

47. The values for  $a$  and  $b$  are reversed;  $\frac{3}{15} = \frac{p}{100}$ ,  $1.5p = 300$ ,  $p = 200\%$ . 49. \$181 51.  $29\frac{1}{6}\%$   
 53. 25 students 55. F 57. 14.4 cm 58. 18 cans  
 59.  $c = 1.75 + 2.4(m - \frac{1}{8})$ ;  $2\frac{5}{8}$  mi 60. 1250%  
 61. 0.6 62. 175%

**Lesson 2-10 pp. 144-150**

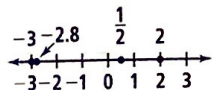
**Got It?** 1. about 32% 2. about 17% 3. about 16%  
 4. 65.5 in. and 66.5 in. 5. It would be smaller since the measurement of each dimension is closer to the actual value of each dimension.

**Lesson Check** 1. about 2% 2. about 61% 3. 7.25 ft and 7.75 ft 4a. percent decrease b. percent decrease c. percent increase 5. 0.05 m 6. A percent increase involves an increase of the original amount and a percent decrease involves a decrease of the original amount.

**Exercises** 7. increase; 50% 9. decrease; 7%  
 11. decrease; 4% 13. increase; 54% 15. increase; 27%  
 17. about 55% 19. about 13% 21. 1.05 kg; 1.15 kg  
 23. about 28% 25. 175% increase 27. 42% decrease  
 29. 39% increase 31. 48.75 m<sup>2</sup>; 63.75 m<sup>2</sup>

33. 505.25 ft<sup>2</sup>; 551.25 ft<sup>2</sup> 37. The original amount is 12, not 18;  $\frac{18-12}{12} = \frac{6}{12} = 0.5 = 50\%$ . 39. 12.63

41a. 21% b. 21% c. 21%; sample: the new length is 1.1 times as great as the original length.  $1.1^2 = 1.21$  or 121%, which shows a 21% increase over the original amount of 100%. 43. l 45.  $66\frac{2}{3}\%$  46. 64.75 47. 21 48-51.



$-3, -2.8, \frac{1}{2}, 2$

**Chapter Review pp. 152-156**

1. inverse operations 2. identity 3. rate 4. scale  
 5. cross products 6. -7 7. 7 8. 14 9. 65 10. 3.5  
 11. -4 12. -5 13. -8 14. \$6.50 15. Add. Prop. of Eq.; Simplify; Div. Prop. of Eq.; Simplify. 16. 11 17. 8  
 18. -7.5 19.  $3\frac{18}{85}$  20. 28 21. 14.7 22.  $4h + 8h + 50 = 164$ ; \$9.50 23.  $37t + 8.50t + 14.99 = 242.49$ ; 5 tickets 24. -90 25. 7.2 26. identity 27. no solution  
 28.  $8h = 16 + 6h$ ; 8 ft 29.  $\frac{d}{65} = \frac{d}{130} + 3$ ; 390 mi  
 30.  $x = \frac{-c}{a+b}$  31.  $x = -t - r$  32.  $x = \frac{m-p}{5}$   
 33.  $x = \frac{pqs}{p+q}$  34. 40 cm 35. 15 mm 36. 16 in.  
 37. 78 in. 38. 71 oz 39. 2.25 min 40. 3960 yd  
 41. 240 loaves 42. about 6 lb 43.  $\frac{5}{11}$  s or about 0.45 s  
 44. 21 45. -4 46. 1.6 47. 21 48. 39 49. -1  
 50. 12 in. 51. 42 in. 52. 300% 53. 108 54. 170  
 55. 60 seeds 56. 30% 57. 72 students 58. increase;

- 11% 59. decrease; 20% 60. decrease; 11% 61. increase; 32% 62. about 47% 63. about 39% 64. Yes; 50% of 38° is 19° and  $38^\circ + 19^\circ = 57^\circ$ .

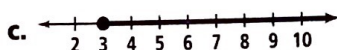
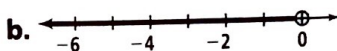
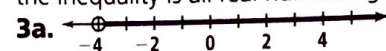
**Chapter 3**

**Get Ready! p. 161**

1.  $>$  2. = 3.  $>$  4.  $<$  5. 7 6. -4 7. 1 8. 2 9. 3  
 10. -12 11. 32.4 12. 23 13. 29.5 14. -28 15. -12  
 16. 48 17. 5 18. -24 19. -10 20. 1.85 21. -24  
 22. -2 23. 3 24. 60 25. -4 26. 3 27.  $\frac{1}{2}$  28. 2.5  
 29. 4.1 30. 24 31. Answers may vary. Sample: Two inequalities are joined together. 32. Answers may vary. Sample: the part that the two groups of objects have in common

**Lesson 3-1 pp. 164-170**

**Got It?** 1a.  $p \geq 1.5$  b.  $t + 7 < -3$  2a. 1 and 3  
 b. The solution of the equation is -2. The solution of the inequality is all real numbers greater than -2.

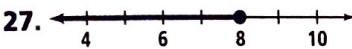
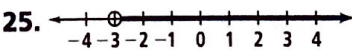
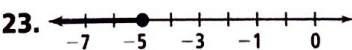
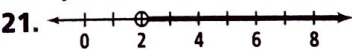


4a.  $x < -3$  b.  $x \geq 0$  5. No; the speed limit can only be nonnegative real numbers.

**Lesson Check** 1.  $y \geq 12$  2a. no b. no c. yes d. yes  
 3. 4.  $x \leq -3$

5. Substitute the number for the variable and simplify. If the number makes the inequality true, then it is a solution of the inequality. 6. Answers may vary. Sample:  $x \geq 0$ , whole numbers, a baseball team's score during an inning, amount in cubic centimeters of liquid in a chemistry beaker;  $x > 0$ , counting numbers, length of a poster, distance in blocks between your house and a park  
 7. Check students' work.

**Exercises** 9.  $b < 4$  11.  $\frac{k}{9} > \frac{1}{3}$  13a. yes b. no c. yes  
 15a. yes b. no c. no 17. D 19. A



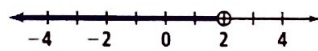
29.  $x > -4$  31.  $x \geq 2$  33.  $x \geq 5$  35. Let  $p$  = the number of people seated;  $p \leq 172$ . 37. Let  $w$  = number of watts of the light bulb;  $w \leq 75$ . 39. Let  $m$  = amount of money earned;  $m > 20,000$ . 41. Check students' work. 43.  $x \leq 186,000$  45.  $b$  is greater than 0. 47.  $z$  is

greater than or equal to 25.6. **49.** 21 is greater than or equal to  $m$ . **51.** 2 less than  $g$  is less than 7. **53.**  $r$  more than 6 is greater than  $-2$ . **55.** 1.2 is greater than  $k$ . **57.** Answers may vary. Sample: *No more than* means "is less than or equal to," since the amount cannot be greater than the given number. *No less than* means "is greater than or equal to," since the amount cannot be less than the given number. **59.**  $998 > 978$ , so Option A  $>$  Option B. **61.** Answers may vary. Sample: Use reasoning or guess and check to see that the values of  $x$  that are less than 3 make the inequality true. **63.** line graph that shows an open circle at  $-3$  stretching to shaded circle at 3 **65.** C **67.** A **69.** increase; 20% **70.** decrease; 10% **71.** decrease; 67% **72.** 44 **73.**  $-\frac{5}{24}$  **74.**  $-3$  **75.**  $-1\frac{3}{7}$  **76.** 11 **77.**  $-2$  **78.**  $-11$  **79.**  $-\frac{1}{9}$

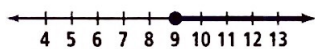
**Lesson 3-2**

pp. 171-177

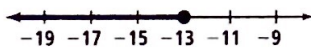
**Got It?** 1.  $n < 2$



2.  $m \geq 9$



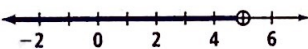
3.  $y \leq -13$



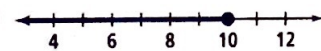
**4a.**  $p \geq 8$  **b.** Yes. The  $\geq$  symbol can be used to represent all 3 phrases.

**Lesson Check**

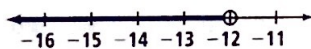
1.  $p < 5$



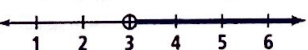
2.  $d \leq 10$



3.  $y < -12$



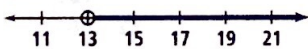
4.  $c > 3$



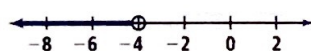
**5.**  $w \leq 524$  **6.** Add or subtract the same number from each side of the inequality. **7a.** Subtract 4 from each side. **b.** Add 1 to each side. **c.** Subtract 3 from each side. **d.** Add 2 to each side. **8.** They are similar in that 4 is being added to or subtracted from each side of the inequalities. They are different in that one inequality adds 4 and the other subtracts 4.

**Exercises 9.** 6 **11.** 3.3

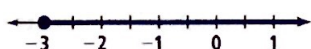
13.  $y > 13$



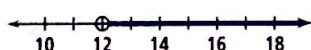
15.  $c < -4$



17.  $t \geq -3$



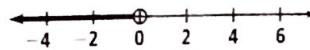
19.  $p > 12$



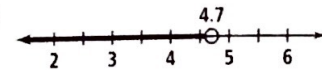
21.  $f > \frac{1}{3}$



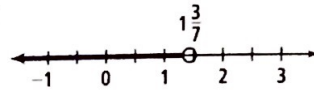
23.  $r < 0$



25.  $s < 4.7$

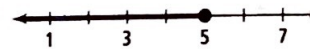


27.  $c < 1\frac{3}{7}$

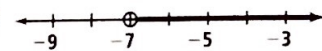


29. 3 **31.** 4.2

33.  $x \leq 5$



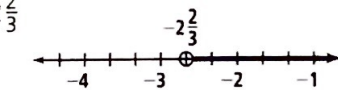
35.  $c > -7$



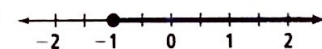
37.  $a \geq -1$



39.  $n > -2\frac{2}{3}$



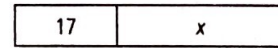
41.  $d \geq -1$



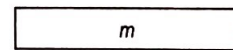
**43.**  $3 + 4 + g \geq 10$ ;  $g \geq 3$  **45.** Add 4 to each side.

**47.** Add  $\frac{1}{2}$  to each side. **49.** yes

**51.** |-----51-----|



**53.** |-----3-----13-----|



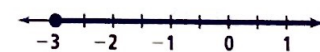
**55.**  $d \leq 2$  **57.**  $-4\frac{4}{5} > p$  **59.**  $-1.2 > z$  **61.**  $p > 12$

**63.**  $h \geq -\frac{7}{8}$  **65.**  $5\frac{7}{16} \geq m$  **67a.** yes **b.** No; in the first

inequality,  $r$  is greater than or equal to the amount. In the second inequality,  $r$  is less than or equal to the amount.

**c.** In part (a), these are equations with only one solution. In part (b), because the inequality relationship is different, there is no relationship between the two inequalities.

**69.** Answers may vary. Sample: 94, 95, or 96. **71.** The graph should be shaded to the right, not the left.

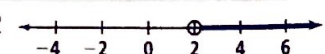


**73a.** No; the solution should be  $a \geq 8.6 - 3.2$ , or  $a \geq 5.4$ . **b.** Answers may vary. Sample: Other numbers that are not substituted could also be solutions to the inequality. **75.** at least \$88.74 **77.** True **79.** Not true; sample:  $x = 5$ ,  $y = 3$ ,  $w = 4$

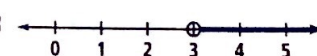
**Lesson 3-3**

pp. 178-183

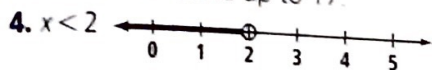
**Got It?** 1.  $c > 2$



2.  $n > 3$

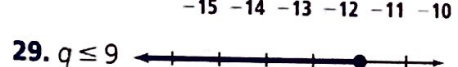
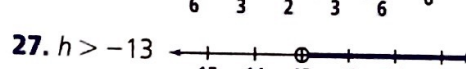
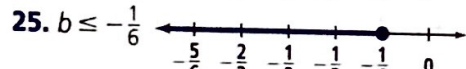
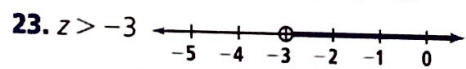
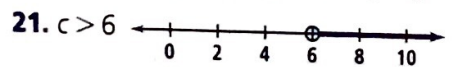
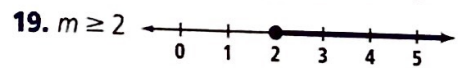
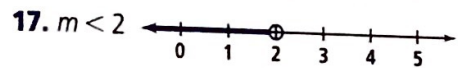
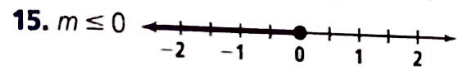
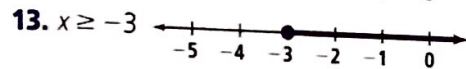
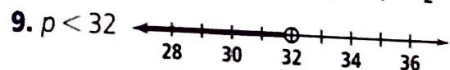
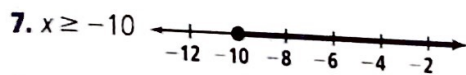


3a. 1, 2, 3, or 4 cases **b.**  $\frac{75}{450} = 16\frac{2}{3}$ , but you cannot walk  $\frac{2}{3}$  of a dog. If you round down to 16, you will only make \$72. So round up to 17.



**Lesson Check 1.** D **2.** B **3.** A **4.** C **5a.** Multiplication by  $-2$ ; it is the inverse of division by  $-2$ . **b.** Addition of 4; it is the inverse of subtraction of 4. **c.** Division by  $-6$ ; it is the inverse of multiplication by  $-6$ . **6.** The inequality symbol was not reversed when multiplying by a negative.  
 $-5\left(-\frac{n}{5}\right) < -5(2), n < -10$

### Exercises



31. no more than 66 text messages **33-35.** Answers may vary. Samples are given. **33.**  $-5, -4, -3, -2$   
**35.**  $-6, -5, -4, -3$  **37.** Multiply each side by  $-4$  and reverse the inequality symbol. **39.** Divide each side by 5.  
**41.**  $-2$  **43.** 4 **45.** Sometimes true; sample: It is true when  $x = 4$  and  $y = 0.5$  but false when  $x = 4$  and  $y = -2$ . **47.** Sometimes true; sample: It is true when  $x = 4$  and  $y = 2$  but false when  $x = 0$  and  $y = 2$ .  
**49.** at least 0.08 mi per min

51.  $3(-1) \geq 3\left(\frac{t}{3}\right)$  Mult. Prop. of Ineq.  
 $-3 \geq t$  Simplify.

53.  $2(0.5) \leq 2\left(\frac{1}{2}c\right)$  Mult. Prop. of Ineq.  
 $1 \leq c$  Simplify.

55.  $5\left(\frac{n}{5}\right) \leq 5(-2)$  Mult. Prop. of Ineq.  
 $n \leq -10$  Simplify.

57.  $-\frac{7}{5}(1) > -\frac{7}{5}\left(-\frac{5}{7}s\right)$  Mult. Prop. of Ineq.  
 $-\frac{7}{5} > s$  Simplify.

59. If the most expensive sandwiches and drinks are ordered, the cost is  $3(7) + 3(2) = 27$ , leaving \$3. If the most expensive snack is bought, the least number of snacks you can afford is 1. If the least expensive sandwiches and drinks are ordered, the cost is  $3(4) + 3(1) = 15$ , leaving \$15. If the least expensive snack is bought, the greatest number of snacks you can afford is 15. **61.**  $x < 20, x < 30, x < 40, \dots$ ; any inequality following the one that  $a$  is a solution to. This is because each following inequality has the same solutions as the previous inequalities, with more values as solutions.

**63.**  $3.14d > 29.5$  and  $d > 9.4$ , so the men's basketballs need a 10-in. box;  $3.14d > 27.75, d > 8.8$  so the youth basketballs need a 9-in. box. **65.** D **67.**  $w = \ell - 3, 18 = 2\ell + 2(\ell - 3), 18 = 4\ell - 6, 24 = 4\ell$ , so  $\ell = 6$  (Length is 6 in.). **68.**  $x \leq -11$  **69.**  $y \geq 13.6$  **70.**  $q < 5$  **71.**  $-\frac{1}{4} > c$  **72.**  $-1 < b$  **73.**  $y \leq 75$  **74.** 2 **75.**  $-2$  **76.** 1

### Lesson 3-4

pp. 186-192

**Got It? 1a.**  $a \geq -4$  **b.**  $n < 3$  **c.**  $x < 25$  **2.** any width greater than 0 ft and less than or equal to 6 ft **3.**  $m \leq -3$   
**4a.**  $b > 3$  **b.** Answers may vary. Sample: adding 1 to each side. This would gather the constant terms onto one side of the inequality. **5a.** no solution **b.** all real numbers  
**Lesson Check 1.** **a.**  $a > 2$  **2.**  $t \leq 5$  **3.**  $z < 13$  **4.** no solution **5.** greater than 0 cm and less than or equal to 8 cm **6.** The variable terms cancel each other out and a false inequality results. **7.** Yes; each side can be divided by 2 first. **8.** No; there is no solution, since  $-6$  is not greater than itself. If the inequality symbol were  $\geq$ , your friend would be correct.

**Exercises 9.**  $f \leq 3$  **11.**  $y > -2$  **13.**  $r \geq 3.5$   
**15.**  $5s \geq 250; s \geq 50$  mph **17.**  $k \geq 1$  **19.**  $j < -1$   
**21.**  $z < 9$  **23.**  $x < 3$  **25.**  $f \leq 6$  **27.**  $m \geq -5$  **29.** all real numbers **31.** all real numbers **33.** all real numbers  
**35.**  $x \geq -4$  **37.**  $t \geq \frac{9}{5}$  **39.**  $n \geq -2$  **41.**  $a \geq 0.5$   
**43.**  $k \leq \frac{13}{6}$  **45.** 5.5 h **47.** D **49a.**  $v \geq 4$  **b.**  $4 \leq v$   
**c.** They are equivalent. **d.** Check students' work. **51.** at least \$3750 **53.**  $3y$  was subtracted from instead of added to each side;  $7y \leq 2, y \leq \frac{2}{7}$ . **55.**  $-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$ , and 6 **57a.** 73 boxes **b.** 4 trips

### Lesson 3-5

pp. 194-199

**Got It? 1.**  $N = \{2, 4, 6, 8, 10, 12\}; N = \{x | x \text{ is an even natural number, } x \leq 12\}$  **2.**  $\{n | n < -3\}$   
**3a.**  $\{\}$  or  $\emptyset, \{a\}, \{b\}, \{a, b\}; \{\}$  or  $\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}$  **b.** Yes; every element of set  $A$  is part of set  $B$ , since  $-3 < 0$ . **4.**  $A' = \{\text{February, April, June, September, November}\}$

**Lesson Check 1.**  $G = \{1, 3, 5, 7, 9, 11, 13, 15, 17\}$ ;

$G = \{x \mid x \text{ is an odd natural number, } x < 18\}$

**2.**  $\{d \mid d \leq 3\}$  **3.**  $\{\}$  or  $\emptyset$ ,  $\{4\}$ ,  $\{8\}$ ,  $\{12\}$ ,  $\{4, 8\}$ ,  $\{4, 12\}$ ,  $\{8, 12\}$ ,  $\{4, 8, 12\}$  **4.**  $W' = \{\text{spring, summer, fall}\}$  **5.**  $A$ ; its complement is the set of all elements in the universal set that are not in  $A$ . **6a.** Yes; the empty set is a subset of every set. **b.** No; the number 5 in the first set is not an element of the second set. **c.** Yes; the element in the first set is also an element of the second set. **7.** sometimes **8.** The student forgot that 0 is also a whole number.

**Exercises 9.**  $\{0, 1, 2, 3\}$ ;  $\{m \mid m \text{ is an integer, } -1 < m < 4\}$  **11.**  $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ;  $\{p \mid p \text{ is a natural number, } p < 11\}$  **13.**  $\{y \mid y \geq 4\}$  **15.**  $\{m \mid m > -5\}$  **17.**  $\{p \mid p \geq 1\}$  **19.**  $\{\}$  or  $\emptyset$ ,  $\{a\}$ ,  $\{e\}$ ,  $\{i\}$ ,  $\{o\}$ ,  $\{a, e\}$ ,  $\{a, i\}$ ,  $\{a, o\}$ ,  $\{e, i\}$ ,  $\{e, o\}$ ,  $\{i, o\}$ ,  $\{a, e, i\}$ ,  $\{a, e, o\}$ ,  $\{a, i, o\}$ ,  $\{e, i, o\}$ ,  $\{a, e, i, o\}$  **21.**  $\{\}$  or  $\emptyset$ ,  $\{\text{dog}\}$ ,  $\{\text{cat}\}$ ,  $\{\text{fish}\}$ ,  $\{\text{dog, cat}\}$ ,  $\{\text{dog, fish}\}$ ,  $\{\text{cat, fish}\}$ ,  $\{\text{dog, cat, fish}\}$  **23.**  $\{\}$  or  $\emptyset$ ,  $\{1\}$  **25.**  $\{1, 4, 5\}$  **27.**  $\{\dots, -4, -2, 0, 2, 4, \dots\}$

**29.**  $A' = \{\text{Tuesday, Thursday, Friday, Saturday}\}$  **31.** False; some elements of  $U$  are not elements of  $B$ . **33.** True; the empty set is a subset of every set. **35.**  $M = \{m \mid m \text{ is odd integer, } 1 \leq m \leq 19\}$  **37.**  $G = \{g \mid g \text{ is an integer}\}$

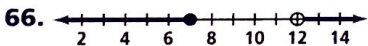
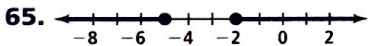
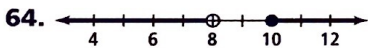
**39.**  $\{\text{Mercury, Venus, Earth}\}$  **41.**  $\{\}$  or  $\emptyset$  **43.**  $\{x \mid x \leq 0\}$

**45.**  $\{\}$  or  $\emptyset$  **47.**  $T' = \{x \mid x \text{ is an integer, } x \leq 0\}$  **49.** 1

**51.** 512 **53.** A **55.** D **57.** Mum's Florist:  $\frac{\$26.40}{24} = \$1.025$

each. First Flowers Florist:  $\frac{\$7.50}{6} = \$1.25$  each. Mum's Florist has a lower cost per rose. **58.**  $b > 8$  **59.**  $t \leq 5$

**60.**  $z < 13$  **61.** 6 **62.** -3 **63.** 3

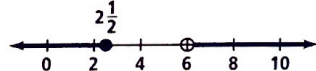


### Lesson 3-6

pp. 200-206

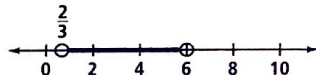
**Got It? 1a.**  $-4 \leq x < 6$

**b.**  $x \leq 2\frac{1}{2}$  or  $x > 6$



**c.**  $x$  is between -5 and 7 does not include -5 or 7. Inclusive means that -5 and 7 are included.

**2.**  $\frac{2}{3} < y < 6$



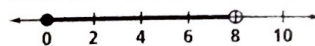
**3.** Answers may vary. Sample: No, to get a B, the average of the 4 tests must be at least 84. If  $x$  is the 4th test score,  $\frac{78 + 78 + 79 + x}{4} \geq 84$ ,  $235 + x \geq 336$ , and  $x \geq 101$ , which is impossible.

**4.**  $y > 3$  or  $y \leq -2$

**5a.**  $-2 < x \leq 7$

**b.**  $(7, \infty)$

**Lesson Check 1.**  $0 \leq x < 8$



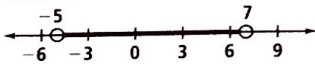
**2.**  $1 \leq r < 4$

**3.**  $85 \leq x \leq 100$  **4.**  $x \leq 6$ ;  $(-\infty, 6)$  **5.** A, C, and D

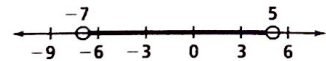
**6.** Answers may vary. Sample: The bracket indicates a specific number is part of the solution. The symbol  $\infty$  means that the numbers continue without end. So a parenthesis should follow. **7.**  $x \leq 7$  or  $x > 7$ ;  $(-\infty, \infty)$

**8.** The graph of a compound inequality with the word *and* contains the overlap of the graphs that form the inequality. The graph of a compound inequality with the word *or* contains both of the graphs that form the inequality.

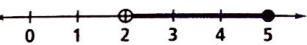
**Exercises 9.**  $-5 < x < 7$



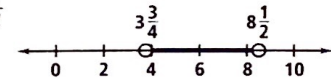
**11.**  $-7 < k < 5$



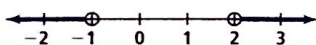
**13.**  $2 < p \leq 5$



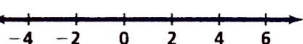
**15.**  $3\frac{3}{4} < x < 8\frac{1}{2}$



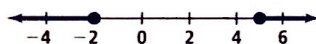
**17.**  $b < -1$  or  $b > 2$



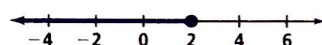
**19.**  $d \geq 2$  or  $d < 2$



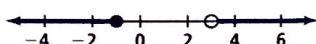
**21.**  $y \leq -2$  or  $y \geq 5$



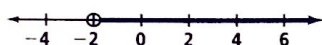
**23.**  $x \leq 2$



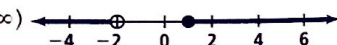
**25.**  $x \leq -1$  or  $x > 3$



**27.**  $(-2, \infty)$



**29.**  $(-\infty, -2)$  or  $[1, \infty)$



**31.**  $(1, 6]$  **33.**  $(-\infty, -5)$  or  $[5, \infty)$  **35.**  $-3 < x < 4$

**37.**  $3 \leq x < 6$  **39.**  $2\frac{2}{3} \leq v \leq 6$  **41.**  $-4\frac{1}{12} \leq w < 12\frac{1}{4}$

**43.**  $4 < x < 14$  **45.** any length greater than 6 ft and less than 36 ft **47.** any length greater than 11 m and less than 23 m **49.** any real number except 4

**51a.**  $102.5 \leq R \leq 184.5$  **b.** 22 years old **53.** B

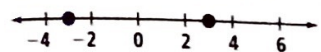
**55.**  $35 \leq 10.4 + 0.0059g \leq 50$ ,  $24.6 \leq 0.0059g \leq 39.6$ ,  $4169.49 \leq g \leq 6711.86$ ; minimum water consumption is 4169 gal and maximum water consumption is about 6712 gal. **56.**  $\{\}$  or  $\emptyset$ ,  $\{1\}$ ,  $\{3\}$ ,  $\{5\}$ ,  $\{7\}$ ,  $\{1, 3\}$ ,  $\{1, 5\}$ ,  $\{1, 7\}$ ,

{3, 5}, {3, 7}, {5, 7}, {1, 3, 5}, {1, 3, 7}, {1, 5, 7}, {3, 5, 7}, {1, 3, 5, 7} **57.**  $B' = \{1, 2, 3, 5, 7, 15\}$  **58.** no **59.**  $\frac{1}{3} < b$   
**60.**  $n \leq 3$  **61.**  $7 \geq r$  **62.** = **63.** > **64.** >

### Lesson 3-7

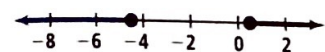
pp. 207-213

**Got It? 1.**  $n = 3$  and  $n = -3$



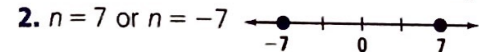
**2.** The 80 represents your friend's starting distance from you. The 5 represents your friend's constant speed of 5 ft/s. She is 60 ft away at 4 s and 28 s. **3.** no solution

**4.**  $x \geq 0.5$  or  $x \leq -4.5$

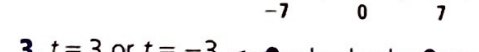


**5a.**  $|w - 32| \leq 0.05$ ;  $31.95 \leq w \leq 32.05$  **b.** No; 213 is part of the absolute value expression. You cannot add 213 until after you write the absolute value inequality as a compound inequality.

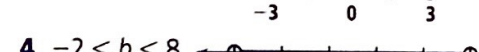
**Lesson Check 1.**  $x = 5$  or  $x = -5$



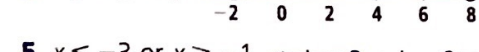
**2.**  $n = 7$  or  $n = -7$



**3.**  $t = 3$  or  $t = -3$



**4.**  $-2 < h < 8$

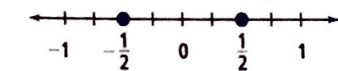


**5.**  $x \leq -3$  or  $x \geq -1$

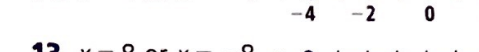


**6.** 2; there are two values on a number line that are the same distance from 0. **7.** The absolute value cannot be equal to a negative number since distance from 0 on a number line must be nonnegative. **8.** Answers may vary. Sample: The equation is set equal to 2 and -2. The first inequality is set to be  $\leq 2$  and  $\geq -2$ . The second inequality is set to be  $\geq 2$  or  $\leq -2$ .

**Exercises 9.**  $b = -\frac{1}{2}$  or  $b = \frac{1}{2}$



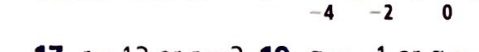
**11.**  $n = 4$  or  $n = -4$



**13.**  $x = 8$  or  $x = -8$



**15.**  $m = 3$  or  $m = -3$

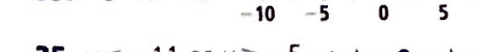


**17.**  $r = 13$  or  $r = 3$  **19.**  $g = -1$  or  $g = -5$  **21.** no solution

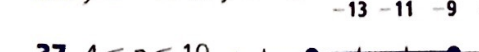
**23.**  $v = 6$  or  $v = 0$  **25.**  $f = 1.5$  or  $f = -2$

**27.**  $y = 3$  or  $y = 0$  **29.** no solution **31.** no solution

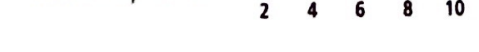
**33.**  $-5 < x < 5$



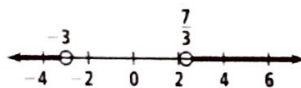
**35.**  $y \leq -11$  or  $y \geq -5$



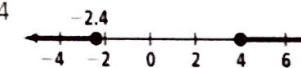
**37.**  $4 \leq p \leq 10$



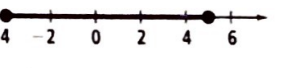
**39.**  $t < -3$  or  $t > \frac{7}{3}$



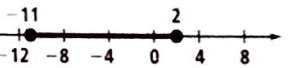
**41.**  $t \leq -2.4$  or  $t \geq 4$



**43.**  $-4 \leq v \leq 5$



**45.**  $-11 \leq f \leq 2$



**47.** any length between 89.95 cm and 90.05 cm, inclusive

**49.**  $d = 9$  or  $d = -9$  **51.** no solution **53.**  $y = 3.4$  or

$y = -0.6$  **55.**  $c = 8.2$  or  $c = -0.2$  **57.**  $-6\frac{1}{4} < n < 6\frac{1}{4}$

**59.**  $-8 < m < 4$  **61.**  $49^\circ\text{F} \leq T \leq 64^\circ\text{F}$  **63.** The 200 represents your friend's starting distance from you. The 18 represents your friend's constant speed of 18 ft/s.

$t = 4\frac{4}{9}$  s and  $17\frac{7}{9}$  s **65.**  $-1 \leq y + 7 \leq 1$ ,  $-8 \leq y \leq -6$

**67.** Answers may vary. Sample: To be more than 1 unit away from -5 on a number line means  $x + 5 > 1$  or  $x + 5 < -1$ .

**69a.** between 193.74 g and 209.26 g, inclusive **b.** Yes; answers may vary. Sample: Some nickels could weigh more and some could weigh less, and their average could be the official amount.

**71.**  $|x| < 4$

**73.**  $|x - 6| > 2$  **75.** between 89.992 mm and

90.008 mm, inclusive **77.** 2 **79.** 3 **81.** always

**83.** 4.265 **85.** 5 **87.** 120 **88.**  $-282 \leq e \leq 20,320$

**89.**  $36.9 \leq T \leq 37.5$  **90.**  $2x + 10$  **91.**  $-3y + 21$

**92.**  $4\ell + 5$  **93.**  $-m + 12$  **94.**  $A = \{x | x \text{ is a whole number, } x < 10\}$

**95.**  $B = \{x | x \text{ is an odd integer, } 1 \leq x \leq 7\}$

**96.**  $C = \{-14, -12, -10, -8, -6\}$

**97.**  $D = \{8, 9, 10, 12, 14, 15, 16\}$

### Lesson 3-8

pp. 214-220

**Got It? 1a.**  $P = \{0, 1, 2, 3, 4\}$ ;  $Q = \{2, 4\}$ ;

$P \cup Q = \{0, 1, 2, 3, 4\}$  **b.** Answers may vary. Sample: If

$B \subseteq A$ , then  $A \cup B$  will contain the same elements as

$A$ . **2a.**  $A \cap B = \{2, 8\}$  **b.**  $A \cap C = \emptyset$  **c.**  $C \cap B =$

$\{5, 7\}$  **3.**  $A$  and  $E$  **4.** 10 **5a.**  $\{x | x \geq 3\} \cap \{x | x < 6\}$

**b.**  $\{x | x < -2\} \cup \{x | x > 5\}$

**Lesson Check 1.**  $X \cup Y = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

**2.**  $X \cap Y = \{2, 4, 6, 8, 10\}$  **3.**  $X \cap Z = \emptyset$  **4.**  $Y \cup Z =$

$\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$  **5.** 31 people **6.**  $A \cup B$

contains more elements because it contains all the

elements in both sets. **7.** The union of sets is the set that

contains all elements of each set. The intersection of sets is

the set of elements that are common to each set. **8.** true

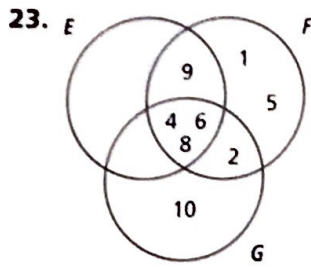
**9.** false

**Exercises 11.**  $A \cup C = \{1, 2, 3, 4, 5, 7, 10\}$

**13.**  $B \cup C = \{0, 2, 4, 5, 6, 7, 8, 10\}$  **15.**  $C \cup D = \{1, 2,$

$3, 5, 7, 9, 10\}$  **17.**  $A \cap C = \emptyset$  **19.**  $B \cap C = \{2\}$

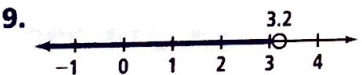
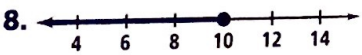
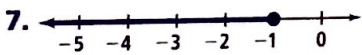
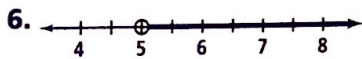
**21.**  $C \cap D = \{5, 7\}$



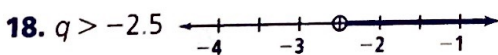
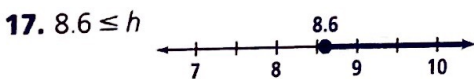
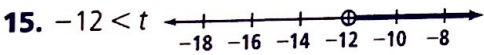
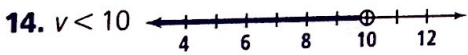
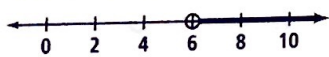
25. 10 girls 27.  $\{x|x > -3\} \cap \{x|x < \frac{19}{3}\}$   
 29.  $\{w|w \leq -\frac{3}{4}\} \cup \{w|w \geq 1\}$  31.  $\{x|x < -7\} \cup \{x|x > 21\}$  33.  $W \cup Y \cup Z = \{0, 2, 3, 4, 5, 6, 7, 8\}$   
 35.  $W \cap X \cap Z = \{6\}$  37. 62 patients 39.  $A \cap B = A$   
 41.  $\{(\pi, 2), (\pi, 4), (2\pi, 2), (2\pi, 4), (3\pi, 2), (3\pi, 4), (4\pi, 2), (4\pi, 4)\}$  43.  $\{(reduce, plastic), (reuse, plastic), (recycle, plastic)\}$  45. Sometimes; when  $A = B = C$ , the statement is true. When  $A, B$ , and  $C$  are distinct sets the statement is false. 47. F 49.  $x = 4$  or  $x = -4$   
 50.  $n = 2$  or  $n = -2$  51.  $f = 2$  or  $f = 8$  52.  $y = \frac{4}{3}$  or  $y = -\frac{8}{3}$  53.  $-5 \leq d \leq 5$  54.  $x \leq -4$  or  $x \geq 10$   
 55.  $w < -15$  or  $w > 9$  56.  $x = \frac{4}{3}$  or  $x = -\frac{4}{3}$  57. yes  
 58. no 59. yes

**Chapter Review pp. 222-226**

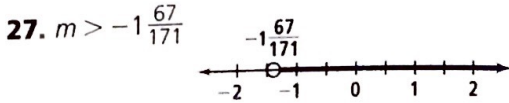
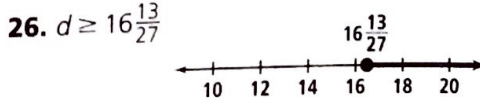
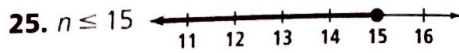
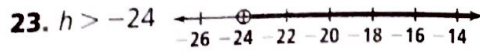
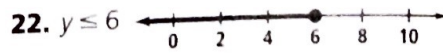
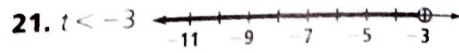
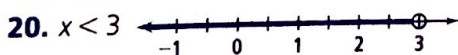
1. roster form 2. union 3. empty set 4. solution of an inequality 5. equivalent inequalities



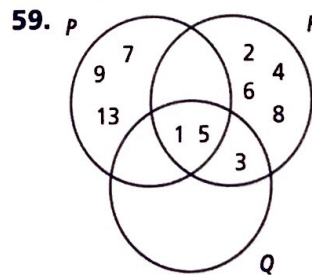
10.  $x > 5$  11.  $x \leq -2$  12.  $x > -5.5$  13.  $w > 6$



19.  $4.25 + x \leq 15.00; x \leq 10.75$



28.  $7.25h \geq 200$ ; at least 28 full hours 29.  $k \geq -0.5$   
 30.  $c < -2$  31.  $t < -6$  32.  $y \leq -56$  33.  $x < 2\frac{2}{3}$   
 34.  $x \leq -13$  35.  $a \leq 5.8$  36.  $w > 0.35$  37.  $200 + 0.04s \geq 450; s \geq 6250$  38.  $\{ \}$  or  $\emptyset, \{s\}, \{t\}, \{s, t\}$   
 39.  $\{ \}$  or  $\emptyset, \{5\}, \{10\}, \{15\}, \{5, 10\}, \{5, 15\}, \{10, 15\}, \{5, 10, 15\}$   
 40.  $A = \{0, 2, 4, 6, 8, 10, 12, 14, 16\}$ ;  $A = \{x|x \text{ is an even whole number less than } 18\}$  41.  $B' = \{1, 3, 5, 7\}$   
 42.  $-2\frac{1}{2} \leq d < 4$  43.  $-1.5 \leq b < 0$  44.  $t \leq -2$  or  $t \geq 7$  45.  $m < -2$  or  $m > 3$  46.  $2 \leq a \leq 5$   
 47.  $6.5 > p \geq -4.5$  48.  $65 \leq t \leq 88$  49.  $y = 3$  or  $y = -3$  50.  $n = 2$  or  $n = -6$  51.  $r = 1$  or  $r = -5$  52. no solution 53.  $-3 \leq x \leq 3$  54. no solution  
 55.  $x < 3$  or  $x > 4$  56.  $k < -7$  or  $k > -3$   
 57. any length between 19.6 mm and 20.4 mm, inclusive  
 58.  $A \cup B = A$



60.  $N \cap P = \{x|x \text{ is a multiple of } 6\}$  61. 5 cats

**Chapter 4**

**Get Ready!**

p. 231

1. -7 2. -18 3. 2 4. -1

5.

| Bob's and His Dog's Ages (years) |   |    |    |    |    |    |    |    |    |    |
|----------------------------------|---|----|----|----|----|----|----|----|----|----|
| Dog's Age                        | 0 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| Bob's Age                        | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |