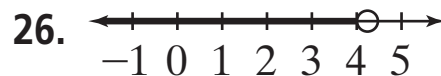
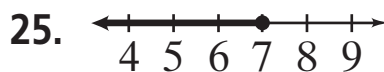
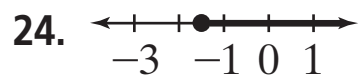
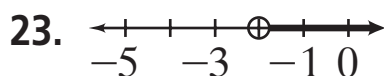
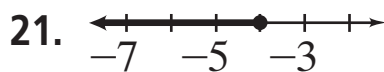
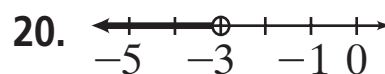
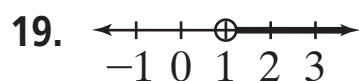


Answers for Lesson 4-1, pp. 202–204 Exercises

1. yes
2. no
3. yes
4. yes
5. no
6. yes
7. no
8. yes
9. a. no b. no c. yes
10. a. yes b. no c. yes
11. a. no b. no c. no
12. a. yes b. no c. no
13. a. no b. yes c. no
14. a. no b. no c. yes
15. C
16. B
17. D
18. A



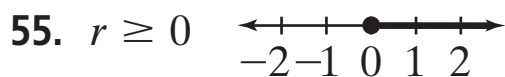
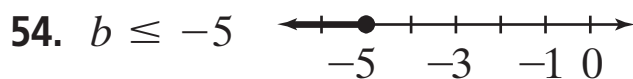
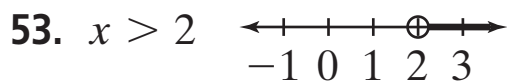
27–37. Choice of variable may vary.

27. $x > -3$
28. $x \leq 7$
29. $x \geq 1$
30. $x < -6$
31. $x \geq 4.5$
32. $x < -0.5$
33. Let s = number of students. $s \leq 48$
34. Let a = age. $a \geq 16$
35. Let w = acceptable number of watts. $w \leq 60$
36. Let s = number of students. $s \geq 350$

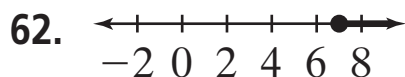
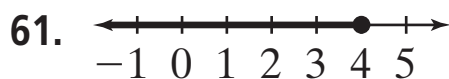
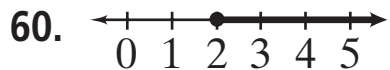
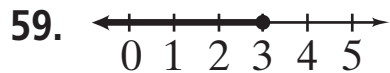
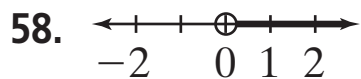
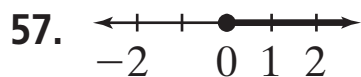
Answers for Lesson 4-1, pp. 202–204 Exercises (cont.)

37. Let a = number of appearances. $a > 75$
38. n is less than 5.
39. b is greater than 0.
40. 7 is greater than or equal to x , or x is less than or equal to 7.
41. z is greater than or equal to -5.6 .
42. q is less than 4, or 4 is greater than q .
43. -1 is greater than or equal to m , or m is less than or equal to -1 .
44. 35 is greater than or equal to w , or w is less than or equal to 35.
45. g minus 2 is less than 7.
46. a is less than or equal to 3.
47. 6 plus r is greater than -2 .
48. 8 is less than or equal to h , or h is greater than or equal to 8.
49. 1.2 is greater than k , or k is less than 1.2.
50. Use an open dot for $<$ or $>$. Use a closed dot for \leq or \geq .
51. Answers may vary. Sample: Every class has at least 18 students.

52. D



Answers for Lesson 4-1, pp. 202–204 Exercises (cont.)



63. “At least” is translated as \geq . “At most” is translated as \leq .

64. $x \geq 2451$

65. Option A $<$ Option B

66. Answers may vary. Sample: For $x = -1$,
 $3(-1) + 1 = -3 + 1 = -2$. $-2 \not\geq 0$.

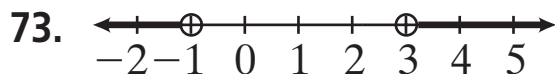
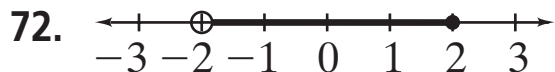
67. Put an open dot at 3 and color the rest of the number line.

68. “4 greater than x ” means $x + 4$; “4 $>$ x ” means 4 is greater than x .

69. C; the inequality is true for $x = 3$ but not true for $x = 5$, so C is correct.

70. Answers may vary. Sample: $a = -1$, $b = \frac{1}{2}$

71. a is negative, and a and b are opposites.

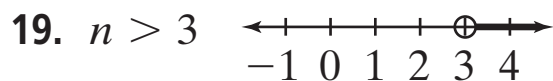
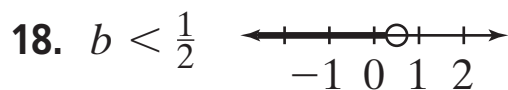
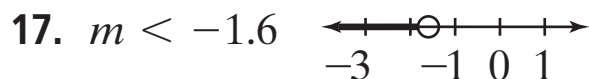
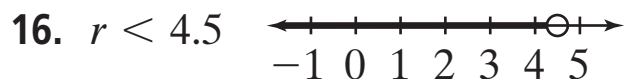
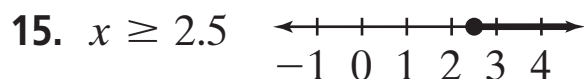
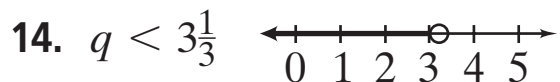
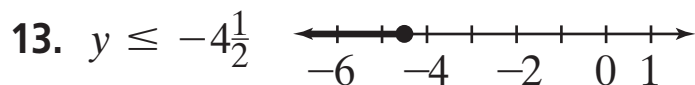
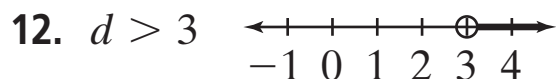
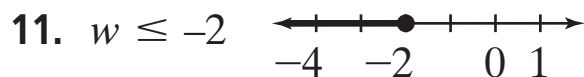
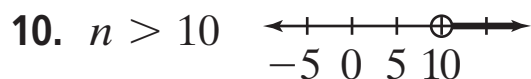
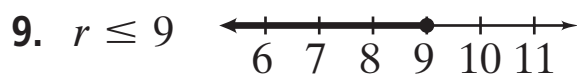
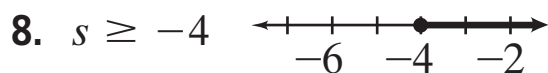
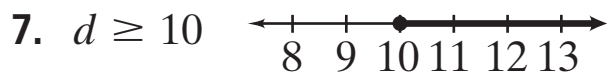
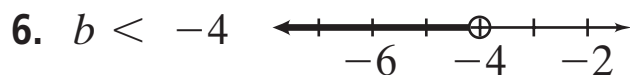
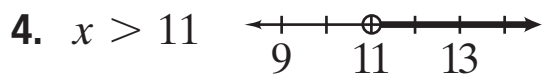


Answers for Lesson 4-2, pp. 208–210 Exercises

1. 5

2. 8

3. 4.3



Answers for Lesson 4-2, pp. 208–210 Exercises (cont.)

20. 2

21. $\frac{5}{3}$

22. 3.1

23. $w \leq 5$;

24. $m > -8$;

25. $b > -7$;

26. $a \leq -6$;

27. $r \geq -6$;

28. $k \leq 1$;

29. $x < -1$;

30. $p > -6$;

31. $z \geq -1$;

32. $y < 5.5$;

33. $m > -1\frac{1}{2}$;

34. $a \leq -0.3$;

35. $p > -7$;

36. $h \leq -\frac{1}{2}$;

37. $d > -1.5$;

38. $t < -\frac{1}{2}$;

Answers for Lesson 4-2, pp. 208–210 Exercises (cont.)

39. $s + 637 \leq 2000$, \$1363

40. $s + 6.50 + 5 \leq 15$, \$3.50

41. $r + 17 + 12 \geq 50$, 21 reflectors

42. Add 4 to each side.

43. Subtract 9 from each side.

44. Add $\frac{1}{2}$ to each side.

45. $w \geq 11$

46. $c \leq 3$

47. $y < 3.1$

48. $n < -5\frac{4}{5}$

49. $z < -9.7$

50. $y < -3.2$

51. $t > \frac{1}{6}$

52. $v \geq 16$

53. $k \geq -8.1$

54. $b < 6$

55. $m \leq -3.5$

56. $k \leq 4\frac{3}{4}$

57. $h \geq -\frac{1}{2}$

58. $x \leq -5.7$

59. $w < -14$

60. at least \$15.50

61. a. yes

b. no

c. Answers may vary. Sample: The = sign indicates that each side is equal, so the two sides may be interchanged. The < sign does not indicate equality. One side cannot be both greater than and less than the other side.

62. a. Let n = points scored on floor exercises.

$$8.8 + 7.9 + 8.2 + n \geq 34.0; n \geq 9.1$$

b. Your sister must score 9.1 points or more to qualify for regional gymnastics competition.

c. Answers may vary. Sample: 9.1, 9.2, 9.3

63. nearly 51.2 MB

64. 40 or more points

Answers for Lesson 4-2, pp. 208–210 Exercises (cont.)

65. a-b. Check students' work.

66. a. No; the solution is $z \geq 13.8$, so $z \geq 14$ is not correct.

b. Answers may vary. Sample: Substituting values does not work because there is always the possibility that the solution lies between values that make the inequality true and a value that does not.

67. $x \geq 1$

68. $n < 5$

69. $t \leq -3$

70. $k > 10$

71. $a \leq 24$

72. $a < -8$

73. a. $a > c - b$

b. $b > a - c$

c. $c > b - a$

d. The length of the third side must be greater than the difference of the lengths of the other two sides.

74. not true; sample counter example: for $a = 5$ and $b = -6$, $5 - (-6) \not< 5 + (-6)$

75. true

76. true

77. not true; sample counter example: for $a = 0$, $b = 1$, and $c = -2$, $0 < 1$ and $0 \not< 1 + (-2)$

78. Answers may vary. Sample: For $x = 2$, $y = 1$, $z = 4$, and $w = 3$, $2 > 1$ and $4 > 3$, but $2 - 4 \not> 1 - 3$.

Answers for Lesson 4-3, pp. 215–217 Exercises

1. $t \geq -4$;

2. $s < 6$;

3. $w \leq -2$;

4. $p < -8$;

5. $y > -4$;

6. $v \leq -1.5$;

7. $x < 6$;

8. $k \geq -2$;

9. $x < 0$;

10. $y \geq 0$;

11. $x < 7$;

12. $d \geq -4$;

13. $c > -\frac{2}{3}$;

14. $b \geq -1\frac{1}{2}$;

15. $u < -\frac{1}{2}$;

16. $n > \frac{3}{4}$;

17. $t < -3$;

Answers for Lesson 4-3, pp. 215–217 Exercises (cont.)

18. $m \geq 2$;

19. $w \leq -5$;

20. $c > 4$;

21. $z \leq -9$;

22. $b < -6$;

23. $d < -\frac{2}{3}$;

24. $x \geq -5\frac{1}{3}$;

25. $q > -3\frac{1}{2}$;

26. $h < 5$;

27. $d > 4$;

28. $m \leq -4.5$;

29. $4.5c \geq 300$, 67 cars

30. $6.15h \geq 100$, 17 hours

31–38. Answers may vary. Samples are given.

31. $-2, -3, -4, -5$

32. $-12, -10, -8, 0$

33. $-3, -4, -5, -6$

34. $\frac{1}{2}, 0, -1, -2$

35. $-6, -7, -8, -9$

36. $-2, -3, -4, -5$

37. $5, 4, 3, 2$

38. $-10.4, -11, -12, -13$

Answers for Lesson 4-3, pp. 215–217 Exercises (cont.)

39. Multiply each side by -4 and reverse the inequality symbol.
40. Multiply each side by 5 .
41. Divide each side by 5 .
42. Multiply each side by $\frac{4}{3}$.
43. Divide each side by 4 .
44. Multiply each side by -1 and reverse the inequality symbol.
45. -2 46. -5 47. 4
48. 18 49. -10 50. 7.5
51. x and y are equal.
- 52–55. Estimates may vary.**
52. $r > -2$ 53. $j > -6$ 54. $p \leq 42$
55. $s \geq 28$ 56. 104 concrete blocks
57. For both the equation and the inequality, you multiply each side by -3 . For the inequality, you must reverse the inequality symbol.
58. Answers may vary. Sample:
 $2x > 6, \frac{4}{3}x > 4, -x < -3, -\frac{x}{5} < -\frac{3}{5}$
59. $d \leq -7$ 60. $u > 35$ 61. $s < -\frac{1}{4}$
62. $k \geq -30$ 63. $y < 9$ 64. $t \leq -2.35$
65. $h \leq -4$ 66. $x > 2$ 67. $x < -9$
68. $b < 0$ 69. $p > -2\frac{1}{2}$ 70. $m \leq -47$
71. $g < -\frac{2}{3}$ 72. $n \geq 2\frac{1}{4}$ 73. $m < 3.5$

Answers for Lesson 4-3, pp. 215–217 Exercises (cont.)

74. $z \geq -2\frac{1}{2}$

75. Yes; in each case, y is greater than 6.

76. $\frac{3}{20} < r; r > 0.15$

77. a. She should have divided each side by -15 .

b. 150 satisfies the original inequality $-15q \leq 135$.

c. Answers may vary. Sample: -15

78. $a > 0$

79. $a > 0$

80. $a \neq 0$

81. $a < 0$

82. $\pi d > 15$, 5-in. box or 6-in. box

83. $\frac{9}{16}x \geq 18(15)$, 480 tiles

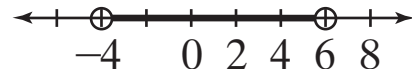
Answers for Lesson 4-4, pp. 222–224 Exercises

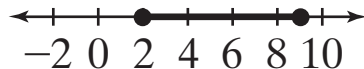
1. $d \leq 4$
2. $m > -3$
3. $x > -2\frac{1}{2}$
4. $n \leq 3$
5. $q \geq 4$
6. $h \geq -2$
7. $a \leq 3$
8. $b > 6\frac{1}{3}$
9. $c < 2$
10. $8t \geq 420$ and $t \geq 52.5$, so the average rate of speed must be at least 52.5 mi/h.
11. $27 \geq 2s + 8$ and $s \leq 9.5$, so the two equal sides must be no longer than 9.5 cm.
12. $-6x + 9$
13. $j \geq 1$
14. $b < \frac{1}{3}$
15. $h > 5$
16. $x \geq 3$
17. $y > -8$
18. $w \leq 4\frac{1}{2}$
19. $c < -7$
20. $r \leq 2\frac{1}{2}$
21. $n \leq 9$
22. $w < 3$
23. $t \leq -1$
24. $d \leq 6$
25. $n \geq 2$
26. $k \geq -4$
27. $s < 10$
28. $p > 3$
29. $x > 2$
30. $m > -\frac{1}{4}$
31. $v \geq -4$
32. $q \leq -2$
33. $r \geq 1\frac{4}{5}$
34. $x < 1\frac{1}{3}$
35. $m > -8$
36. $v \geq 2$
37. Subtract 8 from each side.
38. Subtract 7 from each side.
39. Subtract y from each side and add 5 to each side.
40. Add 2 to each side, then multiply each side by -5 , and reverse the inequality sign.

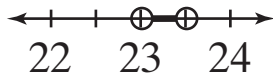
Answers for Lesson 4-4, pp. 222–224 Exercises (cont.)


41. Answers may vary. Sample: To solve $2.5(p - 4) > 3(p + 2)$, first use the Distributive Property to simplify each side. The result is $2.5p - 10 > 3p + 6$. Then use the Subtraction Property of Inequality. Subtract 6 from each side and $2.5p$ from each side. The result is $-16 > 0.5p$. Then use the Division Property of Inequality. Divide each side by 0.5. The result is $-32 > p$. So the solution is $-32 > p$ or $p < -32$.
42. C
43. For $x =$ the number of guests, $(0.75)200 + 1.25x \geq 250$; $x \geq 80$; at least 80 guests must attend.
44. a. maximum
b. no more than 135
45. B 46. E 47. F
48. A 49. D 50. C
51. Answers may vary. Samples:
 $-\frac{1}{3}x - 5 > 0, x < -15$; $-\frac{1}{3}x - 5 \leq 10, x \geq -45$
52. $r < 5\frac{1}{2}$ 53. $m \geq -2$ 54. $s \leq 4.4$
55. $n \leq -2\frac{5}{8}$ 56. $s < 8$ 57. $k \leq 1.4$
58. $n > -2$ 59. $r \leq 1\frac{3}{4}$ 60. $x > 1$
61. $a \geq \frac{1}{2}$ 62. $m \geq 1$ 63. $k \leq 2\frac{1}{6}$
64. $n \geq -23$ 65. $x \leq 0$ 66. $a < -6\frac{2}{3}$
67. $c \geq 4$
68. a. $-3t \leq -9, t \geq 3$
b. $9 \leq 3t, t \geq 3$
c. The results are the same.


Answers for Lesson 4-5, pp. 229–231 Exercises

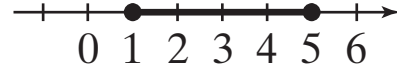
1. $-4 < x$ and $x < 6$ or $-4 < x < 6$; 


2. $2 \leq n$ and $n \leq 9$, or $2 \leq n \leq 9$; 


3. $23 < c < 23.5$; 


4. $40 \leq w \leq 74$; 

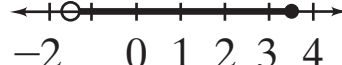
5. $-5 < j < 5$; 

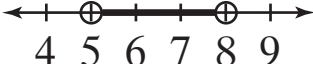
6. $1 \leq w \leq 5$; 


7. $2 < n \leq 6$; 

8. $-4 < p \leq -2$; 

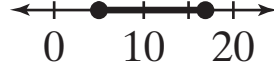
9. $1 < x < 3$; 

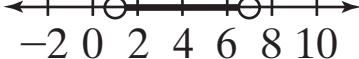
10. $-1.5 < w \leq 3.5$; 


11. $5 < x < 8$; 

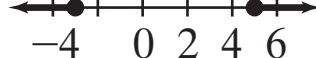
12. $-2 < m \leq 1$; 

13. $3 \leq s < 4$; 

14. $5 \leq a \leq 17$; 

15. $1 < x < 7$; 

16. $-1 \leq x \leq 11$; 

17. $n \leq -3$ or $n \geq 5$; 

Answers for Lesson 4-5, pp. 229–231 Exercises (cont.)

18. $x < 3$ or $x > 7$;

19. $h < 1$ or $h > 3$;

20. $b < 100$ or $b > 300$;

21. $b < -2$ or $b > 2$;

22. $k < -5$ or $k > -1$;

23. $c < 2$ or $c \geq 3$;

24. $a \leq 4$ or $a > 5$;

25. $c \leq 2$ or $c \geq 3$;

26. $y \leq -2$ or $y \geq 5$;

27. $d \leq -3$ or $d \geq 0$;

28. $z < -1$ or $z > 2$;

29. $-2 < x < 3$

30. $x < -3$ or $x \geq 2$

31. $x \leq 0$ or $x > 2$

32. $-4 \leq x \leq 3$

33. $q \leq -2\frac{2}{3}$ or $q > 4$

34. $h < -7$ or $h > 4$

35. $4 \leq t \leq 14$

36. $r < 16$ or $r > 25$

37. $-6 \leq t < 1$

38. $x < -6$ or $x > 9$

39. D

40. all real numbers except 5

41. The word “and” means both statements must be true. The word “or” means that at least one of the statements must be true.

Answers for Lesson 4-5, pp. 229–231 Exercises (cont.)

42. $2.5 < x < 7.5$

43. $6 < x < 30$

44. $7 < x < 49$

45. $11 < x < 21$

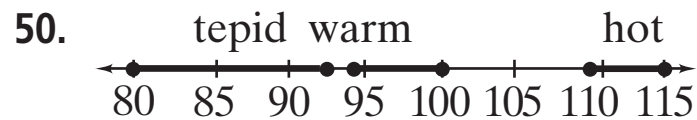
46. $66 \leq C \leq 88$

47. $15 \leq D \leq 30$

48. Charlotte: $29 \leq C \leq 90$

Detroit: $15 \leq D \leq 83$

49. Answers may vary. Sample: Elevation near a coastline varies between 2 m below and 8 m above sea level.



51. $-2 < x < 0$ or $0 < x < 3$

52. $n = 0$ or $n \geq 3$

53. a. $130 \leq R \leq 157$

b. 20 years old

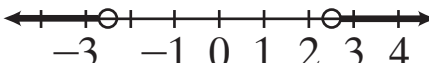
54. 16, 18, 20


55. 10, 12, 14

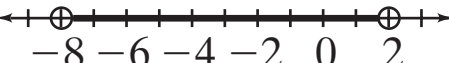
Answers for Lesson 4-6, pp. 237–239 Exercises


1. $-2, 2$ 2. $-4, 4$ 3. $-\frac{1}{2}, \frac{1}{2}$
 4. $-6, 6$ 5. $-3, 3$ 6. $-7, 7$
 7. $-5, 5$ 8. $-2, 2$ 9. 0
 10. no solution 11. $-3, 3$ 12. $-4, 4$
 13. $3, 13$ 14. $-8, 4$ 15. $-3, 1$
 16. $-5, 1$ 17. $-5, 9$ 18. no solution
 19. $-7, 1$ 20. $-1, 1$ 21. $-0.6, 0.6$

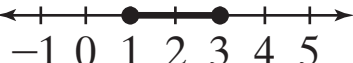
22. a. less than
 b. greater than

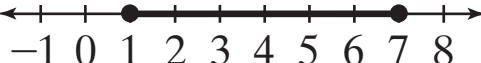
23. $k < -2.5$ or $k > 2.5$; 

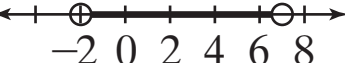
24. $-2 < w < 2$; 

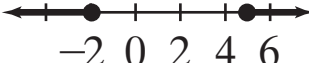
25. $-8 < x < 2$; 

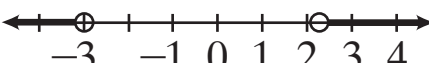
26. $n \leq -11$ or $n \geq -5$; 

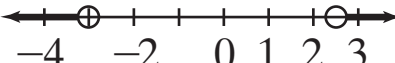
27. $1 \leq y \leq 3$; 

28. $1 \leq p \leq 7$; 

29. $-2 < c < 7$; 


30. $y \leq -2$ or $y \geq 5$; 

31. $t < -3$ or $t > 2\frac{1}{3}$; 

32. $x < -3$ or $x > 2.5$; 

Answers for Lesson 4-6, pp. 237–239 Exercises (cont.)

33. $t \leq -2.4$ or $t \geq 4$; 

34. $-2 < r < 8$; 

35. between 12.18 mm and 12.30 mm, inclusive

36. between $49\frac{25}{32}$ in. and $50\frac{7}{32}$ in., inclusive

37. $-9, 9$

38. $-3, 3$

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

40. $-1.8, 1.8$

41. $-5, 3$

42. $0, 8$

43. $d \leq -2$ or $d \geq 2$

44. $n < -10$ or $n > 10$

45. $c < -16$ or $c > 2$

46. $-12.6, 12.6$

47. $-6 < x < 6$

48. $-8, 8$

49. $-8, 8$

50. $-3, 3$

51. $-8 < m < 4$

52. $|n| < 3$

53. $|n| > 7.5$

54. $|n - 6| > 2$

55. $|n + 1| \geq 3$

56. $|w - 16| \leq 0.05, 15.95 \leq w \leq 16.05$

57. 39%, 45%

58. a. $|w - 454| \leq 5$

b. between 449 g and 459 g, inclusive

59. $|g - 6.27| \leq 0.02$

60. The absolute value of a number cannot be less than zero.

61. Sample: $|5x - 12| = 3; 1\frac{4}{5}, 3$

62. $|x - 4| = 2$

63. $|x - 2| = 4$

Answers for Lesson 4-6, pp. 237–239 Exercises (cont.)

64. $|x - 3| = 6$

65. $|x - 12\frac{1}{2}| = 3\frac{1}{2}$

66. $|x - 3| = 4$

67. $|x - 5\frac{1}{2}| = 2\frac{1}{2}$

68. $|x + 9| = 6$

69. $|x - 6| = 4$

70. a. between 7.075 oz and 7.105 oz, inclusive

b. No; the excess weight of some coins may be balanced by the lower weight of other coins.

71. a. $11^{\circ}\text{F}, 39^{\circ}\text{F}$

b. $|t - 25| = 14$

72. 2

73. $\frac{2}{3}, 3$

74. 3

75. \leq

76. \geq

77. $=$

78. $=$

79. $|x + 1| > 3$

80. $|x - 2| \leq 4$