Name _____ Class _____ Date _____

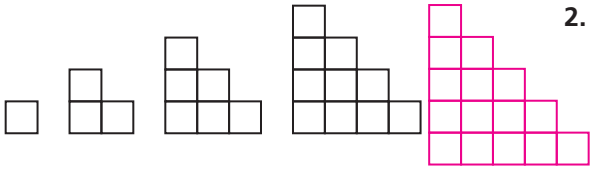
Extra Practice

Chapter 1

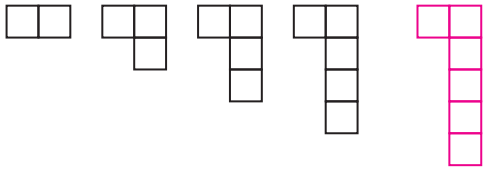
Lesson 1-1

Describe each pattern using words. Draw the next figure in the pattern.

1.

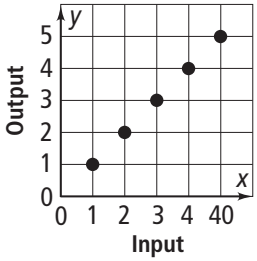


2.



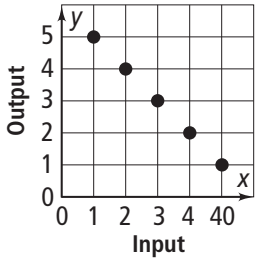
Identify a pattern by making a table of the inputs and outputs. Include a process column.

3.



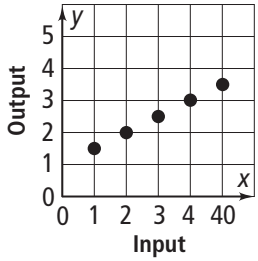
Input	Process Column	Output
1	1 + 0	1
2	2 + 0	2
3	3 + 0	3
4	4 + 0	4
5	5 + 0	5

4.



Input	Process Column	Output
1	5 − 1	4
2	5 − 2	3
3	5 − 3	2
4	5 − 4	1
5	5 − 5	0

5.



Input	Process Column	Output
1	1 + 0.5(1)	1.5
2	1 + 0.5(2)	2
3	1 + 0.5(3)	2.5
4	1 + 0.5(4)	3
5	1 + 0.5(5)	3.5

Identify a pattern and find the next three numbers in the pattern.

6. 2, 4, 8, 16, ... The previous number is multiplied by 2: 32, 64, 128.

7. 4, 8, 12, 16, ... Four is added to the previous number: 20, 24, 28.

8. 5, 25, 125, 625, ... The previous number is multiplied by 5: 3,125; 15,625; 78,125.

9. A scientist observes a Petri dish containing a number of bacteria. On the first day, the dish had 300 bacteria. On the second day, the dish had 1,200 bacteria. On the third day, the dish had 4,800 bacteria. If the pattern continues, how many bacteria will the dish have on the fourth day? on the nth day? 19,200; $75 \cdot 4^n$

Lesson 1-2

Graph each number on a number line.

10. 3

11. $1\frac{1}{5}$

12. $-\sqrt{11}$

Compare the two numbers. Use < and >.

13. $-5, -8$ $-5 > -8$

14. $\frac{1}{3}, 0.333$ $\frac{1}{3} > 0.333$

15. $\sqrt{6}, 3$ $\sqrt{6} < 3$

Extra Practice (continued)

Chapter 1

Name the property of real numbers illustrated by each equation.

16. $n \cdot 1 = n$
Multiplicative Identity

17. $a(b + c) = ab + ac$
Distributive Property

18. $4 \cdot 8 = 8 \cdot 4$
Commutative Property of Multiplication

19. $0 = q + (-q)$
Inverse Property of Addition

20. The school cafeteria serves chili every Friday. Which set of numbers best describes the values for the number of people p who order chili? the number of gallons of chili g sold? whole numbers; rational numbers

Lesson 1-3

Write an algebraic expression that models each word phrase.

21. six less than a number w $w - 6$

22. the product of 11 and the difference of 4 and a number r $11(4 - r)$

23. the quotient of the sum of 3 and a number t, and the sum of 5 and a number t $\frac{3 + t}{5 + t}$

Evaluate each expression for the given values of the variables.

24. $6c + 5d - 4c - 3d + 3c - 6d$; $c = 4$ and $d = -2$ 28

25. $10a + 3b - 5a + 4b + 1a + 5b$; $a = -3$ and $b = 5$ 42

26. $3m + 9n + 6m - 7n - 4m + 2n$; $m = 6$ and $n = -4$ 14

Simplify by combining like terms.

27. $4 + 3t - 2t$ $4 + t$

28. $6 + 2d - 3$ $2d + 3$

29. $2.5p - 4p$ $-1.5p$

30. $9y + 2x - 4y + x$ $3x + 5y$

31. $3 - 2(2r - 4)$ $-4r + 7$

32. $-(j - 3j + 8)$ $2j - 8$

Write an algebraic expression to model each situation.

33. This season, the Easton High School boys lacrosse team averaged exactly 8 goals per game. If there are x lacrosse games in a season, how many goals in total did the team score? How many goals were scored in the 16-game season? $8x$; 128 goals

34. You fill your car with gasoline at a service station for $2.75 per gallon. You pay with a $50 bill. How much change will you receive if you buy g gallons of gasoline? How much change will you receive if you buy 14 gallons? $50 - 2.75g$; $11.50

35. You ride the train to an after-school job every weekday. The ticket for the trip from school to work costs $3. The ticket for the trip from work back home costs d dollars. How much do you spend on train tickets each day? How much do you spend in a 5-day week? $3 + d$; $5(3 + d)$

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Extra Practice (continued)

Chapter 1

Lesson 1-4

Solve each equation. Check your answers.

36. $18 - n = 10$
-8

37. $\frac{x}{5} = 2$
10

38. $3.5y = 14$
4

39. $5 - w = 2w - 1$
2

40. $-2s = 3s - 10$
2

41. $2(x + 3) + 2(x + 4) = 24$
$\frac{5}{2}$

42. $8z + 12 = 5z - 21$
-11

43. $7b - 6(11 - 2b) = 10$
4

44. $10k - 7 = 2(13 - 5k)$
$\frac{33}{20}$

Determine whether the equation is *sometimes, always,* or *never* true.

45. $3x - 5 = -2$
sometimes

46. $2x - 3 = 5 + 2x$
never

47. $2x + 4 - 3x = 5 - x$
never

48. $6x - 3(2 + 2x) = -6$
always

49. $4x - 2 = 2(1 - 2x)$
sometimes

50. $2.5t + 6 = \frac{10t + 24}{4}$
always

Solve each formula for the indicated variable.

51. $V = I \cdot R$, for R
$R = \frac{V}{I}$

52. $V = \frac{1}{3}\pi r^2 h$, for h
$h = \frac{3V}{\pi \cdot r^2}$

53. $F = \frac{G \cdot m_1 \cdot m_2}{d^2}$, for G
$G = \frac{F \cdot d^2}{m_1 \cdot m_2}$

54. You can use the equation $T = 0.6\left(205 - \frac{a}{2} - r\right) + r$ to determine the target heart rate, T, for a cardiovascular workout for an athletic male a years old. His rest heart rate is r heartbeats per minute. What is the rest heart rate of an athletic 18-year-old male whose target heart rate is 144 heartbeats per minute? **66 beats/min**

55. A desktop computer now sells for 15% less than it did last year. The current price is \$425. What was the price of the computer last year? **\$500**

Lesson 1-5

Write an inequality that represents the sentence.

56. The product of 12 and a number is less than 6. **$12n < 6$**

57. The sum of a number and 2 is no less than the product of 9 and the same number. **$n + 2 \geq 9n$**

Solve each inequality. Graph the solution.

58. $3x - 8 \geq 1$ **$x \geq 3$**

59. $7t + 4 \leq 3t$ **$t \leq -1$**

60. $3v \leq 5v + 18$ **$v \geq -9$**

61. $4a < 2a - 7$ **$a < -\frac{7}{2}$**

62. $7 - x \geq 24$ **$x \leq -17$**

63. $2(y - 3) + 7 < 21$ **$y < 10$**

Name _____ Class _____ Date _____

Extra Practice (continued)

Chapter 1

Solve each compound inequality. Graph the solution.

64. $4r > -12$ and $2r < 10$ **$-3 < r < 5$**

65. $5z \geq -10$ and $3z < 3$ **$-2 \leq x < 1$**

66. $7x \geq 21$ and $8x \leq 56$ **$3 \leq x \leq 7$**

67. $3x < -6$ or $7x > 56$ **$x < -2, x > 8$**

68. $9b > 27$ and $4b \leq 44$ **$3 < b \leq 11$**

69. $5p \geq 10$ or $-2p < 10$ **$p > -5$**

70. A homeowner needs to rent some cleaning equipment. Company A will rent the machine he needs for $28 plus $4 per hour. Company B will charge $22 plus $4.75 per hour. For what range of hours will Company B charge less than Company A? **less than 8 h**

Lesson 1-6

Solve each equation. Check your answers.

71. $|4m + 2| = 10$
2, −3

72. $|9 - 4z| = 53$
−11, 15.5

73. $|5x| = 30$
−6, 6

74. $|3x - 6| - 7 = 14$
−5, 9

75. $3|2d - 1| = 21$
−3, 4

76. $|2v + 3| - 6 = 14$
$-\frac{23}{2}, \frac{17}{2}$

Solve each inequality. Graph the solution.

77. $|3 - k| < 7$ **$-4 < k < 10$**

78. $|2t + 7| \geq 4$ **$t \leq -5.5, t \geq -1.5$**

79. $|x - 2| < 6$ **$-4 < x < 8$**

80. $2|w + 6| \leq 10$ **$-11 \leq w \leq -1$**

81. $|3y - 5| + 6 > 15$ **$y < -\frac{4}{3}$ or $y > \frac{14}{3}$**

82. $3|2z + 5| + 2 \leq 8$ **$-\frac{7}{2} \leq z \leq -\frac{3}{2}$**

83. A metal part for a machine is now 5.85 inches long. The specifications call for it to be 5.72 inches long, with a tolerance of ±0.02 inch. By how much can a machinist decrease the length of the part? **0.11 to 0.15 in.**