Name: _____   Date: _____

Practice: Solve Problems Involving Linear Systems

1. Solve each linear system. Which method did you use each time? Why?
   a) $x + y = 4$
   $3x - y = 0$
   b) $-2x + 3y = -5$
   $3x + y = 2$
   c) $y = 2x + 1$
   $-x + y = 4$
   d) $y = -x + 1$
   $y = \frac{1}{2}x - 2$

2. Lydia works at an electronics store. Her annual salary is represented by the equation $S = 26\ 500 + 20n$ where n is the number of television sets sold. Calvin works at another electronics store that pays an annual salary of $S = 28000 + 15n$.
   a) How many television sets must be sold for Lydia and Calvin to earn the same salary?
   b) What will that salary be?

3. Caitlin invested $2500 in two funds. The education savings plan pays 7% interest per year and the savings bond pays 4.5% interest per year. After one year, Caitlin earned a total of $150 in interest. How much did Caitlin invest in each fund?

4. Daisy wants high-speed internet. One company charges an $80 installation fee plus $30 per month. A second internet company charges a $100 installation fee plus $25 per month.
   a) After how many months are the costs the same?
   b) If Daisy plans to use the internet for 1 year, which company should she choose? Why?

5. Sean needs a box to hold his mother's birthday gift. Sean estimates that the dimensions of the box must be such that the length is 10 cm longer than the width, and the perimeter should be 90 cm. What are the dimensions of the box?

6. One cell phone company charges 30¢/min for local calls and 50¢/min for long distance calls. During one month, Darren used 360 min on his cell phone. The bill was $120. How many minutes did Darren talk long distance?

7. Four friends are planning a camping trip. There are two deals: the first deal costs $462 per person. This includes renting the camping gear for 7 days and enough food for 2 meals a day. The second deal costs $518. It includes the camping gear for 1 week and 3 meals per day.
   a) Write a system of linear equations to represent the information.
   b) What is the cost for renting the camping gear per day?
   c) What is the cost of food per meal?

8. Steven drives home from college every weekend. He drives 300 km in 4 h. In the city he drives at an average speed of 60 km/h. On the highway he drives at an average speed of 100 km/h. Let x represent the distance Steven travels at 60 km/h. Let y be the distance he travels at 100 km/h.
   a) Write a system of linear equations to represent this situation.
   b) How far does Steven drive at each speed?