Name: _____Key_____ Date: _____

Systems of Linear Equations – Word Problems

1. You sell tickets for admission to your school play and collect a total of $104. Admission prices are $6 for adults and $4 for children. You sold 21 tickets. How many adult tickets and how many children tickets did you sell?

$a + c = 21 \Rightarrow$ $6a + 6c = 126$
$6a + 4c = 104$ $\ominus 6a + 4c = 104$
$\underline{\hspace{3cm}}$
$2c = 22$
$c = 11$

$a + c = 21$
$a + 11 = 21$
$a = 10$

I sold 10 adult tickets and 11 children's tickets

2. Beach Hotel in Cancun is offering two weekend specials. One includes a 2-night stay with 3 meals and cost $195. The other includes a 3-night stay with 5 meals and cost $300. What is the cost of a single meal?

$2n + 3m = 195 \Rightarrow$ $6n + 9m = 585$
$3n + 5m = 300$ $\ominus 6n + 10m = 600$
$\underline{\hspace{3cm}}$
$-1m = -15$
$m = 15$

$2n + 3m = 195$
$2n + 3(15) = 195$
$2n + 45 = 195$
$2n = 150$
$n = 75$

A meal costs $15

3. Rent-A-Car rents compact cars for a fixed amount per day plus a fixed amount for each mile driven. Benito rented a car for 6 days, drove it 550 miles, and spent $337. Lisa rented the same car for 3 days, drove it 350 miles, and spend $185. What is the charge per day and the charge per mile for the compact car?

$6d + 550m = 337$ $6d + 550m = 337$
$3d + 350m = 185 \Rightarrow$ $\ominus 6d + 700m = 370$
$\underline{\hspace{3cm}}$
$-150m = -33$
$m = .22$

$3d + 350m = 185$
$3d + 350(.22) = 185$
$3d + 77 = 185$
$3d = 108$
$d = 36$

They charge $36 a day and $0.22 a mile

4. You bought the meat for Saturday's cookout. A package of hot dogs cost $1.60 and a package of hamburger cost $5. You bought a total of 8 packages of meat and you spent $23. How many packages of hamburger meat did you buy?

$1.60d + 5b = 23$ $1.60d + 5b = 23$
$d + b = 8 \Rightarrow$ $\ominus 5d + 5b = 40$
$\underline{\hspace{3cm}}$
$-3.40d = -17$
$d = 5$

$d + b = 8$
$5 + b = 8$
$b = 3$

I bought 5 packages of hot dogs & 3 packages of hamburgers

5. Casey orders 3 pizzas and 2 orders of breadsticks for a total of $29.50. Rachel orders 2 pizzas and 3 orders of breadsticks for a total of $23. How much does a pizza cost?

$3p + 2b = 29.50$ $6p + 4b = 59$
$2p + 3b = 23 \Rightarrow$ $\ominus 6p + 9b = 69$
$\underline{\hspace{3cm}}$
$-5b = -10$
$b = 2$

$2p + 3b = 23$
$2p + 3(2) = 23$
$2p + 6 = 23$
$2p = 17$
$p = 8.50$

A pizza costs $8.50

Name: _____ Date: _____

Systems of Linear Equations – Word Problems

1. Adam and Shayna each improved their yards by planting flowers and shrubs. They bought their plants from the same store. Adam spent $205 on 5 flowers and 10 shrubs. Shayna spent $120 on 6 flowers and 5 shrubs. Find the costs for one flower and one shrub.

$$5f + 10s = 205$$
$$6f + 5s = 120$$

$$5f + 10s = 205$$
$$\Rightarrow \ominus 12f + 10s = 240$$
$$\overline{-7f \qquad = -35}$$
$$f = 5$$

$$5f + 10s = 205$$
$$5(5) + 10s = 205$$
$$25 + 10s = 205$$
$$10s = 180$$
$$s = 18$$

A flower costs $5 and a shrub costs $18

2. Brenda is selling cheesecakes for a school fundraiser. Customers can buy pecan cheesecakes for $7.75 and chocolate marble cheesecakes for $9.50. Brenda sold 39 cheesecakes all together and raised $349.50 doing so. ~~How much did each type of cheesecake cost?~~ How many of each type did she sell?

$$7.75p + 9.50c = 349.50$$
$$p + c = 39$$

$$7.75p + 9.50c = 349.50$$
$$\Rightarrow \ominus 7.75p + 7.75c = 302.25$$
$$\overline{1.75c = 47.25}$$
$$c = 27$$

$$p + c = 39$$
$$p + 27 = 39$$
$$p = 12$$

She sold 12 pecan and 27 chocolate marble cheesecakes

3. Asanji and Jessica each took a series of lessons. They were taking their lesson from the same trainers. Asanji spent $656 on 8 hours of guitar lessons and 16 hours with a personal gym trainer. Jessica spent $460 on 5 hours of guitar lessons and 12 hours with the same instructors. How much did each trainer charge per hour?

$$8g + 16t = 656$$
$$5g + 12t = 460$$

$$40g + 80t = 3280$$
$$\Rightarrow \ominus 40g + 96t = 3680$$
$$\overline{-16t = -400}$$
$$t = 25$$

$$5g + 12t = 460$$
$$5g + 12(25) = 460$$
$$5g + 300 = 460$$
$$5g = 160$$
$$g = 32$$

The guitar teacher costs $32 and the gym trainer costs $25

$x = 6\%$
$y = 55\%$

4. Darren is looking back at his investments for the year. He had $1720 total in his investments, some of it in an account that earned 6% interest and some in an account that earned 5.5% interest. In total, he earned $98.20 in interest. How much was invested in each account?

$$.06x + .055y = 98.20$$
$$x + y = 1720$$

$$.06x + .055y = 98.20$$
$$\Rightarrow .06x + .06y = 103.20$$
$$\overline{-.005y = -5}$$
$$y = 1000$$

$$x + y = 1720$$
$$x + 1000 = 1720$$
$$x = 720$$

He invested $720 at 6% and $1000 at 5.5%

5. Flying with the wind a plane went 221 mph. Flying into the same wind the plane went only 175 mph. Find the speed of the wind and the speed of the plane in still air.

P = Plane speed
W = wind speed

$$p + w = 221$$
$$\ominus p - w = 175$$
$$\overline{2w = 46}$$
$$w = 23$$

$$p + w = 221$$
$$p + 23 = 221$$
$$p = 198$$

The plane flies at 198 mph & the wind is going 23 mph