Selected Answers

Chapter 1

1.1 Skill Practice **1.** exponent: 12, base: 6 **3.** 60 **5.** 12 **7.** 12 **9.** 3 **11.** 10 **13.** $\frac{1}{3}$ **17.** seven to the third power, $7 \cdot 7 \cdot 7$ **19.** three tenths to the fourth power, $0.3 \cdot 0.3 \cdot 0.3 \cdot 0.3$ **21.** n to the seventh power, $n \cdot n \cdot n \cdot n \cdot n \cdot n \cdot n$ **23.** t to the fourth power, $t \cdot t \cdot t \cdot t$ **25.** The base was used as the exponent and the exponent was used as the base; $5^4 = 5 \cdot 5 \cdot 5 \cdot 5 = 625$. **27.** 100 **29.** 1331 **31.** 243 **33.** 1296 **35.** $\frac{27}{125}$ **37.** $\frac{1}{216}$ **39.** 1.21 **41.** 40.5 **43.** 9.6

1.1 Problem Solving **49.** 162.5 cm **51. a.** 12 in. **b.** 144 in.^{2} **53.** New England Patriots

1.2 Skill Practice **1.** Square 4. **3.** 8 **5.** 14 **7.** $3\frac{3}{5}$ **9.** $63\frac{3}{4}$ **11.** 21 **13.** 73.5 **15.** $12\frac{1}{2}$ **17.** 48 **21.** $\frac{1}{2}$ was multiplied by 6 before squaring 6; $20 - \frac{1}{2} \cdot 6^2 = 20 - \frac{1}{2} \cdot 36 = 20 - 18 = 2$. **23.** 29 **25.** 126 **27.** 0.75 **29.** 3 **33.** $(2 \times 2 + 3)^2 - (4 + 3) \times 5$

1.2 Problem Solving **35. a.** \$22.87 **b.** \$2.13 **37.** *Sample answer:* $(3 \times 4) + 5$ **39. a.** \$380, \$237.99; \$142.01 **b.** *Sample answer:* You could write an expression showing the difference of your income and expenses as $10s - (4.50m + 12.99)$.

1.2 Graphing Calculator Activity **1.** 5 **3.** 0.429 **5.** 0.188 **7.** 40.9 BMI units

1.3 Skill Practice **1.** rate **3.** $x + 8$ **5.** $\frac{1}{2}m$ **7.** $7 - n$ **9.** $\frac{2t}{12}$ **11.** $2k - 7$ **15.** $4v$ **17.** $\frac{16}{p}$ **19.** $7 - d$ **21.** $12y$ **23.** 0.2 ft/sec **25.** 83.6 ft/sec **27.** Feet should cancel out; \$54. **29.** \$19.50 for 1 h

1.3 Problem Solving **31.** $19.95t + 3$; \$102.75 **33. a.** \$.055, \$.06 **b.** 48 oz container **c.** \$.96 **35.** \$500 **37. a.** $12g + h + \frac{1}{4}c$ **b.** 247; 376.75; 242

1.4 Skill Practice **1.** *Sample answer:* $3x + 5 = 20$ **3.** $42 + n = 51$ **5.** $9 - \frac{t}{6} = 5$ **7.** $9(t + 5) < 6$ **9.** $8 < b + 3 < 12$ **11.** $10 < t - 7 < 20$ **13.** $p \geq 12.99$ **15.** The wrong inequality symbol is used; $\frac{t}{4.2} \leq 15$. **17.** solution **19.** not a solution **21.** not a solution **23.** solution **25.** solution **27.** not a solution **29.** 5 **31.** 12 **33.** 9 **35.** $3x - 2 = x + 5$; solution

1.4 Problem Solving **39.** 7.5 mi **41.** 167 h **43.** \$100 **45. a.** $6r + 5(10 - r) \geq 55$ **b.** Yes; you will earn \$30 running errands and \$25 walking dogs; $30 + 25 = 55$. **c.** Yes; if you work 10 hours running errands, you will earn \$60. You will not meet your goal if you work all 10 hours walking dogs.

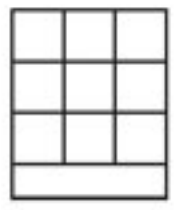
1.5 Skill Practice **1.** *Sample answer:* $d = rt$ **3.** You know the cost of materials and the amount you hope to make. You need to find the amount you should charge for each collar. You need to know the number of collars you made, which is missing. **5.** You know the temperature in Rome and the temperature in Dallas. You know the formula to convert Fahrenheit temperatures to Celsius temperatures. You need to find the higher temperature. **7.** The formula for perimeter should be used, not area; $P = 2\ell + 2w$; $P = 2(200) + 2(150) = 700$; \$10(700) = \$7000. **9.** $P = I - E$

1.5 Problem Solving **15.** 46.25 in.^{2} **17.** 2 water bottles **19. a.** 960 ft **b.** 480 ft **21. a.**

Room size (feet)	1 by 1	2 by 2	3 by 3	4 by 4	5 by 5
Remaining area (square feet)	431	428	423	416	407

b. $1 \leq s \leq 5$; 5 ft

1.5 Problem Solving Workshop



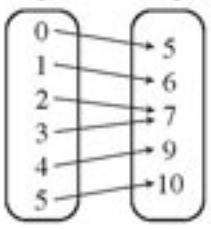
1. 9 pieces of cake; Equation: Let c be the number of pieces of cake; $9c = 99$, $c = 11$. Diagram: Draw a diagram of a 9 inch by 11 inch pan and cut the cake into 3 inch by 3 inch pieces. From the diagram you see that you can cut 9 such pieces. The diagram shows that you cannot actually cut 11 square pieces because of the shape of the pan. **3.** The equation should be $3x + 6 = 12$ because there are only 3 spaces between the 4 floats; $3(2) + 6 = 12$.

1.6 Skill Practice **1.** precision **3.** 14.2 gal **5.** 71 in. **7.** 29.3 cm **9.** Minutes are a smaller unit of measure than hours, therefore 85 minutes is more precise than 1.5 hours. **11.** 4 **13.** 2 **15.** 3 **17.** 3 **19.** 7 **21.** 81.2 m **23.** 110 **25.** 48.2 mm **27.** 227 kg **29.** The area must have the same number of significant digits as the least precise measurement. The value 20 is less precise than 8.2, having one significant digit. Therefore the area of the rectangle should be given with just one significant digit.

Selected Answers

1.6 Problem Solving **33.** Justine **35.** Chandra **37.** No. *Sample answer:* Both 426 miles and 19.3 gallons are measurements with 3 significant digits, so Brian's answer should have 3 significant digits. He should say that his car gets 22.1 miles per gallon. **39.** 118.5 lb; because tenths are smaller units than ones, 118.5 pounds is more precise than 118 pounds.
41. 13.2 mi **43.** *Sample answer:* 22,000 cm
45. *Sample answer:* 4020 m^2 **47.** 24 in. **49.** 1800 ft^2

1.7 Skill Practice **1.** input; output
3. domain: 0, 1, 2, and 3, range: 5, 7, 15, and 44
5. domain: 6, 12, 21, and 42, range: 5, 7, 10, and 17
7. not a function **9.** The pairing is a function. Each input is paired with only one output.
11. *Sample:*



Input	Output
0	5
1	6
2	7
3	7
4	9
5	10

15.

Input	4	5	7	8	12
Output	7.5	8.5	10.5	11.5	15.5

range: 7.5, 8.5, 10.5, 11.5, and 15.5

17.

Input	4	6	9	11
Output	5	6	7.5	8.5

range: 5, 6, 7.5, and 8.5

19.

Input	0	2	4	6
Output	$\frac{1}{2}$	1	$1\frac{1}{2}$	2

range: $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2

21. $y = x - 8$

1.7 Problem Solving **23. a.** the number of quarters left; the number of quarters used
b. $y = 10 - x$; domain: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10
c.

Input	0	1	2	3	4	5	6	7	8	9	10
Output	10	9	8	7	6	5	4	3	2	1	0

range: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10
25. $y = 100 + 20m$; independent variable: m, the number of months; dependent variable: y, the amount of money saved; domain: $m > 0$, range: $y \geq 100$; $340

27. a.

2	3	4	5
A, B, C	D, E, F	G, H, I	J, K, L
6	7	8	9
M, N, O	P, Q, R, S	T, U, V	W, X, Y, Z

No; because there is more than one output for each input.

b.

A	B	C	D	E	F	G	H	I	J	K	L
2	2	2	3	3	3	4	4	4	5	5	5

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6	6	6	7	7	7	7	8	8	8	9	9	9	9

Yes; because there is only one output for each input.

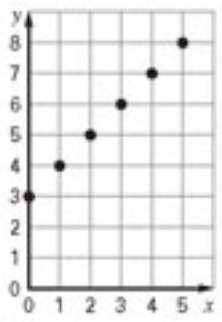
1.7 Graphing Calculator Activity **1.** 50°F; scroll down until you see the output 10, look to see that the input is 50.
3.

Input	0	1	2	3
Output	5	5.75	6.5	7.25

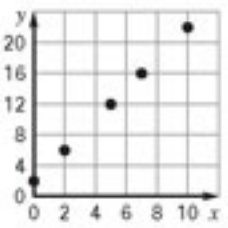
5.

Input	1	2	3	4
Output	7	14.5	22	29.5

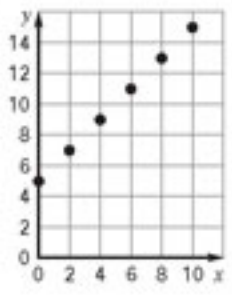
1.8 Skill Practice **1.** domain; range
3.



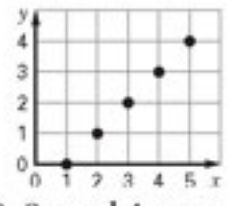
5.



7.

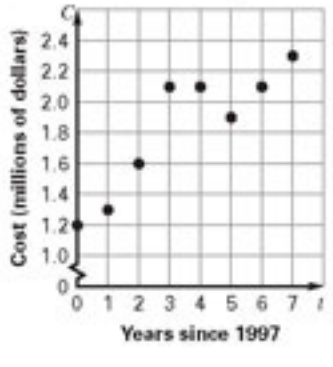


9. The domain and range are graphed backwards.



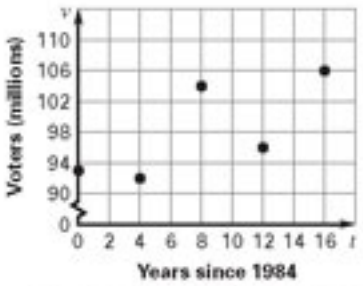
11. $y = 2x - 2$; domain: 1, 2, 3, and 4, range: 0, 2, 4, and 6

1.8 Problem Solving
15.



17.

Years since 1984	Voters	Voters (millions)
0	92,652,680	93
4	91,594,693	92
8	104,405,155	104
12	96,456,345	96
16	105,586,274	106



19. a. increases **b.** Yes; 27.5 grams is between the mass of an egg that is just under 38 millimeters long and an egg that is just over 38 millimeters long.

Extension **1.** function **3.** not a function **5.** function **7.** Not a function. *Sample answer:* There could be many students whose first names have 4 letters, for instance, but their last names could all have a different number of letters. **9.** Function; for each of your birthdays, you have only one height.

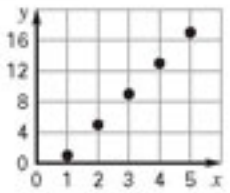
Chapter Review **1.** 7, 12 **3.** algebraic expression **5.** 16 **7.** 10 **9.** 400 **11.** 25 in.^{2} **13.** 9 **15.** 8 **17.** $\frac{1}{3}$ **19.** 52 **21.** 18 **23.** $z - 5$ **25.** $3x^2$ **27.** $2.95n + 2.19$ **29.** $13 + t \geq 24$ **31.** solution **33.** 240 ft^2 **35.** 4 **37.** 2

39.

Input	10	12	15	20	21
Output	5	7	10	15	16

range: 5, 7, 10, 15, and 16

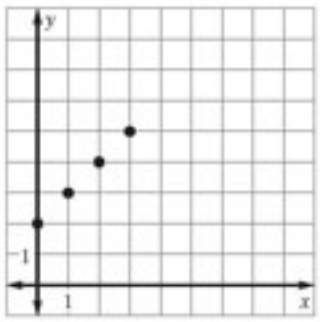
41. $y = x + 4$ **43.**



Chapter 1 Extra Practice

1. 16 **3.** 4.4 **5.** 2.4 **7.** $\frac{8}{27}$ **9.** 26 **11.** 28 **13.** 10 **15.** 111 **17.** $\frac{3}{4}m$ **19.** $y - 3$ **21.** $45 - m$ **23.** $12 \cdot (r - 4) = 72$ **25.** 38 **27.** 16 **29.** *Sample answer:* You know the temperature in Quito in degrees Celsius and the temperature in Miami in degrees Fahrenheit. You need to find out which one is greater. **31.** domain: 3, 4, 5, 6; range: 9, 11, 13, 15

33.



35.