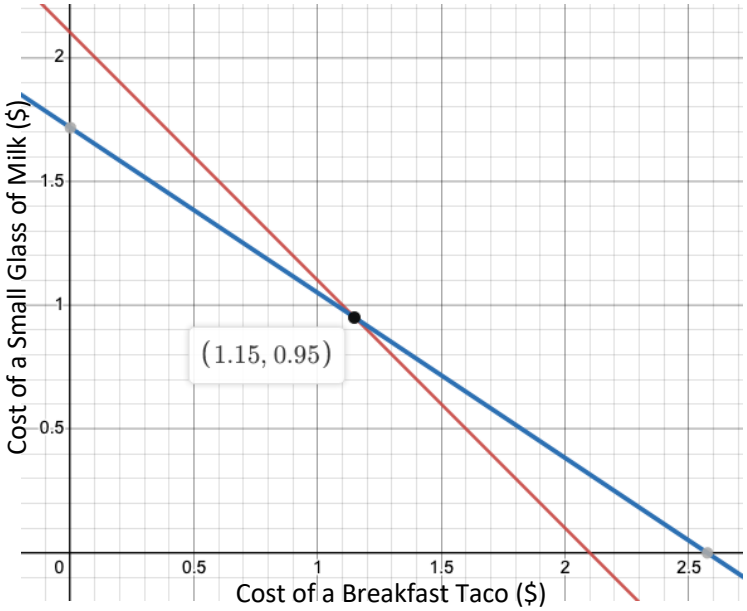
3. At a restaurant the cost for a breakfast taco and a small glass of milk is $2.10. The cost for 2 tacos and 3 small glasses of milk is $5.15. How much does a breakfast taco cost? How much does a small glass of milk cost?

Let x = cost of a breakfast taco
Let y = cost of a small glass of milk

x + y = 2.10
2x + 3y = 5.15

Common Solution: (1.15, 0.95)

The breakfast taco costs **$1.15** and the small glass of milk costs **$0.95**.



4. The Frosty Ice Cream Shop sells sundaes for $2 and banana splits for $3. On a hot summer day, the shop sold 8 more sundaes than banana splits and made $156. How many banana splits did they sell?

Let x = # of sundaes sold
Let y = # of banana splits sold

x = y + 8
2x + 3y = 156

Common Solution: (36, 28)

They sold **28** Banana Splits.
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