Name _____ Class _____ Date _____

Extra Practice

Chapter 3

Lessons 3-1 to 3-4

Solve each inequality. Graph and check your solution.

1. $-8w < 24$

2. $9 + p \leq 17$

3. $\frac{r}{4} > -1$

4. $7y + 2 \leq 28$

5. $t - 5 \geq -13$

6. $9h > -108$

7. $8w + 7 > 5$

8. $\frac{s}{6} \leq 3$

9. $\frac{6c}{5} \geq -12$

10 $-8\ell + 3.7 \leq 31.7$

11. $9 - t \leq 4$

12. $m + 4 \geq 8$

13 $y + 3 < 16$

14. $n - 6 \leq 8.5$

15. $12b - 5 > -29$

16 $4 - a > 15$

17. $4 - x \leq 3$

18. $1 - 4d \geq 4 - d$

19. $n + 7 \leq 3n - 1$

20. $\frac{s}{2} + 1 < s + 2$

21. $3 - \frac{2x}{3} > 5$

22 $8r - \frac{r}{6} > \frac{1}{6} - 8$

23. $1.4 + 2.4x < 0.6$

24. $x - 2 < 3x - 4$

25. $2(m - 5) + 4m \leq 56$

26. $6(c + 3) - 9 \geq 27$

27. $-3(2t - 1) + 5t > 7$

Define a variable and write an inequality for each situation.

28. A car dealership sells at least 35 cars each week.

29. No more than 425 tickets to a musical will be sold.

30. You must be at least 18 years old to vote.

31. The party store sold more than 720 balloons in July.

32. The booster club raised $102 in their car wash. They want to buy $18 soccer balls for the soccer team. Write and solve an inequality to find how many soccer balls they can buy.

33. You earn $7.50 per hour and need to earn $35. Write and solve an inequality to find how many hours you must work.

Extra Practice (continued)

Chapter 3

Write and solve an inequality for each situation.

34. Suppose you are trying to increase your coin collection to at least 500 coins. How many more coins do you need if you already have a collection of 375 coins?

35. Janet has a balance of $125 on a credit card. On her next statement, she wants to reduce her balance to no more than $60. How much does she need to pay off ?

36. A homeroom class with 25 students is holding a fund-raiser to support school sports. Their goal is to raise at least $200. On average, how much money does each student need to contribute to meet or exceed the goal?

37. You are reading a book with 19 chapters. How many chapters should you read each week if you want to finish the book in 5 weeks or less?

38. The sophomore class is putting on a variety show to raise money. It costs $700 to rent the banquet hall they are going to use. If they charge $15 for each ticket, how many tickets do they need to sell in order to raise at least $1000?

39. A technical-support company charges $10 per month plus $35 per hour of phone support. If you need to spend less than $100 per month on support, how many hours can you get?

Lesson 3-5

Write each set in roster form and in set-builder notation.

40. A is the set of integers that are greater than –4 and less than 2.

41. B is the set of natural numbers less than 9.

42. C is the set of real numbers that are factors of 20.

Write the solutions of each inequality in set-builder notation.

43. $3y + 5 \leq 17$ **44.** $6m - 11 > 31$ **45.** $2 - 4p \geq -42$

List all the subsets of each set.

46. {0, 1} **47.** {–4, 0, 4} **48.** {w, x, y, z}

49. Suppose $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ is the universal set and $T = \{1, 3, 5, 7, 9\}$. What is T' ?

50. Suppose $U = \{1, 2, 3, 4, 5 \ldots\}$ is the universal set and $C = \{1, 2, 3\}$. What is C'?

Name _____ Class _____ Date _____

Extra Practice (continued)

Chapter 3

Lesson 3-6

Solve each compound inequality.

51. $8 < w + 3 < 10$

52. $-6 < t - 1 < 6$

53. $6m - 15 \leq 9$ or $10m > 84$

54. $9j - 5j \geq 20$ and $8j > -36$

55. $37 < 3c + 7 < 43$

56. $3 < 5 + 6h < 10$

57. $1 + t < 4 < 2 + t$

58. $2 + 3w < -1 < 3w + 5$

59. $2x - 3 \leq x$ and $2x + 1 \geq x + 3$

60. $3n - 7 > n + 1$ or $4n - 5 < 3n - 3$

Write each interval as an inequality. Then graph the solutions.

61. $(-\infty, 5)$

62. $[2, 9)$

63. $(-\infty, 1]$ or $[6, \infty)$

Write a compound inequality for each situation. Graph your solution.

64. Water will not be in liquid form when it is colder than 32°F or warmer than 212°F.

65. The width of a parking space needs to be at least 8 feet and no more than 11 feet.

66. A car salesman has been told to sell a particular car for more than $14,500 and up to the sticker price of $15,755.

Lesson 3-7

Choose a variable and write an absolute value inequality that represents each set of numbers.

67. all real numbers less than 2 units from 0

68. all real numbers more than 0.5 units from 4.5

69. all real numbers less than 1 unit from –4

70. all real numbers 3 or more units from –1

71. all real numbers less than or equal to 5 units from 3

Solve each inequality. Graph and check your solution.

72. $|x| < 5$

73. $|t| > 1$

74. $|t| - 5 \leq 3$

75. $|-6m + 2| > 20$

76. $|3c| - 1 \geq 11$

77. $|8 - w| \leq 8$

Extra Practice (continued)

Chapter 3

78. $|2b + 3| < 7$ **79.** $|c - 5| \leq 6$ **80.** $|n| + 4 \leq 5$

81. Write an absolute value inequality that has numbers between 2 and 3 as the solutions.

82. Holes with radius 3 cm must be drilled in sheets of metal. The radius must have an error no more than 0.01 cm. Write an absolute value inequality whose solutions are acceptable radii.

Write and solve an absolute value inequality for each situation.

83. The ideal diameter of an aircraft tire is 105 inches. The acceptable error for each tire is 0.175 inches. Find the range of acceptable tire diameters.

84. A tractor crankshaft is designed to have a radius of 4.25 cm. The acceptable error for the radius is 0.005 cm. Find the range of acceptable radii for the crankshaft.

85. The ideal weight of an exercise ball is 175 ounces. Each ball can have an error of 0.35 ounces. What is the range of acceptable weights?

Lesson 3-8

Find each union or intersection. Let $X = \{1, 4, 9\}$, $Y = \{x \mid x$ is an odd whole number less than 10$\}$, and $Z = \{2, 4, 6, 8\}$.

86. $X \cup Y$ **87.** $X \cup Z$ **88.** $Y \cup Z$

89. $X \cap Y$ **90.** $X \cap Z$ **91.** $Y \cap Z$

Solve each inequality. Write the solutions as either the union or intersection of two sets.

92. $|2x - 7| < 11$ **93.** $|5b + 8| \geq 17$ **94.** $3|m - 4| \leq 18$

95. Let $R = \{h, o, r, s, e\}$, $S = \{t, u, r, k, e, y\}$, and $T = \{m, o, n, k, e, y\}$. Draw a Venn diagram to represent the union and intersection of these sets.

96. In a survey of 100 people, some of them jog for exercise, some of them ride a bike, some do both, and 15 do not jog or ride a bike. If 46 of the people surveyed jog and 21 of them both jog and ride a bike, how many of the people surveyed only ride a bike?