AGS 1 Name: _____ Period: ____ Date: _____

Notes 6.5 – Solving Systems

Practice solving from context

a. Alex bought some chips and soda for his class party. He bought a total of 32 items. Each bag of chips cost $2.19 and each bottle of soda cost $0.75. He spent a total of $39.84. How many bags of chips and how many bottles of soda did he buy?

Define variables:

C = # of chips

S = # of sodas

Write equations:

$C + S = 32$

$2.19C + .75S = 39.84$

Solve:

$C + S = 32$

$-S \quad -S$

$C = -S + 32$

$2.19(-S+32) + .75S = 39.84$

$-2.19S + 70.08 + .75S = 39.84$

$-1.44S + 70.08 = 39.84$

$-70.08 \quad -70.08$

$\frac{-1.44S}{-1.44} = \frac{-30.24}{-1.44}$ $S = 21$

Answer:

$C + 21 = 32$

$-21 \quad -21$

$C = 11$

11 bags of chips
21 bottles of soda

b. Miguel collected a bunch of dimes and quarters for the school fundraiser. He collected a total of 122 coins for a total of $21.50. How many dimes and quarters did he collect?

d = # of dimes

q = # of quarters

$d + q = 122$

$.10d + .25q = \$21.50$

$d + q = 122$

$-q \quad -q$

$d = -q + 122$

$.10(-q+122) + .25q = 21.50$

$-.10q + 12.2 + .25q = 21.50$

$.15q + 12.2 = 21.50$

$-12.2 \quad -12.2$

$\frac{.15q}{.15} = \frac{9.3}{.15}$

$q = 62$

$d + 62 = 122$

$-62 \quad -62$

$d = 60$

60 dimes
62 quarters

c. The sum of twice a number, x, and another number, y, is 90. The difference of x and y is 21. Find x and y.

$2x + y = 90$

$2(x - y = 21)$

$-\left[\begin{array}{l} 2x - 2y = 42 \\ 2x + y = 90 \end{array}\right.$

$-3y = -48$

$\frac{-3y}{-3} = \frac{-48}{-3}$

$y = 16$

$x - 16 = 21$

$+16 \quad +16$

$x = 37$

The two numbers are 37 and 16.

d. The leadership classes at Mountain View High School and Bend High School planned separate trips to Portland to watch playoff games. Bend High rented and filled one van and six buses with 372 students. Mountain View High rented and filled four vans and 12 buses with 780 students. If all vans carry the same number of people and all buses carry the same number of people, how many people fit in one van and how many people fit in one bus?

v = # of people in a van

b = # of people in a bus

Eqns $\begin{cases} v + 6b = 372 \\ 4v + 12b = 780 \end{cases}$

$v + 6b = 372$

$-6b \quad -6b$

$v = -6b + 372$

$4(-6b + 372) + 12b = 780$

$-24b + 1488 + 12b = 780$

$-12b + 1488 = 780$

$-1488 \quad -1488$

$\frac{-12b}{-12} = \frac{-708}{-12}$

$b = 59$

$v + 6(59) = 372$

$v + 354 = 372$

$-354 \quad -354$

$v = 18$

A van holds 18 people and a bus holds 59 people.