Lesson 4.1

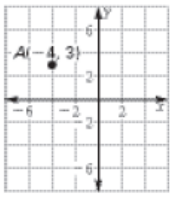
Practice B

1. $A(2, 0)$, $B(-1, -4)$, $C(-2, 2)$, $D(1, 3)$

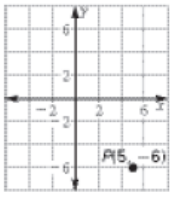
2. $A(-4, 1)$, $B(1, -2)$, $C(3, 2)$, $D(0, 3)$

3. $A(-3, 0)$, $B(-2, 4)$, $C(3, 2)$, $D(1, -3)$

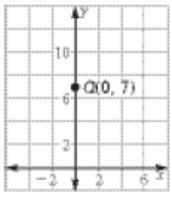
4. Point A is located 4 units to the left of the origin and 3 units above the x-axis.



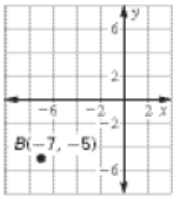
5. Point P is located 5 units to the right of the origin and 6 units below the x-axis.



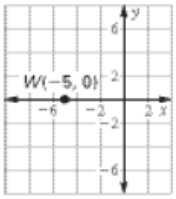
6. Point Q is located 7 units above the origin on the y-axis.



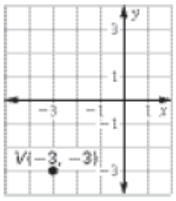
7. Point B is located 7 units to the left of the origin and 5 units below the x-axis.



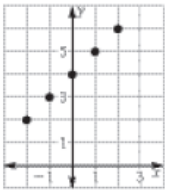
8. Point W is located 5 units to the left of the origin on the x-axis.



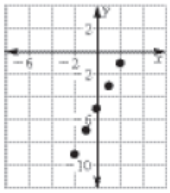
9. Point V is located 3 units to the left of the origin and 3 units below the x-axis.



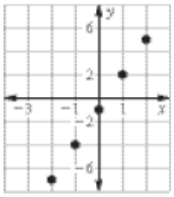
10. range: 2, 3, 4, 5, 6



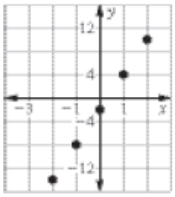
11. range: −9, −7, −5, −3, −1



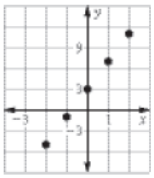
12. range: −7, −4, −1, 2, 5



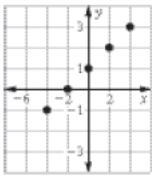
13. range: −14, −8, −2, 4, 10



14. range: −5, −1, 3, 7, 11



15. range: −1, 0, 1, 2, 3

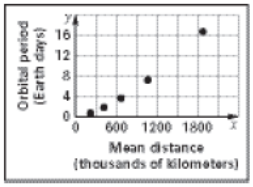


16. Because both coordinates are negative, $(-4, -2)$ lies in Quadrant III.

17. Because the first coordinate is positive and the second coordinate is negative, $(9, -2)$ lies in Quadrant IV.

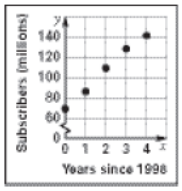
18. Because the first coordinate is negative and the second coordinate is positive, $(-1, 8)$ lies in Quadrant II.

19.



The graph represents a function because each input has exactly one output.

20. a.



The graph represents a function because each input has exactly one output. **b.** The number of subscribers keeps increasing as time goes on.

Lesson 4.2

Practice B

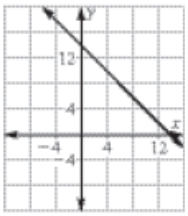
1. b **2.** b **3.** b **4.** $y = 6x + 11$

5. $y = -4x + 5$ **6.** $y = 2x + 3$

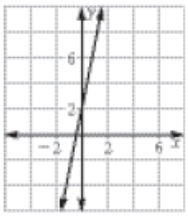
7. $y = 2x + 8$ **8.** $y = 2x - 5$

9. $y = -\frac{3}{2}x - 4$

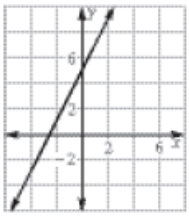
10.



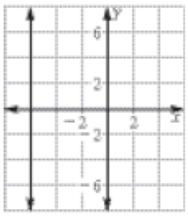
11.



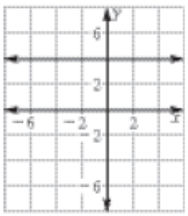
12.



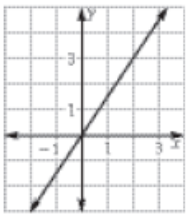
13.



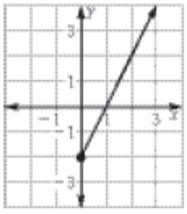
14.



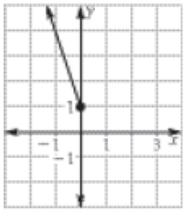
15.



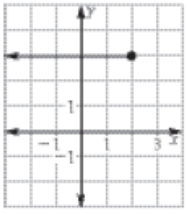
16. range: $y \geq -2$



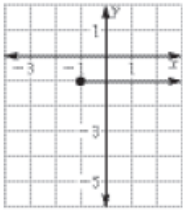
17. range: $y \geq 1$



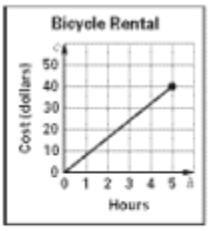
18. range: $y = 3$



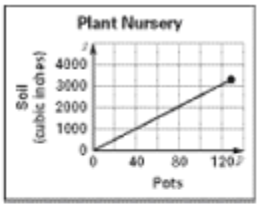
19. range: $y = -1$



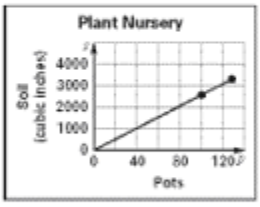
20. $y < -\frac{8}{3}$ **21.** $y < -1$

22. 

domain: $0 \le h \le 5$;
range: $0 \le c \le 40$; \$40

23. a. 

domain: $0 \le p \le 128$;
range: $0 \le s \le 3456$;
128 pots

b. 

domain: $0 \le p \le 100$;
range: $0 \le s \le 2700$; 2700 in.^{3}

24. 

domain: $m \ge 0$; range: $C \ge 700$; Rent for one year: domain: $0 \le m \le 12$; range: $0 \le C \le 6700$; The original graph was a ray. By restricting the domain, the graph becomes a line segment.

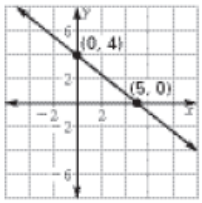
Lesson 4.3

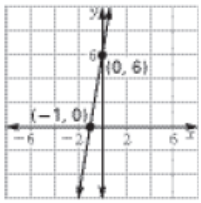
Practice B

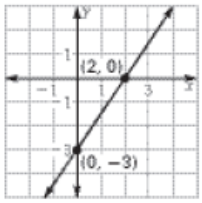
1. x: 1; y: 1 **2.** x: -5; y: 5 **3.** x: $-\frac{1}{2}$; y: 1

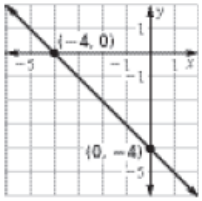
4. x: 6; y: 3 **5.** x: -4; y: $\frac{20}{9}$ **6.** x: 2; y: -8

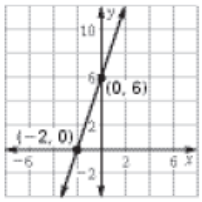
7. x: $\frac{18}{7}$; y: $\frac{9}{4}$ **8.** x: $\frac{1}{2}$; y: -3 **9.** x: 4; y: -16

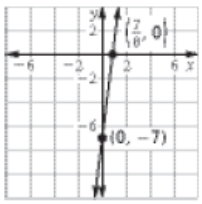
10. 

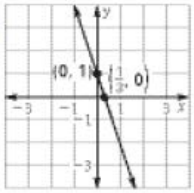
11. 

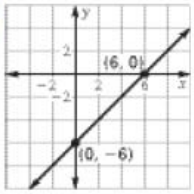
12. 

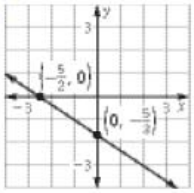
13. 

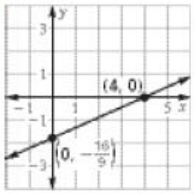
14. 

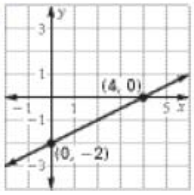
15. 

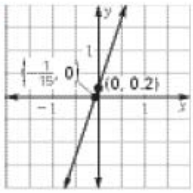
16. 

17. 

18. 

19. 

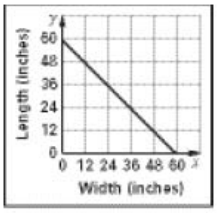
20. 

21. 

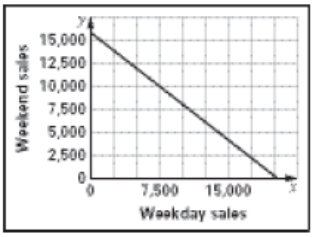
22. C **23.** A **24.** B

25. a. $2x + 2y = 118$

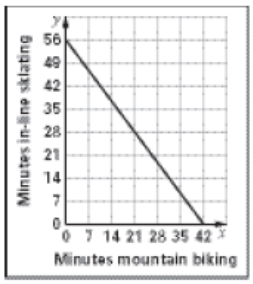
b. x: 59; y: 59



26. a. x: 20,358; y: 15,834



27. a. x: 42; y: 56



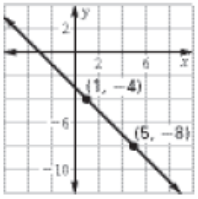
b. Answers will vary.

27. b. The x-intercept is the number of calories burnt when the man only mountain bikes and the y-intercept is the number of calories burnt when the man only in-line skates. **c.** Answers will vary.

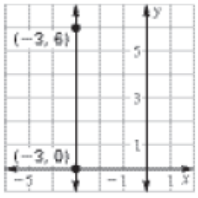
Lesson 4.4

Practice B

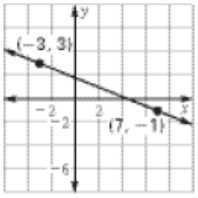
1. negative



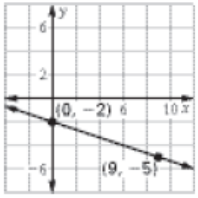
2. undefined



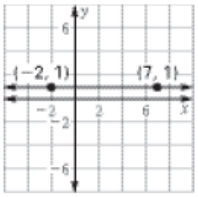
3. negative



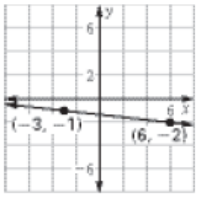
4. negative



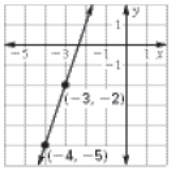
5. zero



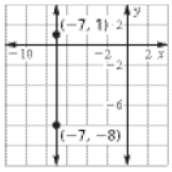
6. negative



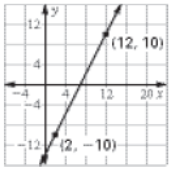
7. positive



8. undefined



9. positive



10. $\frac{2}{3}$ **11.** $-\frac{4}{5}$ **12.** 0 **13.** $-\frac{3}{5}$ **14.** $\frac{3}{5}$ **15.** undefined **16.** $\frac{5}{6}$ **17.** $\frac{1}{2}$ **18.** undefined

19. $-\frac{1}{4}$ **20.** $\frac{1}{2}$ **21.** 1 **22.** 0 **23.** 1 **24.** $\frac{1}{3}$ **25.** 4 **26.** -6 **27.** 8 **28.** -2 **29.** 6 **30.** 3

31. a. From 1980 to 1985: -29.4 buses per year; From 1985 to 1990: 31.2 buses per year; From 1990 to 1995: 10.6 buses per year; From 1995 to 2000: 13.2 buses per year; From 1980 to 1985, the number of buses decreased, but then the number of buses increased after that. **b.** Greatest: From 1985 to 1990; Least: From 1990 to 1995 **32. a.** From 2001 to 2002 **b.** From 1995 to 1999

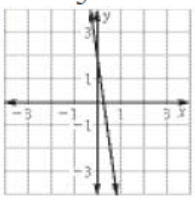
33. The person's heartrate increased for 0 to 12 minutes, then it slowly decreased until the end of the workout.

Lesson 4.5

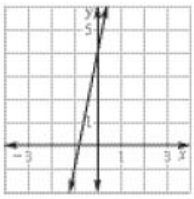
Practice B

1. Slope: 5; y-intercept: -4 **2.** Slope: -4; y-intercept: 10 **3.** Slope: -9; y-intercept: 8
4. Slope: -4; y-intercept: 3 **5.** Slope: 3; y-intercept: -1 **6.** Slope: $-\frac{2}{5}$; y-intercept: 2
7. Slope: 3, y-intercept: $\frac{1}{3}$ **8.** Slope: $-\frac{3}{2}$; y-intercept: $\frac{1}{2}$ **9.** Slope: $\frac{1}{4}$; y-intercept: $\frac{5}{8}$ **10.** Slope: -1; y-intercept: $\frac{3}{5}$ **11.** Slope: 0; y-intercept: -4 **12.** Slope: undefined; y-intercept: none **13.** C **14.** B **15.** A

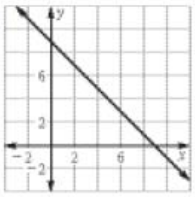
16.



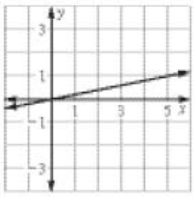
17.



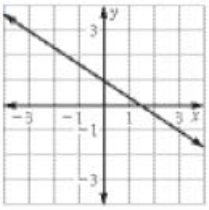
18.



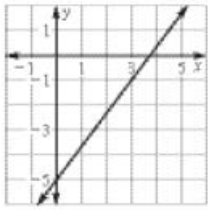
19.



20.

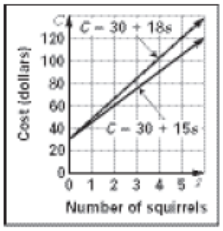


21.



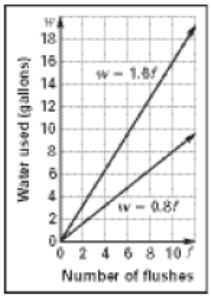
22. line through $(-1, -4)$ and $(0, 2)$ and line through $(1, 3)$ and $(2, 9)$ **23.** line through $(-3, 9)$ and $(-1, 1)$ and line through $(-2, 10)$ and $(1, -2)$ **24.** no **25.** no **26.** no **27.** yes **28.** yes **29.** no

30. a. and **b.**



c. $12

31. a.



The slopes indicate the number of gallons of water used per flush. The w-intercepts show how much water is used when the toilet is not flushed at all.

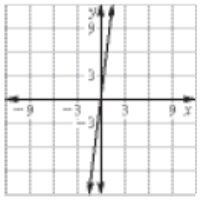
b. 8 gal

Lesson 4.6

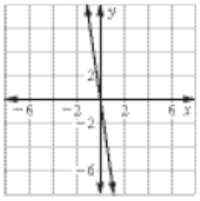
Practice B

1. yes; 8 **2.** no **3.** no

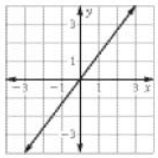
4.



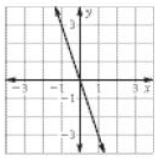
5.



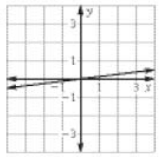
6.



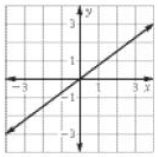
7.



8.



9.

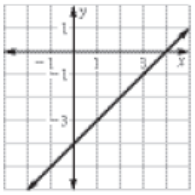


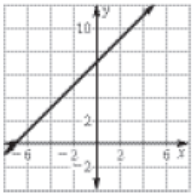
10. $y = 6x$; 60 **11.** $y = -\frac{5}{2}x$; -25 **12.** $y = \frac{3}{2}x$; 15 **13.** $y = \frac{1}{2}x$; 5 **14.** $y = \frac{2}{3}x$; $\frac{20}{3}$
15. $y = -5x$; -50 **16.** $y = -\frac{1}{3}x$; $-\frac{10}{3}$ **17.** $y = x$; 10 **18.** $y = \frac{1}{4}x$; $\frac{5}{2}$ **19.** yes; $y = 18x$
20. yes; $y = 0.4x$ **21.** no **22.** no **23.** $y = \frac{1}{8}x$ **24.** $y = \frac{1}{4}x$ **25.** $y = -\frac{1}{7}x$
26. $y = -6x$ **27.** $y = 6x$ **28.** $y = -\frac{3}{8}x$ **29.** $y = 17x$ **30.** $y = -8x$ **31.** $y = \frac{3}{5}x$
32. a. $F = s$ **b.** 25 lb **33. a.** $g = 0.01A$ **b.** 5.3 gal. **c.** 850 ft^2
34. a. Because the ratios for each data pair is 28, s varies directly with t. **b.** $s = 28t$ **c.** about 29 sec

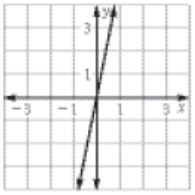
Lesson 4.7

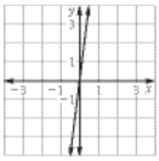
Practice B

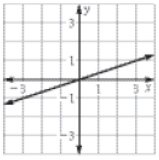
1. -41; 4; 34 **2.** 28; 1; -17 **3.** 16; -5; -19 **4.** -9.75; 0; 6.5 **5.** 13.2; 0; -8.8 **6.** -21.6; -3.3; 8.9
7. $-\frac{22}{5}$; -2; $-\frac{2}{5}$ **8.** 9; 4; $\frac{2}{3}$ **9.** $-\frac{57}{8}$; -6; $-\frac{21}{4}$ **10.** 14.5; 7; 2 **11.** -15.6; -3; 5.4 **12.** -20.5; -2.2; 10
13. 5 **14.** 5 **15.** -3 **16.** -2 **17.** 4 **18.** 5 **19.** -3 **20.** 10 **21.** -5 **22.** 10

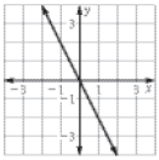
23. 
The graph of h is the graph of f shifted down 4 units.

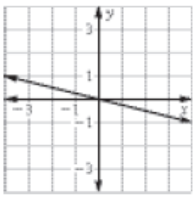
24. 
The graph of g is the graph of f shifted up 7 units.

25. 
The graph of m is a dilation of the graph of f using a scale factor of 5.

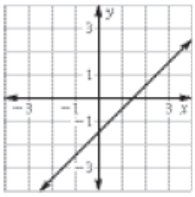
26. 
The graph of m is a dilation of the graph of f using a scale factor of 8.

27. 
The graph of p is a dilation of the graph of f using a scale factor of $\frac{1}{3}$.

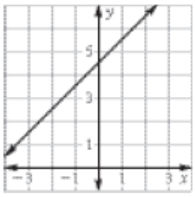
28. 
The graph of n is a dilation of the graph of f using a scale factor of 2 and a reflection in the x-axis.

29. 

The graph of p is a dilation of the graph of f using a scale factor of $\frac{1}{4}$ and the reflection of f in the x-axis.

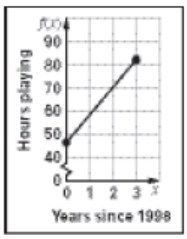
30. 

The graph of d is the graph of f shifted down 1.5 units.

31. 

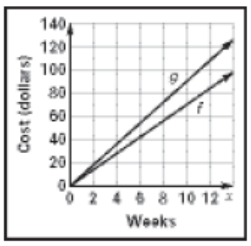
The graph of s is the graph of f shifted up 4.5 units.

32. C **33.** A **34.** B

35. a. 

domain: $0 \le x \le 3$
range: $46.4 \le f(x) \le 82.1$

b. $f(2) = 70.2$; In 2000, people spent 70.2 hours each year playing video games. **c.** $f(1.1) \approx 60$; Near the beginning of 1999, people spent 60 hours each year playing video games.

36. a. 

The graphs have the same y-intercept but the slope of g is steeper than the slope of f. **b.** \$24; Because the difference is \$2 per week, multiply 2 by 12.