Name: _____ Date: _____

Modeling with Systems of Equations
Homework

1. A local theater is showing an animated movie. They charge $5 per ticket for a child and $12 per ticket for an adult. They sell a total of 342 tickets and make a total of $2550. We want to try to find out how many of each type of ticket they sold. Let x represent the number of children's tickets sold and y represent the number of adult tickets sold.

   (a) Write an equation that represents the fact that 342 total tickets were sold.

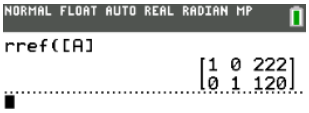
   (b) Write an equation representing the fact that they made a total of $2550.

   (c) Solve the system you created in (a) and (b) by the Method of Elimination.

let x = # of child tix
let y = # of adult tix

① $x + y = 342$

② $5x + 12y = 2550$



222 child tix
120 adult tix

2. A catering company is setting up tables for a big event that will host 764 people. When they set up the tables they need 2 forks for each child and 5 forks for each adult. The company ordered a total of 2992 forks. Set up a system of equations involving the number of adults, a, and the number of children, c, and solve to find out how many of each attended the event.

let a = # of adults → 488
let c = # of children → 276

① $a + c = 764$

② $5a + 2c = 2992$

CALC THIS THING!

let x = # of child tix
let y = # of adult tix

① $x + y = 342$ $\quad y = 342 - x$

② $5x + 12y = 2550$

Substitution

$5x + 12(342 - x) = 2550$

$5x + 4104 - 12x = 2550$

$-7x + 4104 = 2550$

$-4104 \quad -4104$

$\frac{-7x}{-7} = \frac{-1554}{-7}$

$x = 222$

elimination

$-5(x + y) = (342)\,-5$

$5x + 12y = 2550$

$-5x - 5y = -1710$

$+ \; 5x + 12y = 2550$

$\frac{7y}{7} = \frac{840}{7} \quad y = 120$