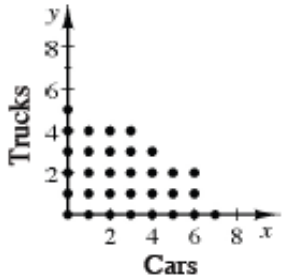
Lesson 4.2.2

4-79. (0, 0), (0, 1), (0, 2), (0, 3), (0, 4), (0, 5), (1, 0), (1, 1), (1, 2), (1, 3), (1, 4), (2, 0), (2, 1), (2, 2), (2, 3), (2, 4), (3, 0), (3, 1), (3, 2), (3, 3), (3, 4), (4, 0), (4, 1), (4, 2), (4, 3), (5, 0), (5, 1), (5, 2), (6, 0), (6, 1), (6, 2), (7, 0)



4-80. See below:

a. 6 cars and 2 trucks, for a profit of $8

b. 3 cars and 4 trucks, for a profit of $11

4-81. See below:

a. i. $4x + 6y \leq 36$
   ii. $2x + y \leq 14$
   iii. $x + 3y \leq 15$

b. See graph below. Both x and y cannot be negative because a negative number of cars or trucks is not possible.

c. (0, 0), (0, 5), (3, 4), (6, 2), (7, 0); You could solve systems of equations from part (a).

d. Students should mention the boundary area or the vertices of the polygon. These points represent places where all of one of the types of construction materials is used entirely.

e. $P = x + 2y$; The graph of $8 = x + 2y$ should contain the points (0, 4), (2, 3), (4, 2), and (6, 1), so any of these combinations would yield a profit of $8.

f. Students do not need to check all of the points; they only need to check the vertices.

g. Draw the graph of $14 = x + 2y$ to show Otto that the profit line completely misses the region that represents the numbers of cars and trucks he can build.

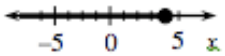
4-82. $3x + 2y$; 6 cars and 2 trucks, for a profit of \$22

Review & Preview

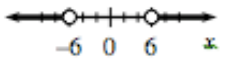
4-83. $x = -2$, $y = 3$, $z = -5$; Solve the system to two equations with x and y, then substitute these values into the third equation to find z.

4-84. See below:

a. $x \leq 4$



b. $x < -6$ or $x > 6$



4-85. red = 10 cm, blue = 14 cm

4-86. The points on the line $y = 2x - 2$ are excluded from the solution region of $y < 2x - 2$.

4-87. See below:

a. $y = \frac{1}{3}x - 4$

b. $y = \frac{6}{5}x - \frac{1}{5}$

c. $y = (x + 1)^2 + 4$

d. $y = x^2 + 4x$

4-88. $y = 0$, $x = 0$

4-89. 2.11 feet