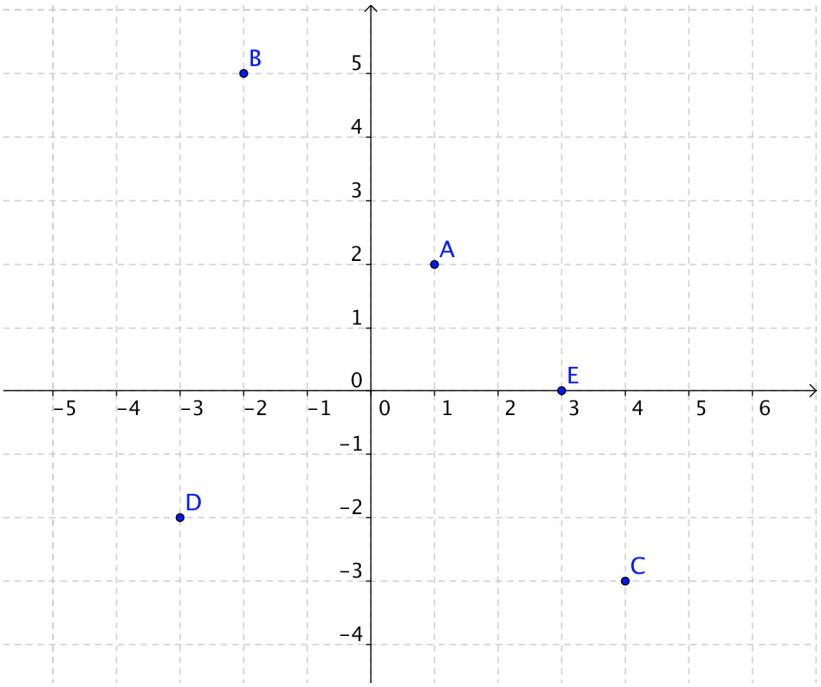
Chapter 4 Review

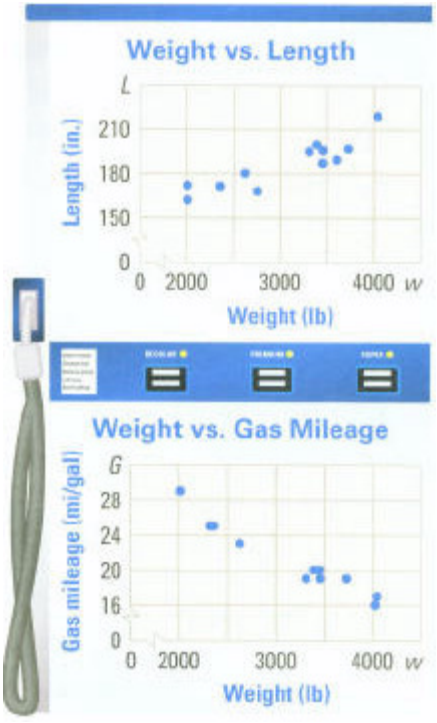
1. Write the ordered pairs that correspond to the points labeled *A*, *B*, *C*, *D*, and *E*.



2. Plot and label the ordered pairs listed below in a coordinate plane.
A (0, 3), *B* (-2, -1), *C* (2, 0), *D* (3, -5), *E* (1.5, 3), *F* (-4, 1)

3. Without plotting the point, tell whether the points below are in quadrant I, quadrant II, quadrant III, or quadrant IV.
   a. (-2, 7)
   b. (3, 9)
   c. (-5, -2)
   d. (5, -6)

4. For the Weight vs. Length graph to the right answer the questions below.
   a. What are the units on the horizontal axis?
   b. What are the units on the vertical axis?
   c. Estimate the coordinates of the point for a car that weighs about 4000 pounds.



d. Can you make a general statement concerning a relationship between weight and length? If so, what can you say?

4. The table below shoes the wing length in millimeters and the wing-beat rate in beats per second.

Bird	Flamingo	Shellduck	Velvet Scoter	Fulmar	Great Egret
Wing length	400	375	281	321	437
Wing-beat rate	2.4	3.0	4.3	3.6	2.1

a. Make a scatter plot that shows the wing lengths and wing-beat rates for the six birds. Use the horizontal axis to represent the wing length.
b. What is the slowest wing-beat rate shown on the scatter plot? What is the fastest? Where are these located on your scatter plot?
c. Describe the relationship between the wing length and the wing-beat rate.

5. Is the ordered pair (2, -1) a solution to the equation $6y - 3x = -9$?

6. Is the ordered pair (-2, 8) a solution to the equation $2y - 4x = 8$?

7. Find three different ordered pairs that are solutions to the equation $x = \frac{1}{2}$.

8. Find three different ordered pairs that are solutions to the equation $y = 3(6x - 1)$.

9. Rewrite the equation $-x - y = 5$ in function form.

10. Use a table of values to graph the equation $x + 2y = -8$.

11. One summer you charge \$20 to mow a lawn and \$10 to trim bushes. You want to make \$300 in one week. Write an algebraic model for your earnings where x is the number of lawns you mow and y is the number of bushes you trim.
a. Solve the equation for y.

b. Use the equation in function form to make a table of values for $x = 5$, $x = 10$, and $x = 15$.
c. If you do not trim any bushes during the week, how many lawns will you have to mow to earn $300?

12. Find the *x*-intercept of the graph of the equation $x + 3y = 5$.

13. Find the *x*-intercept of the graph of the equation $-7x - 3y = 42$.

14. Find the *y* –intercept of the graph of the equation $3x + 12y = -84$.

15. Find the *y* –intercept of the graph of the equation $-x + 1.7y = 5.1$.

16. Find the *x*-intercept and the *y*-intercept of the line $y = -6 + 3x$. Graph the equation. Label the points where the line crosses the axes.

17. Find the *x*-intercept and the *y*-intercept of the line $4x + 5y = 20$. Graph the equation. Label the points where the line crosses the axes.

18. You are running in a marathon. You either run 8 miles per hour or walk 4 miles per hour.
    a. Write an equation to show the relationship between time run and time walked during the 26.2-mile course.
    b. Graph the equation from part **a**. What are some possible running and walking times if you complete the 26.2-mile course?
    c. If you walk for a total of 1 hour during the course, how long will you have spent running when you cross the finish line of the marathon?

19. Plot the points (7, 4) and (-1, 8) and draw a line through them. Without calculating state whether the slope of the line is *positive*, *negative*, *zero*, or *undefined*. Explain your reasoning.

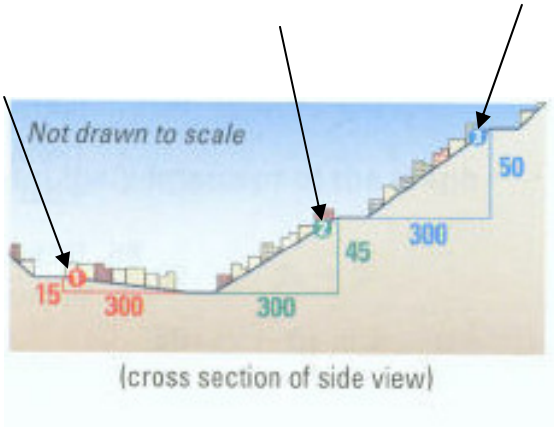
21. Plot the points (2, -2) and (2, -6) and draw a line through them. Without calculating state whether the slope of the line is *positive*, *negative*, *zero*, or *undefined*. Explain your reasoning.

22. Plot the points and find the slope of the line passing through the points (0, -6) and (8, 0).

23. Plot the points and find the slope of the line passing through the points (-6, 2) and (4, -2).

24. Find the value of y so that the line passing through the two points (2, -15) and (5, y) has the slope $m = \frac{4}{5}$.

25. In the 1870s a cable car system was built in San Francisco to climb the steep streets. San Francisco was the site of the first cable car used for public transportation in America. Calculate each labeled slope (note the arrows) from left to right in the diagram to the right.

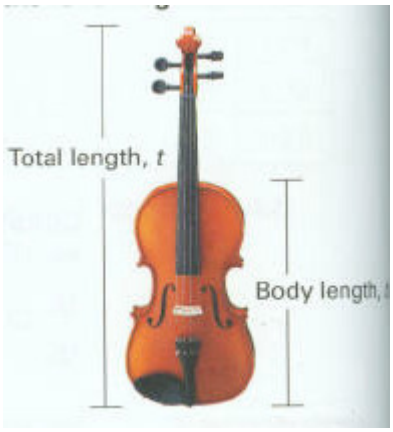


26. Graph the equation $y = -5x$. Find the constant of variation and the slope of the direct variation model.

27. Graph the equation $y = \frac{5}{4}x$. Find the constant of variation and the slope of the direct variation model.

28. The variables y and x vary directly. Use the values $x = 7$ and $y = 35$ to write an equation that relates x and y.

29. The violin family includes the bass, the cello, the viola, and the violin. The size of each instrument determines its tone. The shortest produces the highest tone, while the longest produces the deepest (lowest) tone.



Violin family	Bass	Cello	Viola	Violin
Total length t (inches)	72	47	26	23
Body length b (inches)	44	30	16	14

a. Write a direct variation model that you can use to relate the body length of a member of the violin family to its total length.

b. Another instrument in the violin family has a body length of 28 inches. Use your model from part **a** to estimate the total length of the instrument. Is its tone higher or lower than a viola's tone?

30. Find the slop and the y-intercept of the graph of the equation $y = 6x + 4$.

31. Find the slop and the y-intercept of the graph of the equation $y = -2$.

32. Find the slop and the y-intercept of the graph of the equation $3x + 4y = 16$

33. Find the slop and the y-intercept of the graph of the equation $y = \frac{6 - x}{3}$

34. Write the equation $3x - 6y = 9$ in slope intercept form. Then graph the equation.

35. Write the equation $5(x + 3 + y) = 10x$ in slope intercept form. Then graph the equation.

36. Decide whether the graphs of the two equations $-x + 3 + y = 2x + 3$ and $y + 4 = 3x$ are parallel lines. Explain your answer.

37. Use the following linear equations

$$y = -x + 2$$
$$y = -1$$
$$y = x + 2$$

a. Which of the lines are parallel? Explain.

b. Graph each equation in the same coordinate plane. What type of polygon do they form? Find the area of the polygon. Justify your method.

38. Write an equation of a line that is perpendicular to the line $y = -2x + 1$.

39. Solve the equation $-3x + 11 = 2$ algebraically. Check your solution graphically.

40. Solve the equation $-\frac{3}{4}x + 3 = \frac{9}{4}$ algebraically. Check your solution graphically.

41. Solve the equation $3x + 10 = -2x$ algebraically. Check your solution graphically.

42. Based on data from 1991 to 1995, a model for the annual number of visitors v from the United States to Europe is $v = 559{,}100t + 6{,}423{,}000$ where t is the number of years since 1991. According to this model, in what year will the number of visitors to Europe reach 11,000,000?

43. Decide whether the relation is a function. If it is a function, give the domain and range.

a.

Input	Output
0	1
2	2
4	3
2	4

b.

Input	Output
1	1
3	2
5	3
7	1

44. Evaluate the function $g(x) = 8x - 2$ when $x = 2$, $x = 0$, and $x = -3$.

45. Evaluate the function $h(x) = \frac{2}{5}x + 7$ when $x = 2$, $x = 0$, and $x = -3$.

46. Find the slop of the graph of the linear function f when $f(2) = -3$ and $f(-2)=5$.

47. Find the slop of the graph of the linear function f when $f(-2) = -1$ and $f(2)=6$.