

## Chapter 2 continued

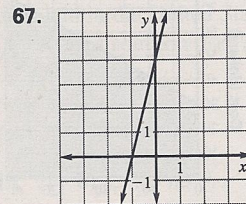
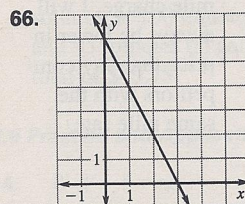
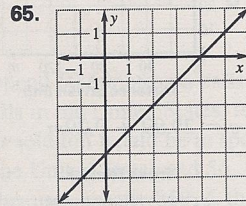
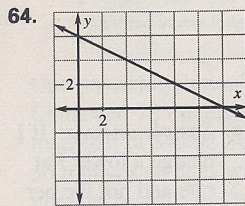
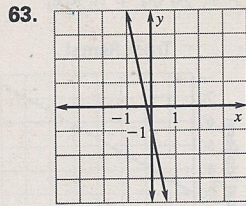
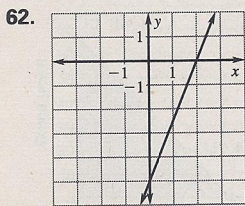
54. *Sample answer:* I used the  $x$  and  $y$  intercepts to find two points on the line. From there I used the point-slope formula to find the equation of the line. Since the line is drawn in full and the area shaded is less than 36, the equation is written  $4x + 9y \leq 36$ .

55. *Sample answer:*  $x$  is the number of grams of carbohydrates and protein and  $y$  is the number of grams of fat in a food that has 56 or fewer cal., or if  $x$  is the number of minutes spent walking at 4 mi/h and  $y$  is the number of minutes spent riding a bike at 9 mi/h, then  $4x + 9y \leq 36$  represents those combinations of  $(x, y)$  that correspond to 36 or fewer miles.

### 2.6 Mixed Review (p. 113)

56.  $1.0 \times 10^7$    57.  $1.65 \times 10^9$    58.  $2.03 \times 10^5$

59.  $6.7 \times 10^{-4}$    60.  $9 \times 10^{-7}$    61.  $8.08 \times 10^{-2}$



68.  $y - 2 = \frac{2 - 5}{2 - 5}(x - 2)$   
 $y - 2 = x - 2$   
 $y = x$

69.  $y - 7 = \frac{7 - 1}{0 - 5}(x - 0)$   
 $y - 7 = -\frac{6}{5}x$   
 $y = -\frac{6}{5}x + 7$

70.  $y - 6 = \frac{6 + 2}{-1 - 8}(x + 1)$   
 $y - 6 = -\frac{8}{9}(x + 1)$   
 $y = -\frac{8}{9}x + \frac{46}{9}$

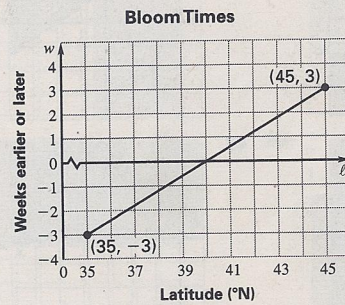
71.  $y - 2 = \frac{-4 - 2}{3 - 3}(x - 3)$   
 $x = 3$

72.  $y - 9 = \frac{9 + 6}{1 + 10}(x - 1)$   
 $y - 9 = \frac{15}{11}(x - 1)$   
 $y = \frac{15}{11}x + \frac{84}{11}$

73.  $y + 8 = \frac{-8 + 8}{-7 - 4}(x - 4)$   
 $y + 8 = 0$   
 $y = -8$

74. domain:  $35 \leq l \leq 45$

range:  $-3 \leq w \leq 3$



### Lesson 2.7

#### 2.7 Guided Practice (p. 117)

1. Piecewise functions are represented by a combination of equations. Step functions have a graphic representation that looks like a set of steps;

Piecewise:

$$f(x) = \begin{cases} 2x - 1, & \text{if } x \leq 1 \\ 3x + 1, & \text{if } x > 1 \end{cases}$$

Step function:

$$f(x) = \begin{cases} 1, & \text{if } 0 \leq x < 1 \\ 2, & \text{if } 1 \leq x < 2 \\ 3, & \text{if } 2 \leq x < 3 \\ 4, & \text{if } 3 \leq x < 4 \end{cases}$$

2. The point is included; the point is not included.

3. False; *Sample answer:* The separate pieces are graphs of different functions. The graphs don't have to be connected. For example, a step function is a piecewise function, but the steps of its graph are not connected.

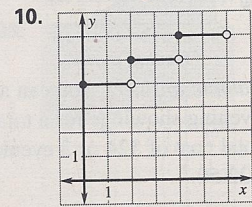
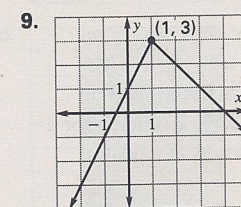
4. True; in substituting  $x = 1, 2, 3$  into the greatest integer function, the graphical representation is the same as the earlier step function.

5.  $f(10) = 2x + 7 = 20 + 7 = 27$

6.  $f(-\frac{1}{3}) = 3(-\frac{1}{3}) - 1 = -1 - 1 = -2$

7.  $f(4) = 3(4) - 1 = 12 - 1 = 11$

8.  $f(-2) = 3(-2) - 1 = -6 - 1 = -7$



11.  $f(x) = \begin{cases} -\frac{4}{3}x + 6, & \text{if } 0 \leq x < 3 \\ -\frac{2}{5}x + \frac{16}{5}, & \text{if } 3 \leq x \leq 8 \end{cases}$