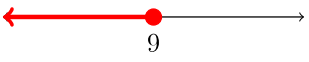
Exercises

1. Draw a number line, then plot the numbers 4, 3, -4, $7/8$, and $-8/3$ on your number line. Label each point with its value. Finally, list the numbers in order, from smallest to largest.
2. Draw a number line, then plot the numbers 5, 3, -4, $5/7$, and $-4/3$ on your number line. Label each point with its value. Finally, list the numbers in order, from smallest to largest.
3. Draw a number line, then plot the numbers -5, 5, 4, $2/3$, and $8/3$ on your number line. Label each point with its value. Finally, list the numbers in order, from smallest to largest.
4. Draw a number line, then plot the numbers -3, -2, 4, $1/3$, and $5/2$ on your number line. Label each point with its value. Finally, list the numbers in order, from smallest to largest.

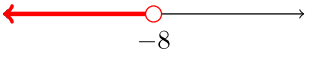
In Exercises 5-20, shade each of the following sets on a number line.

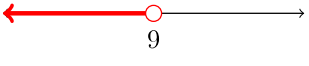
5. $\{x : x \geq -7\}$
6. $\{x : x \geq -1\}$
7. $\{x : x < 2\}$
8. $\{x : x < -6\}$
9. $(-\infty, 2)$
10. $(-\infty, -9)$
11. $(6, \infty)$
12. $(5, \infty)$
13. $\{x : x > 7\}$
14. $\{x : x > -8\}$
15. $[0, \infty)$
16. $[7, \infty)$
17. $\{x : x \leq -2\}$
18. $\{x : x \leq 7\}$
19. $(-\infty, 3]$
20. $(-\infty, -1]$

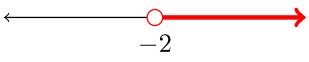
In Exercises 21-28, use set-builder notation to describe the shaded region on the given number line.

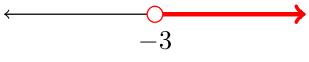
21. 

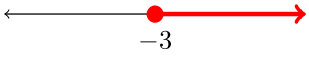
22. 

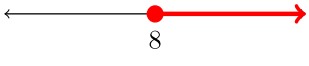
23. 

24. 

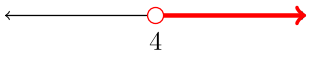
25. 

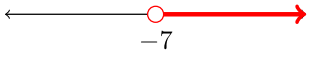
26. 

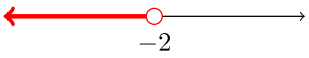
27. 

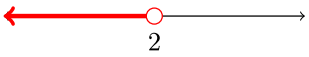
28. 

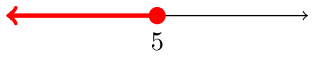
In Exercises 29-36, use interval notation to describe the shaded region on the given number line.

29. 

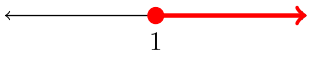
30. 

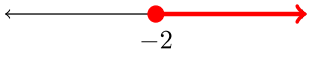
31. 

32. 

33. 

34. 

35. 

36. 

In Exercises 37-44, solve each of the given inequalities. Sketch the solution on a number line, then use set-builder and interval notation to describe your solution.

37. $x + 10 < 19$

38. $x + 17 \geq 7$

39. $4x < 8$

40. $16x \geq -2$

41. $-2x \leq -2$

42. $-18x > -20$

43. $x - 18 > -10$

44. $x - 8 \leq -18$

In Exercises 45-62, solve each of the given inequalities. Sketch the solution on a number line, then use set-builder and interval notation to describe your solution.

45. $-5x - 6 \geq 4 - 9x$

46. $2x - 7 \geq -3 - 4x$

47. $16x - 6 \leq 18$

48. $8x - 14 \leq -12$

49. $-14x - 6 \geq -10 - 4x$

50. $-13x - 4 \geq -2 - 5x$

51. $5x + 18 < 38$

52. $9x + 16 < 79$

53. $-16x - 5 \geq -11 - 6x$

54. $-11x - 7 \geq -15 - 5x$

55. $2x - 9 \geq 5 - 8x$

56. $-3x - 6 \geq -2 - 9x$

57. $-10x - 4 \leq 18$

58. $-6x - 14 \leq 1$

59. $-12x + 4 < -56$

60. $-18x + 6 < -12$

61. $15x + 5 < 6x + 2$

62. $12x + 8 < 3x + 5$

In Exercises 63-76, solve each of the given inequalities. Sketch the solution on a number line, then use set-builder and interval notation describe your solution.

63. $\frac{3}{2}x > \frac{9}{8}$

64. $\frac{6}{7}x > \frac{3}{4}$

65. $x + \frac{3}{2} < \frac{9}{5}$

66. $x + \frac{1}{4} < -\frac{1}{5}$

67. $\frac{4}{7} - \frac{1}{6}x \leq \frac{4}{3}x - \frac{1}{2}$

68. $\frac{5}{3} - \frac{3}{4}x \leq \frac{7}{4}x - \frac{3}{5}$

69. $x - \frac{3}{8} \geq -\frac{9}{7}$

70. $x - \frac{7}{2} \geq \frac{1}{5}$

71. $\frac{6}{5}x \leq -\frac{4}{7}$

72. $\frac{4}{3}x \leq \frac{2}{9}$

73. $-\frac{6}{5}x - \frac{7}{3} \leq \frac{5}{9} - \frac{2}{9}x$

74. $-\frac{3}{7}x - \frac{1}{2} \leq \frac{3}{2} - \frac{2}{7}x$

75. $\frac{9}{7}x + \frac{9}{2} > \frac{1}{7}x + \frac{7}{2}$

76. $\frac{5}{7}x + \frac{9}{2} > \frac{1}{3}x + \frac{5}{2}$

In Exercises 77-84, solve each of the given inequalities. Sketch the solution on a number line, then use set-builder and interval notation containing fractions in reduced form to describe your solution.

77. $-3.7x - 1.98 \leq 3.2$

78. $-3.6x - 3.32 \leq 0.8$

79. $-3.4x + 3.5 \geq 0.9 - 2.2x$

80. $-2.6x + 3.1 \geq -2.9 - 1.7x$

81. $-1.3x + 2.9 > -2.6 - 3.3x$

82. $2.5x + 2.1 > 1.4 - 3.8x$

83. $2.2x + 1.9 < -2.3$

84. $1.6x + 1.2 < 1.6$