

Practice by Example

Example 1
(page 305)

Graph each equation.

1. $y - 2 = (x - 3)$

2. $y - 2 = 2(x - 3)$

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

4. $y + 5 = -(x - 2)$

5. $y + 1 = \frac{2}{3}(x + 4)$

6. $y - 1 = -3(x + 2)$

7. $y + 3 = -2(x - 1)$

8. $y - 4 = (x - 5)$

9. $y - 2 = 3(x + 2)$

Example 2
(page 305)

Write an equation in point-slope form for the line through the given point with the given slope.

10. $(3, -4); m = 6$

11. $(4, 2); m = -\frac{5}{3}$

12. $(0, 2); m = \frac{4}{5}$

13. $(-2, -7); m = -\frac{3}{2}$

14. $(4, 0); m = 1$

15. $(5, -8); m = -3$

16. $(-5, 2); m = 0$

17. $(1, -8); m = -\frac{1}{5}$

18. $(-6, 1); m = \frac{2}{3}$

Example 3
(page 305)

A line passes through the given points. Write an equation for the line in point-slope form. Then rewrite the equation in slope-intercept form.

19. $(-1, 0), (1, 2)$

20. $(3, 5), (0, 0)$

21. $(4, -2), (9, -8)$

22. $(6, -4), (-3, 5)$

23. $(-1, -5), (-7, -6)$

24. $(-3, -4), (3, -2)$

25. $(2, 7), (1, -4)$

26. $(-2, 6), (5, 1)$

27. $(3, -8), (-2, 5)$

28. $(1, \frac{1}{2}), (3, 2)$

29. $(\frac{1}{2}, 2), (-\frac{3}{2}, 4)$

30. $(0.2, 1.1), (7, 3)$

Example 4
(page 306)

Is the relationship shown by the data linear? If so, model it with an equation.

31.

x	y
-4	9
2	-3
5	-9
9	-17

32.

x	y
-10	-5
-2	19
5	40
11	58

33.

x	y
3	1
6	4
9	13
15	49

Example 5
(page 306)

34.

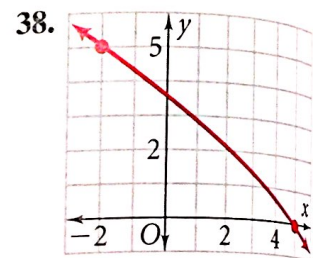
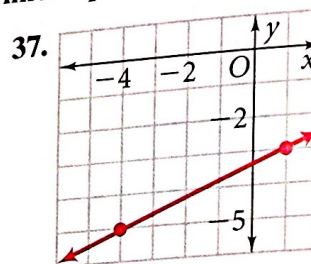
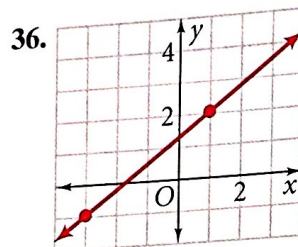
Speed Over Posted Speed (mi/h)	Fine (\$)
10	75
12	95
15	125
19	165

35.

Volume (gal)	Weight (lb)
0	0
2	16
4	33
6	50

B Apply Your Skills

Write an equation of each line in point-slope form.



Write one equation of the line through the given points in point-slope form and one in standard form using integers.

39. (1, 4), (-1, 1)

40. (6, -3), (-2, -3)

41. (0, 0), (-1, -2)

42. (0, 2), (-4, 2)

43. (-6, 6), (3, 3)

44. (2, 3), (-1, 5)

45. (5, -3), (3, 4)

46. (2, 2), (-1, 7)

47. (-7, 1), (5, -1)

48. (-8, 4), (-4, -2)

49. (2, 4), (-3, -6)

50. (5, 3), (4, 5)

51. (0, 1), (-3, 0)

52. (-2, 4), (0, -5)

53. (6, 2), (1, -1)

54. **Science** At the surface of the ocean, pressure is 1 atmosphere. At 66 ft below sea level, the pressure is 3 atmospheres. The relationship of pressure and depth is linear.

- Write an equation for the data.
- Predict the pressure at 100 ft below sea level.

55. **Environment** Worldwide carbon monoxide emissions are decreasing about 2.6 million metric tons each year. In 1991, carbon monoxide emissions were 79 million metric tons. Use a linear equation to model the relationship between carbon monoxide emissions and time. Let $x = 91$ correspond to 1991.

56. **a. Open-Ended** Write an equation in point-slope form that contains the point $(-4, -6)$. Explain your steps.

b. How many equations could you write in part(a)? Explain.

57. **Critical Thinking** How would the graph of $y - 12 = 8(x - 2)$ change if all of the subtraction signs were changed to addition signs?

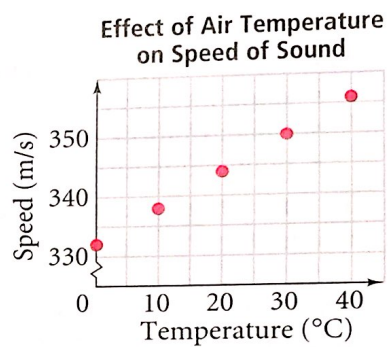
58. **Reasoning** Is $y - 5 = 2(x - 1)$ an equation of a line through $(4, 11)$? Explain.

PRESSURE INCREASES

- A scuba diver can descend to about 131 feet.
- The submersible *Alvin* can descend to about 2.5 miles.
- In 1960, the submersible *Trieste* descended to a record depth of 6.8 miles.

59. **Open-Ended** Write an equation in each of the following forms.
- slope-intercept form
 - standard form
 - point-slope form

60. **Science** Use the scatter plot.
- Write an equation to model the data.
 - What is the speed of sound at 15°C ?
 - Predict the speed of sound at 60°C .



C Challenge

Write an equation in slope-intercept form of each line described below.

- The line contains the point $(-3, -5)$ and has the same slope as $y + 2 = 7(x + 3)$.
- The line contains the point $(1, 3)$ and has the same y -intercept as $y - 5 = 2(x - 1)$.
- The line contains the point $(2, -2)$ and has the same x -intercept as $y + 9 = 3(x - 4)$.
- The table shows data that you can model using a linear function.
 - Find the value of y when $x = 6$.
 - Find the value of y when $x = 120$.
 - Find the value of x when $y = 11$.
 - Find the value of x when $y = 50$.

x	y
4	14
8	15.5
12	17
16	18.5