

Linear Equations - ANSWERS

L1 Exercises

- | | | | |
|-------------|-----------------------------|---------------------------------|--------------------|
| 1. true | 3. false | 5. true | 7. expression |
| 9. equation | 11. linear | 13. not linear | 15. linear |
| 17. yes | 19. No | 21. $\frac{5}{6}$ | 23. -2 |
| 25. -1 | 27. $\mathbb{R}$; identity | 29. $\emptyset$; contradiction | 31. $-\frac{2}{3}$ |
| 33. -6 | 35. $\frac{13}{66}$ | 37. -1 | 39. -12 |
| 41. 3 | 43. $\frac{5}{32}$ | 45. $\frac{145}{23}$ or 6.30435 | 47. 2500 |

L2 Exercise

- | | |
|--|-------------------------------|
| 1. B and C | 3. $r = \frac{I}{Pt}$ |
| 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. $C(n) = 1.9n + 3.2$ | 23. a. 5 ml |
| b. \$22.20 | b. $d = \frac{c(a+12)}{a}$ |
| c. 15 km | c. 15 ml |
| 25. a. $C = 1060d$ | 27. $W = \frac{P-2L}{2}$ |
| b. 7420 | |
| 29. a. $t = \frac{I}{Pr}$ | 31. a. $k = 120$; $N = 120P$ |
| b. 3 years | b. 75,778,800 bottles |
| 33. 67 g | 37. \$3000 |
| 35. ~ 7.5 cm | 41. ~ 105 barrels |
| 39. The area would decrease by 25% | |

L3 Exercises

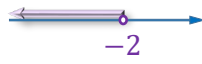
1. $x - 7$
5. $x^2 - y^2$
9. $\frac{3x}{10}$
13. $x^2 - x$
17. 238 and 239
21. 11, 13, 15
25. \$1850
29. \$9000 at 3%
\$42000 at 6.5%
33. \$4800
37. 8 ft by 16 ft
41. 12 kg of pecans
18 kg of cashews
45. 8.22 \$/kg
49. 375 ml
53. a. 1 hr 51 min; b. 1 hr 23 min
57. 1 min 12 sec
3. $\frac{1}{2}(x + y)$
7. $n + (n + 1) + (n + 2) = 30$
11. $0.03x - 100$
15. 8
19. 86.9%
23. 33, 35, 37
27. ~158700
31. \$6000 at 4.5%
\$8000 at 5.25%
35. $39^\circ, 63^\circ, 78^\circ$
39. 7 nickels; 9 dimes
43. 126 tickets for adults; 52 tickets for children
47. 20 grams
51. 40 ml
55. 6 km

L4 Exercises

1. $[2, 3]$
5. $x > 3$

9. $[-5, \infty)$

3. $(-\infty, 4)$
7. $-7 \leq x \leq 5$

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


13. $(-4, 1)$



17. yes

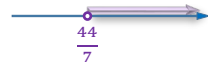
21. $(-\infty, 2]$



25. $[-9, \infty)$



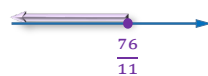
29. $(\frac{44}{7}, \infty)$



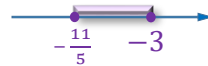
33. $(-\infty, \frac{3}{2}]$



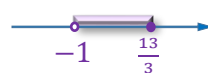
37. $(-\infty, \frac{76}{11}]$



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



45. $(-1, \frac{13}{3}]$



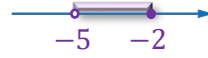
49. $3x + 2 \geq 8$
 $x \in [2, \infty)$

53. $-6 < 2x < 8$
 $x \in (-3, 4)$

57. up to 112 days

61. more than \$30,000

15. $(-5, -2]$



19. yes

23. $(15, \infty)$



27. $(-\infty, \infty) = \mathbb{R}$



31. $(-\infty, \frac{57}{34})$



35. $(\frac{17}{5}, \infty)$



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



43. $(10, 14)$



47. $x + 5 > 12$
 $x \in (7, \infty)$

51. $\frac{1}{2}(x + 3) \leq 12$
 $x \in (-\infty, 21]$

55. at least 87%

59. between -5°C and 20°C

63. 85 cheques

L5 Exercises

1. $\{1, 3\}$

3. $\{1, 3, 5\}$

5. $\emptyset$

7. $\{5\}$

9. $[1, 3]$

11. $(0, 7]$

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

15. $\{1\}$

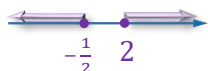
17. $(-2, \infty)$



25. $[6, \infty)$



29. $(-\infty, \infty) = \mathbb{R}$



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

19. $(-\infty, -2) \cup (5, \infty)$



21. $(-2, 1)$



27. $(\frac{14}{3}, \frac{22}{3}]$



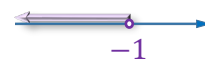
31. $(0, \infty)$



35. $[-4, 7)$



23. $(-\infty, -1)$



37. 8.5 to 11.5 hr/day
39. at least 14 and at most 24
41. a. $\{\text{Education, Humanities, Nursing, Veterinary Medicine}\}$
 b. $\{\text{Nursing}\}$
 c. $\{\text{Education, Humanities, Business, Mathematics, Dentistry, Veterinary Medicine}\}$
 d. $\{\text{Business, Mathematics, Dentistry}\}$

L6 Exercises

1. $2x^2$

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

5. $7x^4|y|^3$ or $7x^4y^2|y|$

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

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

11. $(x-1)^2$

13. a. $\emptyset$ b. 1 c. 2

15. $\{-4, 4\}$

17. $\{-5, 11\}$

19. $\{0, \frac{10}{3}\}$

21. $\{-28, 16\}$

23. no solution

25. $\{-2, 2\}$

27. $\{-7, 8\}$

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

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

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