

Name Key

Homework: Systems Appl.

1-9 Write 2 equations then solve. Show all work on a separate piece of paper.

\$2.65 tuna \$2.35 chicken 1) You and your sisters are helping your aunt with her yard work. At lunch you volunteer to go out and buy sandwiches. You buy 6 chicken sandwiches and 6 tuna ones for \$30. Later, everyone is hungry again. You go to the same deli and buy 4 chicken sandwiches and 8 tuna ones for \$30.60. What's the price of each type of sandwich?

21 2) An airplane has a total of 152 seats. The number of coach-class seats is 5 more than 6 times the number of first-class seats. How many first-class seats are on the plane?

135 3) The CHS Band sold 250 dinners at a BBQ. A child's plate cost \$3.50 and an adult's plate cost \$7.00. A total of \$1347.50 was collected. How many adult plates were served?

38° 4) Two angles are complementary. The sum of the measure of the first angle and half the second angle is 64°. Find the measure of the smaller angle.

5 round 20 rect. 5) You need to rent tables for a party you're having for your favorite math teacher. You can only afford to rent 25 tables. There are rectangular tables and round tables. Each cost the same to rent. Each round table can seat 8 people, and each rectangular table can seat 12. How many of each type of table should you rent if you want each of your 280 guests to have a seat?

72 6) On a college entrance exam, you answered 80 out of 85 questions. Each correct answer adds 1 point to your score, each incorrect answer subtracts a $\frac{1}{4}$ point from your score, and each unanswered question adds/subtracts nothing from your score. How many questions did you answer correctly if your score was a 70?

6 7) Jorge scored 18 times during one basketball game. He scored a total of 30 points, two points for each field goal, and one point for each free throw. How many free throws did he make?

4 8) Dang must play 12 commercials during his 1-hr radio show. Each commercial is either 30 seconds or 60 seconds long. If the total commercial time during that hour is 10 minutes, then how many 30 second commercials can Jason play?

\$1500 at 4% \$3000 at 5% 9) A total of \$4500 was invested in 2 funds. One fund paid a 4% annual interest rate and the other paid 5%. The combined interest earned in a year was \$210. How much of the \$4500 was invested in each fund?

HW Systems Applications

- ① $x =$ price chicken sandwich
 $y =$ price tuna sandwich

$$\begin{aligned} 2(6x + 6y = 30) &\Rightarrow 12x + 12y = 60 \\ -3(4x + 8y = 30.60) &\Rightarrow \underline{-12x - 24y = -91.80} \\ &\quad \underline{-12y = -31.80} \\ &\quad \quad \quad \underline{-12} \end{aligned}$$

$$\boxed{y = \$2.65 \text{ tuna}}$$

$$6x + 6y = 30$$

$$6x + 6(2.65) = 30$$

$$\begin{array}{r} 6x + 15.9 = 30 \\ \underline{-15.9 \quad -15.9} \end{array}$$

$$\frac{6x}{6} = \frac{14.1}{6}$$

$$\boxed{x = \$2.35 \text{ chicken}}$$

- ② $x =$ # first-class seats
 $y =$ # coach seats

$$\begin{array}{r} y = 5 + 6x \\ \underline{-6x \quad -6x} \end{array}$$

$$-6x + y = 5$$

$$\begin{aligned} 6(x + y = 152) &\Rightarrow 6x + 6y = 912 \\ -6x + y &= 5 \end{aligned}$$

$$\underline{\quad \quad \quad} \frac{7y}{7} = \frac{917}{7}$$

$$y = 131 \text{ Coach}$$

$$x + y = 152$$

$$x + 131 = 152$$

$$\underline{-131 \quad -131}$$

$$\boxed{x = 21 \text{ first-class}}$$

③ $x = \# \text{ child plates}$
 $y = \# \text{ adult plates}$

$$-3.5(x + y = 250)$$

$$\begin{array}{r} 3.5x + 7y = 1347.50 \\ -3.5x - 3.5y = -875 \\ \hline \end{array}$$

$$\frac{3.5y}{3.5} = \frac{472.5}{3.5}$$

$$y = 135 \text{ adult plates}$$

④ Complementary \rightarrow add to 90°

$x = \text{measure second angle}$

$y = \text{measure first angle}$

$$-1(x + \frac{1}{2}y = 64)$$

$$\begin{array}{r} x + y = 90 \\ -x - \frac{1}{2}y = -64 \\ \hline \end{array}$$

$$2 \cdot \frac{1}{2}y = 26 \cdot 2$$

$$y = 52^\circ$$

$$x + y = 90$$

$$x + 52 = 90$$

$$x = 38^\circ$$

⑤ $x = \# \text{ round tables}$
 $y = \# \text{ rectangular tables}$

$$-8(x + y = 25)$$

$$\begin{array}{r} 8x + 12y = 280 \\ -8x - 8y = -200 \\ \hline \end{array}$$

$$\frac{4y}{4} = \frac{80}{4}$$

$$y = 20 \text{ rectangular tables}$$

$$x + y = 25$$

$$x + 20 = 25$$

$$x = 5 \text{ round tables}$$

⑥ $x = \# \text{ correct answers}$
 $y = \# \text{ incorrect answers}$

$$-1(x + y = 80)$$

$$\begin{array}{r} 1x - \frac{1}{4}y = 70 \\ -1x - y = -80 \\ \hline \end{array}$$

$$-1\frac{1}{4}y = -10$$

$$\left(-\frac{4}{5}\right) \cdot \frac{5}{4}y = -10 \left(-\frac{4}{5}\right)$$

$$y = \frac{40}{5} = 8 \text{ incorrect}$$

$$x + y = 80$$

$$x + 8 = 80$$

$$x = 72 \text{ correct}$$

⑦ $x = \# \text{ field goals}$
 $y = \# \text{ free throws}$

$$-1(x + y = 18)$$

$$\begin{array}{r} 2x + 1y = 30 \\ -x - y = -18 \\ \hline \end{array}$$

$$x = 12 \text{ field goals}$$

$$y = 6 \text{ free throws}$$

⑧ $x = \#$ 30 sec commercials
 $y = \#$ 60 sec commercials

$$-1(x + y = 12)$$

$$\frac{1}{2}x + \frac{1}{y} = 10$$

$$-x - \frac{1}{y} = -12$$

$$(-2) - \frac{1}{2}x = -2(-2)$$

$$x = \boxed{4} \text{ 30 sec commercials}$$

⑨ $x = \$$ in 4% fund
 $y = \$$ in 5% fund

$$-4(x + y = 4500) \Rightarrow -4x - 4y = -18,000$$

$$100(.04x + .05y = 210) \Rightarrow 4x + 5y = 21,000$$

$$y = \boxed{\$3000} \text{ 5% fund}$$

$$x + y = 4500$$

$$x + 3000 = 4500$$

$$-3000 \quad -3000$$

$$x = \boxed{\$1500} \text{ 4% fund}$$