

Linear Equations - ANSWERS

L.1 Exercises

- | | | | |
|----------------|-----------------------------|---------------------------------|-------------------------|
| 1. linear | 3. equivalent | 5. empty set | 7. Equations, evaluated |
| 9. false | 11. false | 13. false | 15. equation |
| 17. expression | 19. not linear | 21. linear | 23. not linear |
| 25. yes | 27. no | 29. $\frac{5}{6}$ | 31. -2 |
| 33. -1 | 35. \mathbb{R} ; identity | 37. \emptyset ; contradiction | 39. $-\frac{2}{3}$ |
| 41. -6 | 43. $\frac{13}{66}$ | 45. -1 | 47. -12 |
| 49. 3 | 51. $\frac{5}{32}$ | 53. $\frac{145}{23}$ | 55. 2500 |

L.2 Exercises

- | | |
|--|------------------------------|
| 1. A and C | 3. $r = \frac{l}{pt}$ |
| 5. $m = \frac{E}{c^2}$ | 7. $b = 2A - a$ |
| 9. $l = \frac{P-2w}{2}$ or $l = \frac{P}{2} - w$ | 11. $\pi = \frac{s}{rs-r^2}$ |
| 13. $C = \frac{5}{9}(F - 32)$ | 15. $p = 2Q + q$ |
| 17. $q = \frac{T-B}{Bt}$ | 19. $R = \frac{d}{1-st}$ |
| 21. a. $C(n) = 1.9n + 5.1$ | 23. a. 50 mg |
| b. \$24.10 | b. $d = \frac{ac+12c}{a}$ |
| c. 13 km | c. 75 mg |
| 25. a. $C = 530x$ | 27. $W = \frac{A}{L}$ |
| b. 15900 | |
| 29. a. $t = \frac{l}{Pr}$ | |
| b. 2 year | |

L.3 Exercises

1. $x - 7$
5. $x^2 - y^2$
9. $\frac{3x}{10}$
13. $x^2 - x$
17. 348 and 349
21. 9, 11, 13
25. \$38600
29. \$18,000 at 4%
\$22,000 at 6%
33. \$8500
37. 5 ft by 15 ft
41. 8 kg of 28.50 \$/kg
17 kg of 22.25 \$/kg
45. 6.85 \$/oz
49. 33 %
53. ~2 hr 14 min
57. 12 min
3. $\frac{1}{2}(x + y)$
7. $n + (n + 1) + (n + 2) = 30$
11. $0.03x - 100$
15. $-\frac{48}{7}$
19. 11%
23. 23, 25, 27
27. ~196700
31. \$8,000 at 3.5%
\$29,000 at 4%
35. $38^\circ, 66^\circ, 76^\circ$
39. 5 nickels; 10 dimes
43. 320 adult tickets
47. 120 ml
51. 3 liters
55. 2.8 mi

L.4 Exercises

1. true
3. reversed
5. bounded
7. closed
9. $[-1, 5)$
11. $[-2, \infty)$
13. $x \leq 2$
15. $-1 \leq x < 4$
17. $(6, \infty)$
19. $(-\infty, 0]$



21. $[3, 7)$

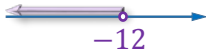


25. no

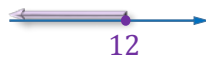
29. $(\frac{9}{7}, \infty)$



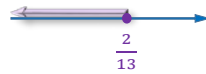
33. $(-\infty, -12)$



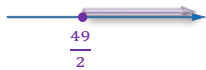
37. $(-\infty, 12]$



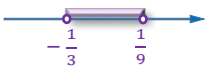
41. $(-\infty, \frac{2}{13}]$



45. $[\frac{49}{2}, \infty)$



49. $(-\frac{1}{3}, \frac{1}{9})$



53. $[\frac{9}{2}, 12)$



57. $5 - 3x \leq 7$
 $x \in [-\frac{2}{3}, \infty)$

61. $1 < \frac{x}{2} - 3 < 12$
 $x \in (8, 30)$

65. \$29.50

69. up to 20 cheques

23. $[0, 1]$



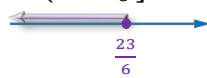
27. yes

31. $[-18, \infty)$

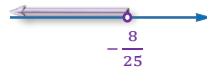


35. \emptyset (no solution)

39. $(-\infty, \frac{23}{6}]$



43. $(-\infty, -\frac{8}{25})$



47. $(-\frac{5}{3}, \frac{4}{3})$



51. $[\frac{40}{3}, \frac{56}{3}]$



55. $5x - 6 < -16$
 $x \in (-\infty, -2)$

59. $2(x + 1) \neq 14$
 $x \in (-\infty, 6) \cup (6, \infty)$

63. from 53 to 98

67. between 32°F and 86°F

L.5 Exercises

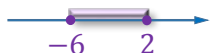
1. intersection

3. compound

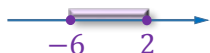
5. bounded

7. $\{1, 2, 3, 4, 5\}$ 9. $\{2, 4\}$ 11. $\{1, 2, 3, 4, 5\}$ 13. $\{1, 2, 3, 4, 5\}$ 15. $(-1, 5]$

17. $(-7, 10]$



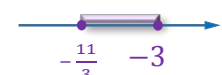
25. $[-6, 2]$



29. $(-\infty, -2)$



33. $[-\frac{11}{3}, -3]$



37. $[-12, \infty)$



41. $[\frac{9}{2}, 6]$



19. \emptyset

21. $(-\infty, \infty)$

27. $(-\infty, -2] \cup (5, \infty)$



31. $(-\infty, 3)$



35. \emptyset (no solution)

39. $[-\frac{1}{2}, \frac{1}{2}]$



43. $[0, \frac{2}{3}]$



45. at -37.9°F or below and at 674.1°F or above

47. between 7.5 and 20

L.6 Exercises

1. absolute value

3. multiplication; division; addition; subtraction

5. solution set; two

7. $2x^2$

9. $\frac{5}{|y|}$

11. $7x^4|y|^3$

13. $\frac{x^2}{|y|}$

15. $\frac{x^2}{2}$

17. $(x-1)^2$

19. a. \emptyset b. 1 c. 2

21. $\{-4, 4\}$

23. $\{-5, 11\}$

25. $\{0, \frac{10}{3}\}$

27. $\{-28, 16\}$

29. no solution

31. $\{-2, 2\}$

33. $\{-7, 8\}$

35. $\{-\frac{3}{5}, 5\}$

37. $\{-\frac{40}{3}, -\frac{20}{7}\}$

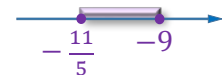
39. $\{\frac{20}{17}, \frac{40}{13}\}$

41. $(-7, -1)$

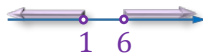
43. $(-\infty, 7] \cup [17, \infty)$



45. $[-\frac{11}{5}, 1]$



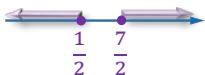
47. $(-\infty, 1) \cup (6, \infty)$



49. $[-72, 120]$



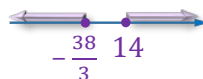
53. $(-\infty, \frac{1}{2}] \cup [\frac{7}{2}, \infty)$



57. $\{-6\}$

59. \emptyset

51. $(-\infty, -\frac{38}{3}] \cup [14, \infty)$



55. $[-5, -3]$



61. \mathbb{R}

63. If A is the solution set of $|x - a| < b$, then $\mathbb{R} \setminus A$ is the solution set of $|x - a| \geq b$.

65. 59 km/h; 63 km/h

67. a. $|I - 39000| > 5000$ b. $I \in (-\infty, 34000) \cup (44000, \infty)$

69. $|T - 37| \leq 0.6$