

Name: _____

Extra Practice

I can solve systems of equations from a context.

The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

$$\begin{array}{r} 3x + y = 38 \\ -(3x + 2y = 52) \\ \hline -y = -14 \\ y = 14 \end{array}$$

$$\begin{array}{r} 3x + 14 = 38 \\ 3x = 24 \\ x = 8 \end{array}$$

Senior Ticket: \$8
Child Ticket: \$14

The state fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 8 vans and 8 buses with 240 students. High School B rented and filled 4 vans and 1 bus with 54 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

$$\begin{array}{r} 8x + 8y = 240 \\ -2(4x + y = 54) \\ \hline + \rightarrow -8x - 2y = -108 \\ \hline 6y = 132 \\ y = 22 \end{array}$$

$$\begin{array}{r} 4x + 22 = 54 \\ 4x = 32 \\ x = 8 \end{array}$$

Vans: 8 students
Buses: 22 students

The senior classes at High School A and High School B planned separate trips to New York City. The senior class at High School A rented and filled 1 van and 6 buses with 372 students. High School B rented and filled 4 vans and 12 buses with 780 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

$$\begin{array}{r} -2(x + 6y = 372) \\ 4x + 12y = 780 \\ + -2x - 12y = -744 \\ \hline 2x = 36 \\ x = 18 \end{array}$$

$$\begin{array}{r} 18 + 6y = 372 \\ 6y = 354 \\ y = 59 \end{array}$$

Vans: 18 students
Buses: 59 students

Brenda's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 3 senior citizen tickets and 9 child tickets for a total of \$75. The school took in \$67 on the second day by selling 8 senior citizen tickets and 5 child tickets. What is the price each of one senior citizen ticket and one child ticket?

$$\begin{array}{r}
 8(3x + 9y = 75) \\
 - 3(8x + 5y = 67) \\
 \hline
 24x + 72y = 600 \\
 - 24x - 15y = -201 \\
 \hline
 57y = 399 \\
 y = 7
 \end{array}$$

$$\begin{array}{r}
 3x + 63 = 75 \\
 x = 4
 \end{array}$$

Senior Ticket: \$4
Child Ticket: \$7

Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of \$203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of \$220. Find the cost each of one small box of oranges and one large box of oranges.

$$\begin{array}{r}
 11(3x + 14y = 203) \\
 - 3(11x + 11y = 220) \\
 \hline
 33x + 154y = 2233 \\
 - 33x - 33y = -660 \\
 \hline
 121y = 1573 \\
 y = 13
 \end{array}$$

$$\begin{array}{r}
 3x + 14(13) = 203 \\
 3x = 21 \\
 x = 7
 \end{array}$$

Small Box: \$7
Large Box: \$13

Wendy is starting a catering business and is attempting to figure out who she should be using to transport the food to different locations. She has found two trucking companies that are willing to make sure her food arrives intact. Peter's Pick Up charges \$0.40 per mile and charges a flat fee of \$68. Helen's Haulers charges \$0.65 per mile and charges a flat fee of \$23.

For what distance would the cost of transporting to the produce be the same for both companies? What is that equal cost? Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

$$C = .4m + 68$$

$$.4m + 68 = .65m + 23$$

$$C = .65m + 23$$

$$45 = .25m$$

$$180 = m \quad .4(180) + 68$$

After 180 miles, the cost for either company is \$140.

Jonas needs a cell phone. He has a choice between two companies with the following monthly billing policies. Each company's monthly billing policy has an initial operating fee and charge per minute.

	Operating Fee	Charge per Minute
Terri's Telephone	29.95	0.14
Carrie's Connection	4.95	0.39

$$29.95 + .14m = C$$
$$4.95 + .39m = C$$

At how many minutes is the monthly cost the same? What is the equal monthly cost of the two plans? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.

$$29.95 + .14m = 4.95 + .39m$$

$$25 = .25m$$

$$100 = m$$

$$29.95 + .14(100) = 43.95$$

After 100 minutes, the cost for either plan is \$43.95.

