

LESSON
12-3

Modeling with Linear Systems

Practice and Problem Solving: A/B

Write a system of equations to solve each problem.

- For a small party of 12 people, the caterer offered a choice of a steak dinner for \$12.00 per meal or a chicken dinner for \$10.50 per meal. The final cost for the meals was \$138.00. How many of each meal was ordered?

Equations: _____

Solution: _____

- A clubhouse was furnished with a total of 9 couches and love seats so that all 23 members of the club could be seated at once. Each couch seats 3 people and each love seat seats 2 people. How many couches and how many love seats are in the clubhouse?

Equations: _____

Solution: _____

- A small art museum charges \$5 for an adult ticket and \$3 for a student ticket. At the end of the day, the museum had sold 89 tickets and made \$371. How many student tickets and how many adult tickets were sold?

Equations: _____

Solution: _____

- Cassie has a total of 110 coins in her piggy bank. All the coins are quarters and dimes. The coins have a total value of \$20.30. How many quarters and how many dimes are in the piggy bank?

Equations: _____

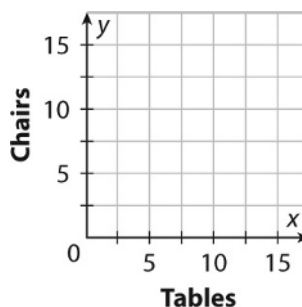
Solution: _____

Write a system of inequalities and graph them to solve the problem.

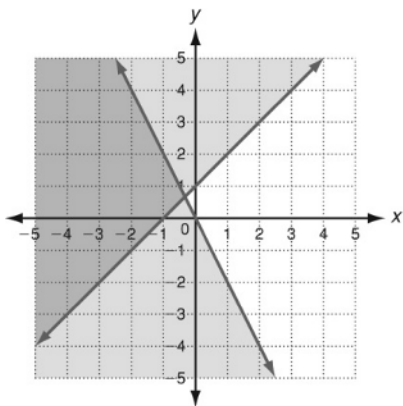
- Jack is buying tables and chairs for his deck party. Tables cost \$25 and chairs cost \$15. He plans to spend no more than \$285 and buy at least 16 items. Show and describe the solution set, and suggest a reasonable solution to the problem.

Equations: _____

Solution: _____

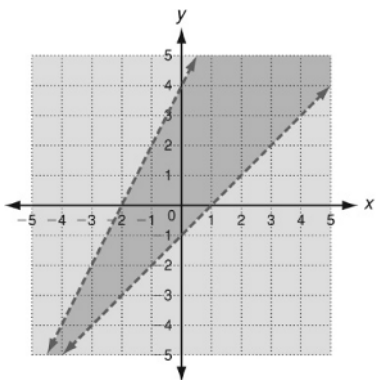


7.



- a. $(-1, 0)$ and $(-3, 2)$
 b. $(0, -3)$ and $(4, 0)$

8.



- a. $(0, 0)$ and $(1, 2)$
 b. $(1, 0)$ and $(-4, 3)$

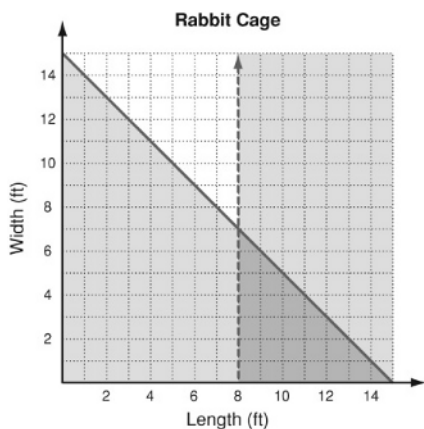
9. $w + c > 5$

$$49w + 100c < 400$$

Reading Strategies

1.
$$\begin{cases} 2x + 2y \leq 30 \\ x > 8 \end{cases}$$

2.



3. $l = 10$ ft, $w = 5$ ft and $l = 11$ ft, $w = 4$ ft

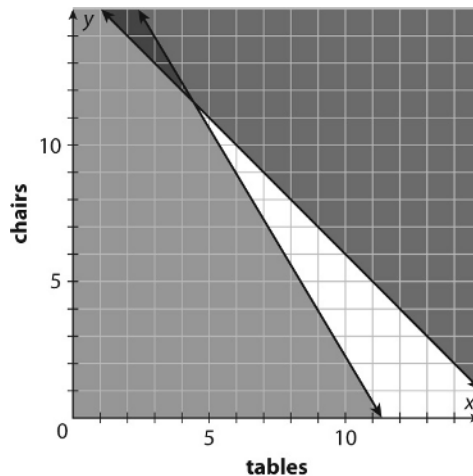
Success for English Learners

- $(-3, 1)$ is a solution because it lies in the shaded region for both inequalities.
- $(4, 2)$ is not a solution because it does not lie in the shaded region for both inequalities.

LESSON 12-3

Practice and Problem Solving: A/B

- $s + c = 12$; $12s + 10.5c = 138$; 8 steak, 4 chicken
- $c + l = 9$; $3c + 2l = 23$; 5 couches, 4 loveseats
- $a + s = 89$; $5a + 3s = 371$; 52 adults, 37 students
- $q + d = 110$; $0.25q + 0.10d = 20.30$; 62 quarters, 48 dimes
- $t + c \geq 16$; $25t + 15c \leq 285$; solution is all the points in the overlap region; 4 tables, 12 chairs



Practice and Problem Solving: C

- $l + s = 41$; $22l + 14s = 710$; 17 large vases, 24 small vases

