Algebra 2- Part 1 **Name**_____

1. At Chipotle, one customer pays $16 for two chicken burritos and two sides of chips & salsa. Another customer pays $30 for four chicken burritos and three sides of chips & salsa. How much does each chicken burrito and side of chips & salsa cost?

a) Define your variables.

$x = C$ = cost of chicken burrito

$y = S$ = cost of chips & salsa

b) Write a linear system of equations to model the cost of each customer's order.

$2C + 2S = 16$

$4C + 3S = 30$

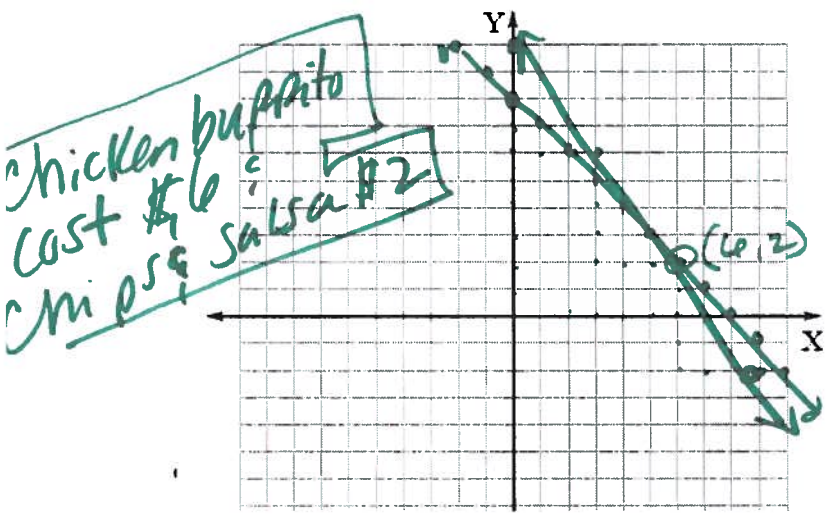
$2x + 2y = 16 \rightarrow x + y = 8$

$y = -x + 8$

$4x + 3y = 30$

$\frac{3y}{3} = \frac{-4x}{3} + \frac{30}{3}$ $\quad y = \frac{-4}{3}x + 10$

c) Solve by Graphing.



chicken burrito cost $6

chips & salsa $2

d) Solve using Substitution.

$C + S = 8$

$C = 8 - S$

$4(8 - S) + 3S = 30$

$32 - 4S + 3S = 30$

$-1S = -2$

$S = 2$

$C = 6$

f) Check your final solution.

$-x + 8 = \frac{-4}{3}x + 10$

$+\frac{4}{3}x - 8 \quad +\frac{4}{3}x - 8$

$\frac{1}{3}x = 2$

$x = 6$

$2(6) + 2S = 16$

$12 + 2S = 16$

$2S = 4$

$S = 2$

Elimination

$-4C - 4S = -32$

$4C + 3S = 30$

$-1S = -2$

$S = 2$

$2(6) + 2(2) \stackrel{?}{=} 16$

$12 + 4 = 16$ ✓

$4(6) + 3(2) \stackrel{?}{=} 30$

$24 + 6 = 30$ ✓

For each situation, define the variables and write & solve a system.

2. The senior classes at Jerome High School and Coffman High School planned separate trips to New York City. The senior class at Jerome rented and filled one van and six buses with 372 students. Coffman rented and filled four vans and twelve buses with 780 students. Each school rented the same type of vans and buses (they can each carry the same number of students). How many students can each vehicle carry?

DTV: v = # of vans, b = # of buses

$-4(1v+6b=372)$

$4v+12b=780$

$-4v-24b=-1488$

$-12b=-708$

$b=59$

$v+6(59)=372 \rightarrow v=18$

18 people in the van
59 people in the bus

3. You look in your wallet and find that you have six more dimes than quarters. The coins have a value of \$5.15. How many of each coin do you have?

d = # of dimes
q = # of quarters

$d=q+6$

$.10d+.25q=5.15$

$.10(q+6)+.25q=5.15$

$.10q+0.6+.25q=5.15$

$\frac{.35q}{.35}=\frac{4.55}{.35}$

$q=13$

$d=q+6$

$d=13+6$

$d=19$

19 dimes!
13 quarters