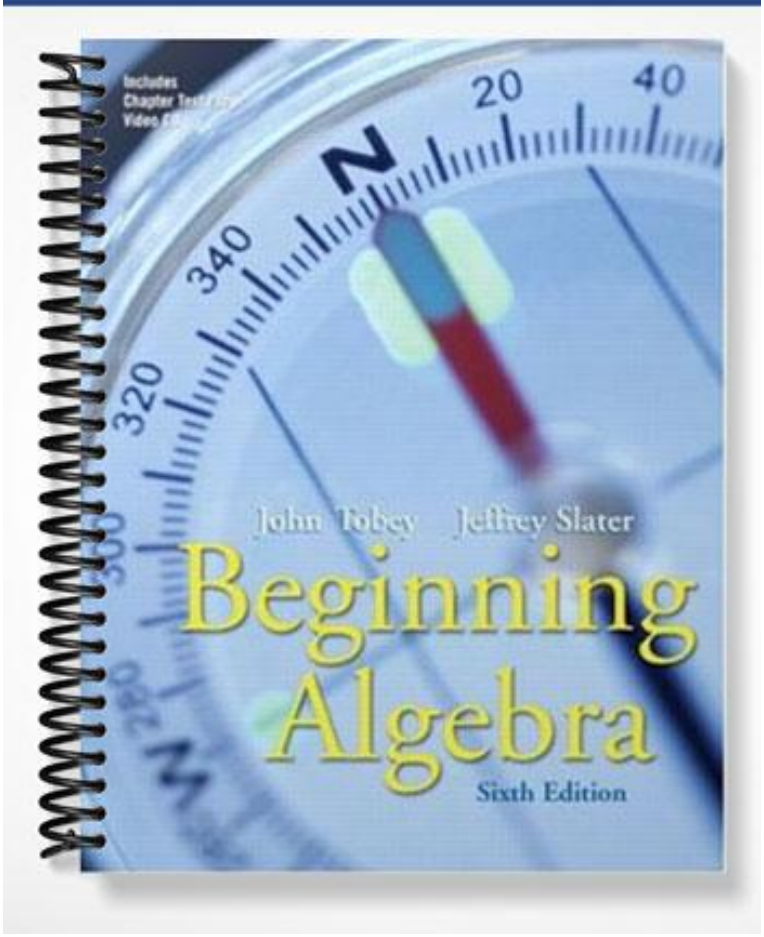
SOLUTIONS MANUAL



Chapter 1

1.1 Exercises

	Number	WN	RaN	IR	ReN
2.	$-4/5$		x		x
4.	2.34		x		x
6.	$-7/9$		x		x
8.	14		x		x
10.	3.232232223...			x	x

12. +\$0.07

14. +3642

16. -12

18. Opposite of $-\frac{4}{5}$ is $\frac{4}{5}$

20. Opposite of 85.4 is -85.4

22. $|-5.9| = 5.9$

24. $\left|\frac{7}{12}\right| = \frac{7}{12}$

26. $-13 + (-3) = -16$

28. $-12 + (-19) = -31$

30. $\left(-\frac{2}{9}\right) + \left(-\frac{4}{9}\right) = -\frac{6}{9} = -\frac{2}{3}$

32. $\left(-\frac{5}{14}\right) + \left(+\frac{2}{14}\right) = -\frac{3}{14}$

34. $\left(-\frac{2}{7}\right) + \left(+\frac{3}{14}\right) = \left(-\frac{4}{14}\right) + \left(+\frac{3}{14}\right) = -\frac{1}{14}$

36. $(-1.8) + (-1.4) = -3.2$

38. $(-0.8) + (+0.5) = -0.3$

40. $(-6.48) + (-3.7) = -10.18$

42. $7 + (-8) + (-4) = -1 + (-4) = -5$

44. $-9 + 6 + (-12) = -15$

46. $-\frac{5}{6} + \frac{7}{18} = -\frac{15}{18} + \frac{7}{18} = -\frac{8}{18} = -\frac{4}{9}$

48. $-4 + (-13) + 7 = -17 + 7 = -10$

50. $16 + (-24) = -8$

52. $-114 + 186 = 72$

54. $-\frac{3}{5} + \frac{2}{3} = -\frac{9}{15} + \frac{10}{15} = \frac{1}{15}$

56. $-\frac{2}{3} + \left(-\frac{1}{4}\right) = -\frac{8}{12} + \left(-\frac{3}{12}\right) = -\frac{11}{12}$

58. $4.79 + (-9.1) = -4.31$

60. $27 + (-11) + (-4) = 16 + (-4) = 12$

62. $-23+4+(-11)+17$
$=-19+(-11)+17$
$=-30+17$
$=-13$

64. $23.17+5.03+(-11.81)$
$=28.2+(-11.81)$
$=16.39$

66. $-12+7=-5$
-5^0 F

68. $11+(-15)=-4$ hours from 12 A.M.
$12+(-4)=8$
8 A.M. in New York

70. Account balance:
$643.85-185.50=\$458.35$
Short: $475-458.35=\$16.54$

72. $-258+(-32)+150=-290+150=-140$
He still owes \$140.

74. $30+14+(-12)+(-18)+8=22$
$\$22,000,000$

76. $-18+?=10$
$-18+28=10$
$?=28$

78. Red: $\$87.99\times 0.50=\$44.00$
Blue: $\$57.99\times 0.75=\$43.50$
The blue blouse was cheaper. The red one was a better buy: for \$0.50 more, she got a better value.

Cumulative Review

80. $\left(\frac{2}{5}\right)\left(\frac{20}{27}\right)=\frac{2(4)(5)}{5(27)}=\frac{8}{27}$

82. $2\frac{1}{2}\div 3\frac{2}{5}=\frac{5}{2}\div\frac{17}{5}=\frac{5}{2}\cdot\frac{5}{17}=\frac{25}{34}$

84. $1.63-0.98=0.65$

86. $0.208\div 0.8=0.26$

1.2 Exercises

2. First change subtracting -15 to adding a positive fifteen. Then use the rules for addition of two real numbers with different signs. Thus $-10-(-15)=-10+15=5$.

4. $(+16)-(+48)=(+16)+(-48)=-32$

6. $(+18)-(+24)=(+18)+(-24)=-6$

8. $-24-(-7)=-24+7=-17$

10. $(-48)-(-80)=(-48)+(+80)=32$

12. $(0)-(-7)=(0)+(+7)=7$

14. $(-24)-(-24)=(-24)+(+24)=0$

16. $-35-(-10)=-35+10=-25$

18. $\frac{2}{9}-\frac{7}{9}=\frac{2}{9}+\left(-\frac{7}{9}\right)=-\frac{5}{9}$

20. $\left(-\frac{2}{3}\right)-\left(+\frac{1}{4}\right)=\left(-\frac{2}{3}\right)+\left(-\frac{1}{4}\right)$
$=\left(-\frac{8}{12}\right)+\left(-\frac{3}{12}\right)$
$=-\frac{11}{12}$

22. $\left(-\frac{7}{10}\right)-\left(+\frac{10}{15}\right)=\left(-\frac{7}{10}\right)+\left(-\frac{10}{15}\right)$
$=\left(-\frac{21}{30}\right)+\left(-\frac{20}{30}\right)$
$=-\frac{41}{30}=-1\frac{11}{30}$

24. $(-0.9)-(+0.5)=(-0.9)+(-0.5)=-1.4$

26. $-0.03-0.06=-0.03+(-0.06)=-0.09$

28. $\frac{5}{6}-3=\frac{5}{6}+\left(-\frac{18}{6}\right)=-\frac{13}{6}=-2\frac{1}{6}$

30. $-\frac{3}{8}+5=-\frac{3}{8}+\frac{40}{8}=\frac{37}{8}=4\frac{5}{8}$

32. $19-76=19+(-76)=-57$

34. $-74-11=-74+(-11)=-85$

36. $8.4-(-2.7)=8.4+2.7=11.1$

38. $\frac{2}{3}-(-6)=\frac{2}{3}+6=6\frac{2}{3}$

40. $9-\frac{2}{3}=\frac{27}{3}+\left(-\frac{2}{3}\right)=\frac{25}{3}=8\frac{1}{3}$

42. $-\frac{11}{12}-\frac{5}{18}=-\frac{11}{12}+\left(-\frac{5}{18}\right)$
$=-\frac{33}{36}+\left(-\frac{10}{36}\right)$
$=-\frac{43}{36}=-1\frac{7}{36}$

44. $-97.6-(-146)=-97.6+146=48.4$

46. $\frac{2}{7}-(-3)=\frac{2}{7}+3=\frac{2}{7}+\frac{21}{7}$
$=\frac{23}{7}=3\frac{2}{7}$

48. $7-(-6.183)=7+6.183=13.183$

50. $-1.043-4=-1.043+(-4)=-5.043$

52. $20-(-12)=20+12=32$

54. $9+6-(-5)=9+6+5=15+5=20$

56. $8+(-4)-(+10)=8+(-4)+(-10)$
$=4+(-10)=-6$

58. $18-(-15)-3=18+15+(-3)$
$=33+(-3)=30$

60. $-4.2-(-3.8)+1.5=-4.2+3.8+1.5$
$=-0.4+1.5=1.1$

62. $-3-(-12)+18+15-(-6)$
$=-3+12+18+15+6$
$=48$

64. $300-(-126)=300+126=426$
426 ft

66. $44.6-(-4)=44.6+4=48.6^{\circ}\text{F}$

68. She paid $1815-265=\$1550$.

Cumulative Review

70. $-37+(-14)=-51$

72. $-21+13=-8^{\circ}\text{C}$

1.3 Exercises

2. To multiply three or more real numbers, multiply the absolute values. The sign of the result is positive if there are an even number of negative signs. It is negative if there are an odd number of negative signs.

4. $8(-2)=-16$

6. $0\times 150=0$

8. $24\times 2.5=60$

10. $(-2.3)(-0.11)=0.253$

12. $0.6(-3.5)=-2.1$

14. $(5)\left(-\frac{7}{10}\right)=-\frac{7}{2}$

16. $\left(-\frac{4}{9}\right)\left(-\frac{3}{5}\right)=\frac{4}{15}$

18. $\left(\frac{14}{17}\right)\left(-\frac{3}{28}\right)=-\frac{3}{34}$

20. $0\div(-15)=0$

22. $-45\div 9=\frac{-45}{9}=-5$

24. $(240)\div(-15)=\frac{240}{-15}=-16$

26. $(-0.6)\div 0.3=\frac{-0.6}{0.3}=-2$

28. $8.1\div(-0.03)=\frac{8.1}{-0.03}=-270$

30. $-7.2\div 8=\frac{-7.2}{8}=-0.9$

32. $\frac{2}{7}\div\left(-\frac{3}{5}\right)=\frac{2}{7}\cdot\left(-\frac{5}{3}\right)=-\frac{10}{21}$

34. $-\frac{5}{6}\div\left(-\frac{7}{18}\right)=-\frac{5}{6}\cdot\left(-\frac{18}{7}\right)=\frac{15}{7}=2\frac{1}{7}$

36. $-\frac{4}{9}\div\left(-\frac{8}{15}\right)=-\frac{4}{9}\cdot\left(-\frac{15}{8}\right)=\frac{5}{6}$

38. $\frac{12}{-\frac{2}{5}}=\frac{12}{1}\left(-\frac{5}{2}\right)=-30$

40. $\frac{-\frac{3}{8}}{-\frac{2}{3}}=-\frac{3}{8}\left(-\frac{3}{2}\right)=\frac{9}{16}$

42. $\dfrac{\frac{5}{12}}{-\frac{7}{24}} = \dfrac{5}{12}\left(-\dfrac{24}{7}\right) = -\dfrac{10}{7} = -1\dfrac{3}{7}$

44. $(-6)(2)(-3)(4) = (12)(3)(4) = (36)(4)$
$= 144$

46. $-2(-1)(3)(-1)(-4) = 24$

48. $(-3)(2)(-4)(0)(-2) = 0$

50. $(60)(-0.6)(-0.002)(0.5)$
$= (-36)(-0.002)(0.5)$
$= (0.072)(0.5)$
$= 0.036$

52. $\left(\dfrac{3}{8}\right)\left(\dfrac{1}{2}\right)\left(-\dfrac{5}{6}\right) = -\dfrac{3}{16}\left(\dfrac{5}{6}\right) = -\dfrac{5}{32}$

54. $\left(-\dfrac{1}{2}\right)\left(\dfrac{4}{5}\right)\left(-\dfrac{7}{8}\right)\left(-\dfrac{2}{3}\right)$
$= -\left(\dfrac{2}{5}\right)\left(\dfrac{7}{8}\right)\left(\dfrac{2}{3}\right) = -\left(\dfrac{7}{20}\right)\left(\dfrac{2}{3}\right)$
$= -\dfrac{7}{30}$

56. $(-5)(-2) = -5 + 2 = -3$

58. $(-3)(-9) = 27$

60. $18 \div (-6) = \dfrac{18}{-6} = -3$

62. $(-6) + (-3) = -9$

64. $18 \div (-18) = -1$

66. $75(27.30 - 37.20) = 75(-9.90) = -742.5$
A loss of \$742.50

68. Payments: $180(12) = \$2160$
Owing: $6480 - 2160 = \$4320$

70. $-5(10) = -50$, lost 50 yards

72. Total $= -50 + 20 = -30$, lost 30 yards

74. $15(6) = +90,$ gained 90 yards

76. Large-loss avoided $= 15(2) = 30$
Additional small-gains $= 5(4) = 20$
Additional yards $= 30 + 20 = 50$ yards

Cumulative Review

78. $(-17.4) + (8.31) + (2.40) = -9.09 + 2.40$
$= -6.69$

80. $(-47) - (-32) = (-47) + 32 = -15$

82. $104\dfrac{1}{2} + 88\dfrac{2}{3} + 72\dfrac{5}{6} = \dfrac{209}{2} + \dfrac{266}{3} + \dfrac{437}{6}$
$= \dfrac{627}{6} + \dfrac{532}{6} + \dfrac{437}{6} = \dfrac{1596}{6} = 266$ sq yards

1.4 Exercises

2. The base is 9 and the exponent is 2. Thus you multiply $(9)(9) = 81$.

4. The answer is negative. When you raise a negative number to an odd power the result is always negative.

6. If you have parentheses surrounding the -3, then the base is -3 and the exponent is 4. The result is 81. If you do not have parentheses, then the base is 3. You evaluate to obtain 81 and then take the negative of 81, which is -81. Thus $(-3)^4 = 81,$ but $-3^4 = -81.$

8. $(7)(7)(7)(7)(7) = 7^5$

10. $(z)(z)(z) = z^3$

12. $(x)(x)(x)(x)(x) = x^5$

14. $(6x)(6x)(6x)(6x) = (6x)^4 = 6^4 x^4$

16. $4^2 = 16$

18. $8^3 = 512$

20. $15^2 = 225$

22. $(-2)^3 = (-2)(-2)(-2) = -8$

24. $(-5)^4 = (-5)(-5)(-5)(-5) = 625$

26. $-4^2 = -(4)(4) = -16$

28. $\left(\frac{1}{2}\right)^3 = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right)\left(\frac{1}{2}\right) = \frac{1}{8}$

30. $\left(\frac{2}{3}\right)^4 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right) = \frac{16}{81}$

32. $(1.2)^2 = (1.2)(1.2) = 1.44$

34. $(0.7)^3 = 0.343$

36. $(-7)^4 = (-7)(-7)(-7)(-7) = 2401$

38. $-7^4 = -(7)(7)(7)(7) = -2401$

40. $7^2 + 6^3 = 49 + 216 = 265$

42. $4^3 - 2^5 = 64 - 32 = 32$

44. $(-2)^3 - (-5)^4 = -8 - 625 = -633$

46. $8^2 - (-2)^3 = 64 - (-8) = 64 + 8 = 72$

48. $(-7)^3 (-2)^4 = (-343)(16) = -5488$

50. $9^2 (-3)^3 = 81(-27) = -2187$

52. $6^{11} = 362,797,056$

54. $256 = (2)(2)(2)(2)(2)(2)(2)(2) = (2)^8$
The number is 2.

Cumulative Review

56. $\frac{3}{4} \div \left(-\frac{9}{20}\right) = \left(\frac{3}{4}\right)\left(-\frac{20}{9}\right) = \left(\frac{3}{4}\right)\left(-\frac{4 \cdot 5}{3 \cdot 3}\right)$
$= -\frac{5}{3} = -1\frac{2}{3}$

58. $(-2.1)(-1.2) = 2.52$

1.5 Exercises

2. $4 + 4 + 4 + 5 + 5 + 5 + 5 + 5 + 5 = 42$

4. (b) gives the correct total

6. $(3-7)^2 \div 2 \times 5 = (-4)^2 \div 2 \times 5$
$= 16 \div 2 \times 5$
$= 8 \times 5$
$= 40$

8. $3(9-2+3)+7 = 3(10)+7$
$= 30 + 7$
$= 37$

10. $6 - 3^2 \cdot 6 + 4 = 6 - 9 \cdot 6 + 4$
$= 6 - 54 + 4$
$= -44$

12. $7 + 36 \div 12 \cdot 3 - 14 = 7 + 3 \cdot 3 - 14$
$= 7 + 9 - 14$
$= 2$

14. $2 \cdot 6 + 5 \cdot 3 - 7 \cdot 4 = 12 + 5 \cdot 3 - 7 \cdot 4$
$= 12 + 15 - 7 \cdot 4$
$= 12 + 15 - 28$
$= -1$

16. $11 - 3(4)^2 \div (-6) = 11 - 3(16) \div (-6)$
$= 11 - 48 \div (-6)$
$= 11 + 8$
$= 19$

18. $-2(3-6)^2 - (-2) = -2(-3)^2 + 2$
$= -2(9) + 2$
$= -18 + 2$
$= -16$

20. $(-3)^2 \cdot 6 \div 9 + 4 \cdot 2 = 9 \cdot 6 \div 9 + 4 \cdot 2$
$= 54 \div 9 + 8$
$= 6 + 8$
$= 14$

22. $\frac{5}{6} \div \frac{2}{3} - 6 \cdot \left(\frac{1}{2}\right)^2 = \frac{5}{6} \cdot \frac{3}{2} - \frac{6}{1} \cdot \frac{1}{4}$
$= \frac{5}{4} - \frac{6}{4} = -\frac{1}{4}$

24. $0.05 + 1.4 - (0.5 - 0.7)^3$
$= 0.05 + 1.4 - (-0.2)^3$
$= 0.05 + 1.4 - (-0.008)$
$= 1.45 + 0.008$
$= 1.458$

26. $-\frac{2}{3}\left(\frac{3}{5}\right) + \frac{5}{7} \div \frac{5}{3} = -\frac{2}{5} + \frac{5}{7} \cdot \frac{3}{5}$
$= -\frac{2}{5} + \frac{3}{7}$
$= -\frac{14}{15} + \frac{15}{35}$
$= \frac{1}{35}$

28. $\left(\frac{3}{5}\right)\left(\frac{5}{6}\right)-\frac{3}{4}\div 6=\left(\frac{3}{5}\right)\left(\frac{5}{6}\right)-\left(\frac{3}{4}\right)\left(\frac{1}{6}\right)$
$=\frac{1}{2}-\frac{1}{8}$
$=\frac{4}{8}-\frac{1}{8}$
$=\frac{3}{8}$

30. $\left(2\frac{4}{7}\right)\div\left(-1\frac{1}{5}\right)=\left(\frac{18}{7}\right)\div\left(-\frac{6}{5}\right)$
$=\left(\frac{18}{7}\right)\left(-\frac{5}{6}\right)$
$=-\frac{15}{7}$ or $-2\frac{1}{7}$

32. $4.35+8.06\div(-2.6)-(2.1)^2$
$=4.35+(-3.1)-4.41$
$=1.25-4.41$
$=-3.16$

34. $(2.4\cdot 1.2)^2-1.6\cdot 2.2+4.0-3.6$
$=(2.88)^2-3.52\div 4.0-3.6$
$=8.2944-0.88-3.6$
$=7.4144-3.6$
$=3.8144$

36. $3(-2)+9(-1)+5(0)+1(1)$
$=-6+9(-1)+5(0)+1(1)$
$=-6+(-9)+5(0)+1(1)$
$=-6+(-9)+0+1(1)$
$=-6+(-9)+0+1$
$=-14$ or 14 under par

38. 37 did not use the order of operations.

Cumulative Review

40. $-\frac{3}{4}-\frac{5}{6}=-\frac{9}{12}-\frac{10}{12}=-\frac{9}{12}=-1\frac{7}{12}$

42. $3\frac{3}{5}\div 6\frac{1}{4}=\frac{18}{5}\div\frac{25}{4}$
$=\frac{18}{5}\cdot\frac{4}{25}=\frac{72}{125}$

How Am I Doing? Sections 1.1-1.5

1. $3+(-12)=-9$

2. $-\frac{5}{6}+\left(-\frac{7}{8}\right)=-\frac{20}{24}+\left(-\frac{21}{24}\right)$
$=\frac{-41}{24}$
$=-1\frac{17}{24}$

3. $\begin{array}{r} 0.34 \\ +\ 0.90 \\ \hline 1.24 \end{array}$

4. $-14+3+(-2.5)+6.4$
$=-11+(-2.5)+6.4$
$=-13.5+6.4$
$=-7.1$

5. $-23-(-34)=-23+34=11$

6. $-\frac{4}{5}-\frac{1}{3}=-\frac{4}{5}+\left(-\frac{1}{3}\right)$
$=-\frac{12}{15}+\left(-\frac{5}{15}\right)$
$=-\frac{17}{15}$
$=-1\frac{7}{15}$

7. $4.5-(-7.8)=4.5+7.8=12.3$

8. $-4-(-5)+9=-4+5+9=10$

9. $(-3)(-8)(2)(-2)=24(2)(-2)$
$=48(-2)$
$=-96$

10. $\left(-\frac{6}{11}\right)\left(-\frac{5}{3}\right)=\frac{10}{11}$

11. $-0.072\div 0.08=\frac{-0.072}{0.08}=-0.9$

12. $\frac{5}{8}\div\left(-\frac{17}{16}\right)=\left(\frac{5}{8}\right)\cdot\left(-\frac{16}{17}\right)=-\frac{10}{17}$

13. $(0.7)^3=(0.7)(0.7)(0.7)$
$=(0.49)(0.7)$
$=0.343$

14. $(-4)^4=(-4)(-4)(-4)(-4)=256$

15. $0-2^8=-(2)(2)(2)(2)(2)(2)(2)(2)$
$=-256$

16. $\left(\frac{2}{3}\right)^3=\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)=\frac{8}{27}$

17. $5^3+(-2)^4=125+16=141$

18. $12\div 6(2)+3=2(2)+3=4+3=7$

19. $15+3-2+(-6)=18+(-2)+(-6)$
$=16+(-6)$
$=10$

20. $(9-13)^2+15\div(-3)$
$=(-4)^2+15\div(-3)$
$=16+15\div(-3)$
$=16+(-5)$
$=11$

21. $-0.12\div 0.6+(-3)(1.2)-(-0.5)$
$=-0.2+(-3)(1.2)+0.5$
$=-0.2+(-3.6)+0.5$
$=-3.8+0.5$
$=-3.3$

22. $\left(\frac{3}{4}\right)\left(-\frac{2}{5}\right)+\left(-\frac{1}{2}\right)\left(\frac{4}{5}\right)+\left(\frac{1}{2}\right)^2$
$=\left(\frac{3}{4}\right)\left(-\frac{2}{5}\right)+\left(-\frac{1}{2}\right)\left(\frac{4}{5}\right)+\frac{1}{4}$
$=-\frac{3}{10}+\left(-\frac{1}{2}\right)\left(\frac{4}{5}\right)+\frac{1}{4}$
$=-\frac{3}{10}+\left(-\frac{2}{5}\right)+\frac{1}{4}$
$=-\frac{6}{20}+\left(-\frac{8}{20}\right)+\frac{5}{20}$
$=-\frac{14}{20}+\frac{5}{20}$
$=-\frac{9}{20}$

1.6 Exercises

2. $7x$ indicates we are *multiplying* 7 by x.

4. It distributes a factor of a to each term inside the parentheses. Distribute means "to give out to each member of a group."

6. $-5(x+3y-2)=-5x-15y-10$
She made an error with the sign rules. She should multiply $(-5)(-2)$ to get +10. The answer to the problem is $-5x-15y+10$.

8. $4(3x-y)=4(3x)-4y=12x-4y$

10. $-3(2a-5b)$
$=-3(2a)-3(-5b)$
$=-6a+15b$

12. $2(4x+y)$
$=2(4x)+2(y)$
$=8x+2y$

14. $6(-4a-2b)=6(-4a)+6(-2b)$
$=-24a-12b$

16. $-(-4x+y)=(-1)(-4x)+(-1)(y)$
$=4x-y$

18. $-5(3x+9-7y)$
$=(-5)(3x)+(-5)(9)+(-5)(-7y)$
$=-15x-45+35y$

20. $3(2x-6y-5)=3(2x)+3(-6y)+3(-5)$
$=6x-18y-15$

22. $\frac{2}{3}(-27a^4+9a^2-21)$
$=\frac{2}{3}(-27a^4)+\frac{2}{3}(9a^2)+\frac{2}{3}(-21)$
$=-18a^4+6a^2-14$

24. $\frac{y}{3}(3y-4x-6)$
$=\frac{y}{3}(3y)+\frac{y}{3}(-4x)+\frac{y}{3}(-6)$
$=y^2-\frac{4xy}{3}-2y$

26. $3a(2a+b-c-4)$
$=3a(2a)+3ab+3a(-c)+3a(-4)$
$=6a^2+3ab-3ac-12a$

28. $(5x+1)(-4)=5x(-4)+1(-4)=-20x-4$

30. $(3x-3y+4)(2x)$
$=3x(2x)+(-3y)(2x)+4(2x)$
$=6x^2-6xy+8x$

32. $(4a-2b-1)(-ab)$
$=4a(-ab)+(-2b)(-ab)+(-1)(-ab)$
$=-4a^2b+2ab^2+ab$

34. $(-2x+y-3)(4xy)$
$=(-2x)(4xy)+y(4xy)+(-3)(4xy)$
$=-8x^2y+4xy^2-12xy$

36. $3.1(2.5x^2-3.1x+0.7)$
$=3.1(2.5x^2)+3.1(-3.1x)+3.1(0.7)$
$=7.75x^2-9.61x+2.17$

38. $-0.9q(2.1q-0.2r-0.8s)$
$=(-0.9q)(2.1q)+(0.9q)(-0.2r)$
$+(-0.9q)(-0.8s)$
$=-1.89q^2+0.8qr+0.72qs$

40. $700(12x+8y)=700(12x)+700(8y)$
$=8400x+5600y$ square feet

42. $85(3x+2y)=85(3x)+85(2y)$
$=225x+170y$ square feet

44. $3x(1500-4y)=3x(1500)+3x(-4y)$
$=4500x-12xy$ square feet

Cumulative Review

46. $-18+(-20)+36+(-14)$
$=-38+36+(-14)$
$=-2+(-14)=-16$

48. $-27-(-41)=-27+41=14$

50. $(12-10)^2+(-3)(-2)=(2)^2+(-3)(-2)$
$=4+(-3)(-2)$
$=4+6$
$=10$

52. Practice days this year
$=60\%(365)=0.6(365)=219$
Increase $=219-205=14$ days

1.7 Exercises

2. Like terms are terms that have identical variables and exponents.

4. The two terms $12a$ and $-9a$ are like terms because they both have the variable a with the exponent of one.

6. The only like terms are $-12ab$ and $9ab$ because the other two have different exponents even though they have the same variables.

8. $-17x^5+3x^5=(-17+3)x^5=-14x^5$

10. $3a^3-6a^2+5a^3=(3+5)a^3-6a^2$
$=8a^3-6a^2$

12. $4a-3b-2a-8b=(4-2)a+(-2-8)b$
$=2a-10b$

14. $3.1a-0.2b-0.8a+5.3b$
$=(3.1-0.8)a+(-0.2+5.3)b$
$=2.3a+5.1b$

16. $1.9x-2.4b-3.8x-8.2b$
$=(1.9-3.8)x+(-2.4-8.2)b$
$=-1.9x-10.6b$

18. $6x-5y-3y+7-11x-5$
$=(6-11)x+(-5-3)y+7-5$
$=-5x-8y+2$

20. $5x^2y+12xy^2-8x^2-12xy^2$
$=5x^2y+(12-12)xy^2-8x^2$
$=5x^2y-8x^2$

22. $5x+7-6x^2+6-11x+4x^2$
$=(-6+4)x^2+(-11+5)x+7+6$
$=-2x^2-6x+13$

24. $3y^2+9y-12-4y^2-6y+2$
$=(3-4)y^2+(9-6)y-12+2$
$=-y^2+3y-10$

26. $\frac{2}{5}s-\frac{3}{8}t-\frac{4}{15}s\frac{5}{12}t$
$=\left(\frac{2}{5}-\frac{4}{15}\right)s+\left(-\frac{3}{8}-\frac{5}{12}\right)t$
$=\left(\frac{6}{15}-\frac{4}{15}\right)s+\left(-\frac{9}{24}-\frac{10}{24}\right)t$
$=\frac{2}{15}s-\frac{19}{24}t$

28. $\frac{2}{5}y-\frac{3}{4}x^2-\frac{1}{3}y+\frac{7}{8}x^2$
$=\left(\frac{2}{5}-\frac{1}{3}\right)y+\left(-\frac{3}{4}+\frac{7}{8}\right)x^2$
$=\left(\frac{6}{15}-\frac{5}{15}\right)y+\left(-\frac{6}{8}+\frac{7}{8}\right)x^2$
$=\frac{1}{15}y+\frac{1}{8}x^2$

30. $ab+3a-4ab+2a-8b$
$=(1-4)ab+(3+2)a-8b$
$=-3ab+5a-8b$
$=5a-3ab-8b$

32. $8(3x-2y)+4(3y-5x)$
$=24x-16y+12y-20x$
$=4x-4y$

34. $2x(x-3y)-4(-3x^2-2xy)$
$=2x^2-6xy+12x^2+8xy$
$=14x^2+2xy$

36. $-7(7xy-11y^2)-2y(-2x+3y)$
$=-21xy+33y^2+4xy-6y^2$
$=-17xy+27y^2$

38. $7(3-x)-6(8-13x)$
$=21-7x-48+78x$
$=71x-27$

40. $2(6x-3)+2(8x-7)=12x-6+16x-14$
$=28x-20$ meters

42. $2(7x-2)+2(3x+4)=14x-4+6x+8$
$=20x+4$ meters

44. $2(4a-5)+2(3a+8)+2(9a+2)$
$=8a-10+6a+16+18a+4$
$=32a+10$ feet

Cumulative Review

46. $\left(-\frac{5}{3}\right)\left(\frac{1}{2}\right)=-\frac{5}{6}$

48. $\left(\frac{5}{7}\right)\div\left(-\frac{14}{3}\right)=\left(\frac{5}{7}\right)\left(-\frac{3}{14}\right)=-\frac{15}{98}$

1.8 Exercises

2. If $x=5$, then $-4x-2$
$=-4(5)-2=-20-2=-22$

4. If $x=-8$, then $\frac{3}{4}x+8=\frac{3}{4}(-8)+8$
$=-6+8=2$

6. If $x=-\frac{1}{2}$, then $7x+20$
$=7\left(-\frac{1}{2}\right)+20=-\frac{7}{2}+20=-\frac{7}{2}+\frac{40}{2}$
$=\frac{33}{2}=16\frac{1}{2}$

8. If $x=8$, then $3-5x=3-5(8)$
$=3-40=-37$

10. If $x=2.3$, then $6.3-3x=6.3-3(2.3)$
$=6.3-6.9=-0.6$

12. If $x=-\frac{2}{3}$, then $5x+7$
$=5\left(-\frac{2}{3}\right)+7=-\frac{10}{3}+\frac{21}{3}=\frac{11}{3}$

14. If $x=4$, then $x^2+3x=(4)^2+3(4)$
$=16+12=28$

16. If $x=-1$, then $4x^2=4(-1)^2=4$

18. If $x=5$, then $-7x^2=-7(5)^2=-7(25)$
$=-175$

20. If $x=-3$, then $-2x^2=-2(-3)^2$
$=-2(9)=-18$

22. If $x=-3$, then $18+3x^2=18+3(-3)^2$
$=18+3(9)=18+27$
$=45$

24. If $x=-2$, then $2-x^2$
$=2-(-2)^2=2-4=-2$

26. If $x=-4$, then $2x-3x^2=2(-4)-3(-4)^2$
$=-8-3(16)=-8-48$
$=-56$

28. If $x=-2$, then $5x+(3x)^2$
$=5(-2)+[3(-2)]^2$
$=-10+(-6)^2$
$=-10+36=26$

30. If $x = -4$, then $7 - 2x^2 = 7 - 2(-4)^2$
$= 7 - 2(16) = 7 - 32$
$= -25$

32. If $x = 2$, then $4x^2 - 3x + 9$
$= 4(2)^2 - 3(2) + 9$
$= 16 - 6 + 9$
$= 19$

34. If $x = -3$, then $\frac{1}{3}x^2 + 2x - 5$
$= \frac{1}{3}(-3)^2 + 2(-3) - 5$
$= \frac{1}{3}(9) - 6 - 5$
$= 3 - 6 - 5$
$= -8$

36. If $x = 4$ and $y = -1$, then $2x^2 - 3xy + 2y$
$= 2(4)^2 - 3(4)(-1) + 2$
$= 2(16) + 12 - 2$
$= 32 + 12 - 2 = 42$

38. If $a = 3$, $b = 2$, and $c = -4$, then
$a^2 - 2ab + 2c^2 = 3^2 - 2(3)(2) + 2(-4)^2$
$= 9 - 12 + 2(16)$
$= 9 - 12 + 32 = 29$

40. If $x = -2$ and $y = -3$, then $\frac{x^2 - 2xy}{2y}$
$= \frac{(-2)^2 - 2(-2)(-3)}{2(-3)} = \frac{4 - 12}{-6}$
$= \frac{-8}{-6} = \frac{4}{3}$ or $1\frac{1}{3}$

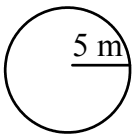
42. $A = ab$, $b = 92$, $a = 54$
$A = (92)(54) = 4968$ square feet

44. $A = s^2$
Decrease $= A_{\text{old}} - A_{\text{new}}$
$= (23)^2 - (20)^2$
$= 529 - 400$
$= 129$ square millimeters

46. $A = \frac{1}{2}a(b_1 + b_2)$, $a = 9$, $b_1 = 17$, $b_2 = 20$
$A = \frac{1}{2}(9)(20 + 17) = \frac{9(37)}{2}$
≈ 166.5 square inches

48. $A = \frac{1}{2}ab$, $a = 14$, $b = 19$
$A = \frac{1}{2}(14)(19) = 133$ square feet

50. $A = \pi r^2 = (3.14)(5)^2 = (3.14)(25)$
$= 78.5$ square meters



52. $C = \frac{5}{9}(F - 32)$
$C = \frac{5}{9}(50 - 32)$
$C = \frac{5}{9}(18)$
$C = 5(2)$
$C = 10^\circ C$

54. $A = \frac{1}{2}\pi r^2,\ r = 15$

$A \approx \frac{1}{2}(3.14)(15)^2 = 353.25$ square inches

Cost $= (0.85)(353.25) = \$300.26$

56. $\mathrm{F} = \frac{9}{5}\mathrm{C} + 32$

$F = \frac{9}{5}(-60) + 32 = -108 + 32 = -76$

$F = \frac{9}{5}(-30) + 32 = -54 + 32 = -22$

$-76^0 F$ to $-22^\circ F$

58. $k = 1.61r$

$20 = 1.61r$

$r = \frac{20}{1.61} = 12.4$

Approximately 12.4 miles

Cumulative Review

60. $3(x-2y) - (x^2 - y) - (x-y)$

$= 3x - 6y - x^2 + y - x + y$

$= -x^2 + 2x - 4y$

62. $4\overline{)214.0}$ About 54 papers each

$\underline{20}$

14

$\underline{12}$

20

$\underline{20}$

0

1.9 Exercises

2. $-x + 5y = -x(-5y) = -(x - 5y)$

4. Innermost

6. $-4x - 2(y - 3x) = -4x - 2y + 6x$

$= 2x - 2y$

8. $4(x-y) - 2(3x+y) = 4x - 4y - 6x - 2y$

$= -2x - 6y$

10. $-4(a+2b) + 5(2b-a)$

$= -4a - 8b + 10b - 5a$

$= -9a + 2b$

12. $4y\left[-3y^2 + 2(4-y)\right] = 4y\left[-3y^2 + 8 - 2y\right]$

$= -12y^3 + 32y - 8y^2$

$= -12y^3 - 8y^2 + 32y$

14. $-3\left[2(3a+b) - 5(a-2b)\right]$

$= -3\left[6a + 2b - 5a + 10b\right]$

$= -3\left[a + 12b\right]$

$= -3a - 36b$

16. $3(x+2y) - \left[4 - 2(x+y)\right]$

$= 3x + 6y - \left[4 - 2x - 2y\right]$

$= 3x + 6y - 4 + 2x + 2y$

$= 5x + 8y - 4$

18. $3\left[x - y(3x+y) + y^2\right]$

$= 3\left[x - 3xy - y^2 + y^2\right]$

$= 3\left[x - 3xy\right]$

$= 3x - 9xy$

20. $7b\left(3b^2-2b-5\right)-2b\left(4-b\right)$
$=21b^3-14b^2-35b-8b+2b^2$
$=21b^3-12b^2-43b$

22. $2b^2-3\left[5b+2b\left(2-b\right)\right]$
$=2b^2-3\left[5b+4b-2b^2\right]$
$=2b^2-3\left[9b-2b^2\right]$
$=2b^2-27b+6b^2=8b^2-27b$

24. $2a-\left\{6b-4\left[a-\left(b-3a\right)\right]\right\}$
$=2a-\left\{6b-4\left[a-b+3a\right]\right\}$
$=2a-\left\{6b-4\left[4a-b\right]\right\}$
$=2a-\left\{6b-16a+4b\right\}$
$=2a-\left\{10b-16a\right\}$
$=2a-10b+16a$
$=18a-10b$

26. $2\left\{3x^2+4\left[2x-\left(3-x\right)\right]\right\}$
$=2\left\{3x^2+4\left[2x-3+x\right]\right\}$
$=2\left\{3x^2+4\left[3x-3\right]\right\}$
$=2\left\{3x^2+12x-12\right\}$
$=6x^2+24x-24$

28. $-2\left\{x^2-3\left[x-\left(x-2x^2\right)\right]\right\}$
$=-2\left[x^2-3\left(x-x+2x^2\right)\right]$
$=-2\left[x^2-3\left(2x^2\right)\right]$
$=-2\left(x^2-6x^2\right)$
$=-2\left(-5x^2\right)$
$=10x^2$

30. Cost of meals $=20\left(52\right)\left(10\right)=\$10,400$
Tax
$=5\%\left(10,400\right)=0.05\left(10,400\right)=\$520$
Total Cost $=10,400+520=\$10,920$
Tip on meal $=15\%\left(10,400\right)$
$=0.15\left(10,400\right)=\$1560$
Tip on total $=15\%\left(10,920\right)$
$=0.15\left(10,920\right)=\$1638$
Difference in tips $=1638-1560=\$78$

Cumulative Review

32. $A=\pi r^2$
$=3.14\left(380\right)^2$
$=3.14\left(144,400\right)$
$=453,416$
$453,416$ sq ft

34. $A=\frac{1}{2}ab,\ a=3.5,\ b=6.5$
$A=\frac{1}{2}\left(3.5\right)\left(6.5\right)=11.375\ \text{ft}^2$
Cost $=122\left(11.375\right)=\$1387.75$

Putting Your Skills to Work

1. 66.8% of 31,723
$0.668\times31,723=21,190.964$
About 21,190,964 use e-mail.

2. $\begin{array}{r} 31,712 \\ -\ 22,205 \\ \hline 9,518 \end{array}$
About 9,518,000 more use computers.

3. $(0.77)x = 65{,}190{,}000$
$$x = \frac{65{,}190{,}000}{0.77}$$
$x = 846{,}622{,}338$ people

4. 117.5% of 65,190,000
$(1.175)(65{,}190{,}000) = 76{,}598{,}250$
About 76,598,250 people.

5. $N = 65{,}190{,}000 + 4{,}500{,}000x$
when $x = 6$
$N = 65{,}190{,}000 + 4{,}500{,}000(6)$
$N = 65{,}190{,}000 + 27{,}000{,}000$
$N = 92{,}190{,}000$ people

6. $N = 65{,}190{,}000 + 4{,}500{,}000x$
when $x = 9$
$N = 65{,}190{,}000 + 4{,}500{,}000(9)$
$N = 65{,}190{,}000 + 40{,}500{,}000$
$N = 105{,}190{,}000$ people

Chapter 1 Review Problems

1. $(-6) + (-2) = -8$

2. $(-12) + (+7.8) = -4.2$

3. $(+5) + (-2) + (-12) = (+3) + (-12) = -9$

4. $(+3.7) + (-1.8) = 1.9$

5. $\left(+\frac{1}{2}\right) + \left(-\frac{5}{6}\right) = \left(+\frac{3}{6}\right) + \left(-\frac{5}{6}\right) = -\frac{2}{6} = -\frac{1}{3}$

6. $\left(-\frac{3}{11}\right) + \left(-\frac{1}{22}\right) = \left(-\frac{6}{22}\right) + \left(-\frac{1}{22}\right)$
$= -\frac{7}{22}$

7. $\left(+\frac{3}{4}\right) + \left(-\frac{1}{12}\right) + \left(-\frac{1}{2}\right)$
$= \left(+\frac{9}{12}\right) + \left(-\frac{1}{12}\right) + \left(-\frac{6}{12}\right) = \frac{2}{12} = \frac{1}{6}$

8. $\left(-\frac{4}{15}\right) + \left(+\frac{12}{5}\right) + \left(-\frac{2}{3}\right)$
$= \left(-\frac{4}{15}\right) + \left(+\frac{36}{15}\right) + \left(-\frac{10}{15}\right) = \frac{22}{15}$

9. $(+5) - (-3) = (+5) + (+3) = 8$

10. $(-2) - (-15) = (-2) + (+15)$
$= 13$

11. $(-30) - (+3) = (-30) + (-3)$
$= -33$

12. $(+8) - (-1.2) = (+8) + (+1.2)$
$= 9.2$

13. $\left(-\frac{7}{8}\right) + \left(-\frac{3}{4}\right) = \left(-\frac{7}{8}\right) + \left(-\frac{6}{8}\right)$
$= -\frac{13}{8} = -1\frac{5}{8}$

14. $\left(-\frac{3}{14}\right) + \left(+\frac{5}{7}\right) = \left(-\frac{3}{14}\right) + \left(+\frac{10}{14}\right)$
$= \frac{7}{14} = \frac{1}{2}$

15. $-20.8-1.9=-20.8+(-1.9)=-22.7$

16. $-151-(-63)=-151+63=-88$

17. $87\div(-29)=-3$

18. $-5(-6)+4(-3)=30+(-12)=18$

19. $\dfrac{-24}{-\frac{3}{4}}=\left(\dfrac{-24}{1}\right)\left(-\dfrac{4}{3}\right)=32$

20. $\left(-\dfrac{1}{2}\right)\div\dfrac{3}{4}=\left(-\dfrac{1}{2}\right)\left(\dfrac{2\cdot 2}{3}\right)=-\dfrac{2}{3}$

21. $\left(\dfrac{5}{7}\right)\div\left(-\dfrac{5}{25}\right)=\dfrac{5}{7}\cdot\left(-\dfrac{25}{5}\right)$
$=-\dfrac{25}{7}$ or $-3\dfrac{4}{7}$

22. $(-6)(3)(4)=(-18)(4)=-72$

23. $(-1)(-2)(-3)(-5)=(1)(2)(3)(5)=30$

24. $(-5)\left(-\dfrac{1}{2}\right)(4)(-3)=\left(\dfrac{5}{2}\right)(-12)=-30$

25. $-5+(-2)-(-3)=-5+(-2)+(+3)$
$=(-7)+(+3)=-4$

26. $6-(-4)+(-2)+(8)=6+4+(-2)+(8)$
$=18+(-2)$
$=16$

27. $(-16)+(-13)=-29$

28. $(-11)-(-12)=-11+12=1$

29. $-\dfrac{4}{3}+\dfrac{2}{3}+\dfrac{1}{6}=-\dfrac{2}{3}+\dfrac{1}{6}=-\dfrac{4}{6}+\dfrac{1}{6}$
$=-\dfrac{3}{6}=-\dfrac{1}{2}$

30. $-\dfrac{6}{7}+\dfrac{1}{2}+\left(-\dfrac{3}{14}\right)=-\dfrac{12}{14}+\dfrac{7}{14}+\left(-\dfrac{3}{14}\right)$
$=-\dfrac{5}{14}+\left(-\dfrac{3}{14}\right)$
$=-\dfrac{8}{14}$
$=-\dfrac{4}{7}$

31. $(-3)(-2)(-5)=-(3)(2)(5)=-30$

32. $-6+(-2)-(-3)=-6+(-2)+3$
$=-8+3$
$=-5$

33. $3.5(-2.6)=-9.1$

34. $(-5.4)\div 4(-6)=0.9$

35. $5-(-3.5)+1.6=5+3.5+1.6=10.1$

36. $-8+2-(-4.8)=-6+4.8=-1.2$

37. $17+3.4+(-16)+(-2.5)=20.4+(-18.5)$
$=1.9$

38. $37+(-44)+12.5+(-6.8)$
$=49.5+(-50.8)$
$=-1.3$

39. $(-8)(3) = -24$; 24 yards lost

40. $-34 + 12 = -22$
-22° F

41. $6895 - (-468) = 6895 + 468 = 7363$ feet

42. $+1\frac{1}{2} - 3\frac{1}{4} + 2 - 2\frac{1}{2} = 3\frac{1}{2} + \left(-5\frac{3}{4}\right)$
$= -2\frac{1}{4}$
$2\frac{1}{4}$ point loss

43. $(-3)^4 = (-3)(-3)(-3)(-3) = 81$

44. $(-2)^7 = -128$

45. $(-5)^4 = -625$

46. $\left(\frac{2}{3}\right)^3 = \frac{8}{27}$

47. $-9^2 = -81$

48. $(0.6)^2 = 0.36$

49. $\left(\frac{5}{6}\right)^2 = \left(\frac{5}{6}\right)\left(\frac{5}{6}\right) = \frac{25}{36}$

50. $\left(\frac{3}{4}\right)^3 = \left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right) = \frac{27}{64}$

51. $(5)(-4) + (3)(-2)^3$
$= (5)(-4) + (3)(-8)$
$= -20 + (-24)$
$= -44$

52. $20 - (-10) - (-6) + (-5) - 1$
$= 20 + 10 + 6 + (-5) - 1$
$= 36 - 6$
$= 30$

53. $(7-9)^3 + (-6)(-2) + (-3)$
$= (-2)^3 + (-6)(-2) + (-3)$
$= -8 + (-6)(-2) + (-3)$
$= -8 + (12) + (-3) = 1$

54. $5(3x - 7y) = 5(3x) + 5(-7y) = 15x - 35y$

55. $2x(3x - 7y + 4)$
$= 2x(3x) + 2x(-7y) + 2x(4)$
$= 6x^2 - 14xy + 8x$

56. $-(7x^2 - 3x + 11)$
$= -1(7x^2) + (-1)(-3x) + (-1)(11)$
$= -7x^2 + 3x - 11$

57. $(2xy + x - y)(-3y)$
$= (2xy)(-3y) + x(-3y) - y(-3y)$
$= -6xy^2 - 3xy + 3y^2$

58. $3a^2b - 2bc + 6bc^2 - 8a^2b - 6bc^2 + 5bc$
$= (3-8)a^2 + (-2+5)bc + (6-6)bc^2$
$= -5a^2b + 3bc$

59. $9x+11y-12x-15y=-3x-4y$

60. $4x^2-13x+7-9x^2-22x-16$
$=(4-9)x^2+(-13-22)x+7-16$
$=-5x^2-35x-9$

61. $-x+\frac{1}{2}+14x^2-7x-1-4x^2$
$=(14-4)x^2+(-7-1)x+\frac{1}{2}-1$
$=10x^2-8x-\frac{1}{2}$

62. If $x=-7,$ then $7x-6=7(-7)-6$
$=-49-6=-55$

63. If $x=8,$ then $7-\frac{3}{4}x=7-\frac{3}{4}(8)$
$=7-6=1$

64. $x^2+3x-4=(-3)^2+3(-3)-4$
$=9-9-4$
$=-4$

65. If $x=2,$ then
$-3x^2-4x+5=-3(2)^2-4(2)+5$
$=-3(4)-4(2)+5$
$=-12-8+5=-15$

66. $-3x^3-4x^2+2x+6$
$=-3(-2)^3-4(-2)^2+2(-2)+6$
$=-3(-8)-4(4)-4+6$
$=24-16-4+6$
$=30-20$
$=10$

67. If $v=24$, $t=2$, and $a=32,$ then
$vt-\frac{1}{2}at^2=24(2)-\frac{1}{2}(32)(2)^2$
$=48-16(4)=48-64=-16$

68. $\frac{nRT}{V}=\frac{16(-2)(4)}{-20}$
$=\frac{-32}{-5}=\frac{32}{5}$

69. If $p=6000,$ $r=18\%,$ and $t=\frac{3}{4},$ then
$I=prt=6000(0.18)\left(\frac{3}{4}\right)=\$810$

70. $F=\frac{9C+160}{5}=\frac{9(30)+160}{5}$
$=\frac{270+160}{5}=\frac{430}{5}=86$
$86^\circ F$

71. If $r=15,$ $A=\pi r^2=3.14(15)^2$
$=3.14(225)=706.5$ square meters
Cost $=(706.5 \text{ sq m})(\$3/\text{sq m})$
$=\$2119.50$

72. $P=180S-R-C$
$=180(56)-300-1200$
$=10,080-300-1200$
$=8580$
$8580

73. $A = \frac{1}{2}a(b_1 + b_2)$,
$a = 200,\ b_1 = 700,\ b_2 = 300$
$A = \frac{1}{2}(200)(700 + 300)$
$= 100(1000)$
$= 100{,}000$ square feet
Cost $= 2(100{,}000) = \$200{,}000$

74. $A = \frac{1}{2}ab,\ a = 3.8,\ b = 5.5$
$A = \frac{1}{2}(3.8)(5.5) = 10.45$ square feet
Cost $= 66(10.45) = \$689.70$

75. $5x - 7(x - 6) = 5x - 7x + 42$
$= -2x + 42$

76. $3(x - 2) - 4(5x + 3)$
$= 3x - 6 - 20x - 12$
$= -17x - 18$

77. $2[3 - (4 - 5x)] = 2(3 - 4 + 5x)$
$= 2(-1 + 5x) = -2 + 10x$

78. $-3x[x + 3(x - 7)] = -3x(x + 3x - 21)$
$= -3x(4x - 21)$
$= -12x^2 + 63x$

79. $2xy^3 - 6x^3y - 4x^2y^2 + 3(xy^3 - 2x^2y - 3x^2y^2)$
$= 2xy^3 - 6x^3y - 4x^2y^2 + 3xy^3 - 6x^2y - 9x^2y^2$
$= (2 + 3)xy^3 - 6x^3y + (-4 - 9)x^2y^2 - 6x^2y$
$= 5xy^3 - 6x^3y - 13x^2y^2 - 6x^2y$

80. $-5(x + 2y - 7) + 3x(2 - 5y)$
$= -5x - 10y + 35 + 6x - 15xy$
$= x - 10y + 35 - 15xy$

81. $2\{x - 3(y - 2) + 4[x - 2(y + 3)]\}$
$= 2[x - 3y + 6 + 4(x - 2y - 6)]$
$= 2(x - 3y + 6 + 4x - 8y - 24)$
$= 2(5x - 11y - 18)$
$= 10x - 22y - 36$

82. $-5\{2a - b[5a - b(3 + 2a)]\}$
$= -5[2a - b(5a - 3b - 2ab)]$
$= -5(2a - 5ab + 3b^2 + 2ab^2)$
$= -10a + 25ab - 15b^2 - 10ab^2$

83. $-3\{2x - [x - 3y(x - 2y)]\}$
$= -3[2x - (x - 3xy + 6y^2)]$
$= -3(2x - x + 3xy - 6y^2)$
$= -3(x + 3xy - 6y^2)$
$= -3x - 9xy + 18y^2$

84. $2\{3x + 2[x + 2y(x - 4)]\}$
$= 2[3x + 2(x + 2xy - 8y)]$
$= 2(3x + 2x + 4xy - 16y)$
$= 2(5x + 4xy - 16y)$
$= 10x + 8xy - 32y$

85. $-6.3 + 4 = -2.3$

86. $4 + (-8) + 12 = -4 + 12 = 8$

87. $$-\frac{2}{3}-\frac{4}{5}=-\frac{10}{15}+\left(-\frac{12}{15}\right)$$
$$=\frac{-22}{15}$$
$$=-1\frac{7}{15}$$

88. $$-\frac{7}{8}-\left(-\frac{3}{4}\right)=-\frac{7}{8}+\frac{6}{8}=-\frac{1}{8}$$

89. $$3-(-4)+(-8)=3+4+(-8)$$
$$=7+(-8)$$
$$=-1$$

90. $$-1.1-(-0.2)+0.4$$
$$=-1.1+0.2+0.4$$
$$=-0.9+0.4$$
$$=-0.5$$

91. $$\left(-\frac{3}{5}\right)\left(-2\frac{1}{2}\right)=\left(-\frac{3}{5}\right)\left(-\frac{5}{2}\right)$$
$$=\frac{3}{2}=1\frac{1}{2}$$

92. $$(-4.2)\div(-0.7)=6$$

93. $$-14.4\div(-0.06)=240$$

94. $$(-8.2)(3.1)=-25.42$$

95. $$400+1000-800=1400-800=600$$
Her score was \$600.

96. $$(-0.3)^4=(-0.3)(-0.3)(-0.3)(-0.3)$$
$$=0.0081$$

97. $$-0.5^4=-(0.5)(0.5)(0.5)(0.5)$$
$$=-0.0625$$

98. $$9(5)-5(2)^3+5=9(5)-5(8)+5$$
$$=45-5(8)+5$$
$$=45-40+5$$
$$=5+5$$
$$=10$$

99. $$3.8x-0.2y-8.7x+4.3y$$
$$=(3.8-8.7)x+(-0.2+4.3)y$$
$$=-4.9x+4.1y$$

100. If $p=-2$ and $q=3$, then
$$\frac{2p+q}{3q}=\frac{2(-2)+3}{3(3)}$$
$$=\frac{-4+3}{9}$$
$$=-\frac{1}{9}$$

101. If $s=-3$ and $t=-2$, then
$$\frac{4s-7t}{s}=\frac{4(-3)-7(-2)}{-3}$$
$$=\frac{-12+14}{-3}$$
$$=-\frac{2}{3}$$

102. $F = \frac{9}{5}C + 32,\ C = 38.6$

$F = \frac{9}{5}(38.6) + 32$

$F = 69.48 + 32$

$F = 101.48^\circ$

Your dog does not have a fever; in fact, its temperature is below normal.

103. $-7(x - 3y^2 + 4) + 3y(4 - 6y)$

$= -7x + 21y^2 - 28 + 12y - 18y^2$

$= -7x + 3y^2 + 12y - 28$

104. $-2\{6x - 3[7y - 2y(3 - x)]\}$

$= -2\{6x - 3[7y - 6y + 2xy]\}$

$= -2\{6x - 3[y + 2xy]\}$

$= -2\{6x - 3y - 6xy\}$

$= -12x + 6y + 12xy$

How Am I Doing? Chapter 1 Test

1. $-2.5 + 6.3 + (-4.1) = 3.8 + (-4.1) = -0.3$

2. $-5 - (-7) = -5 + 7 = 2$

3. $\left(-\frac{2}{3}\right)(7) = -\frac{14}{3} = -4\frac{2}{3}$

4. $(-5)(-2)(7)(-1) = -(10)(7)(1)$

$= -(70)(1) = -70$

5. $(-12) \div (-3) = 4$

6. $(-1.8) \div (0.6) = -3$

7. $(-4)^3 = (-4)(-4)(-4) = -64$

8. $(1.6)^2 = (1.6)(1.6) = 2.56$

9. $\left(\frac{2}{3}\right)^4 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right) = \frac{16}{81}$

10. $(0.2)^2 - (2.1)(-3) + 0.46$

$= 0.04 - (2.1)(-3) + 0.46$

$= 0.04 - (-6.3) + 0.46$

$= 0.04 + 6.3 + 0.46$

$= 6.34 + 0.46$

$= 6.8$

11. $3(4 - 6)^3 + 12 \div (-4) + 2$

$= 3(-2)^3 + 12 \div (-4) + 2$

$= 3(-8) + 12 \div (-4) + 2$

$= -24 - 3 + 2$

$= -25$

12. $-5x(x + 2y - 7)$

$= -5x(x) - 5x(2y) - 5x(-7)$

$= -5x^2 - 10xy + 35x$

13. $-2ab^2(-3a - 2b + 7ab)$

$= -2ab^2(-3a) - 2ab^2(-2b) - 2ab^2(7ab)$

$= 6a^2b^2 + 4ab^3 - 14a^2b^3$

14. $6ab-\frac{1}{2}a^2b+\frac{3}{2}ab+\frac{5}{2}a^2b$
$=\left(6+\frac{3}{2}\right)ab+\left(-\frac{1}{2}+\frac{5}{2}\right)a^2b$
$=\left(\frac{12}{2}+\frac{3}{2}\right)ab+\frac{4}{2}a^2b$
$=\frac{15}{2}ab+2a^2b$

15. $2.3x^2y-8.1xy^2+3.4xy^2-4.1x^2y$
$=(2.4-4.1)x^2y+(-8.1+3.4)xy^2$
$=-1.8x^2y-4.7xy^2$

16. $3(2-a)-4(-6-2a)=6-3a+24+8a$
$=5a+30$

17. $5(3x-2y)-(x+6y)$
$=15x-10y-x-6y$
$=(15-1)x+(-10-6)y$
$=14x-16y$

18. $x^3-3x^2y+2y-5$
$=3^3-3(3)^2(-4)+2(-4)-5$
$=27-3(9)(-4)-8-5$
$=27+108-8-5$
$=122$

19. If $x=-3,$ then $3x^2-7x-11$
$=3(-3)^2-7(-3)-11$
$=37$

20. $2a-3b$
$=2(-4)-3(-3)$
$=-8+9$
$=1$

21. (60 miles/hr)(1.61 km/mile)
$=96.6$ kilometers per hour

22. $A=\frac{1}{2}a(b_1+b_2),$
$a=120,\ b_1=200,\ b_2=180$
$A=\frac{1}{2}(120)(200+180)=60(380)$
$=22,800$ square feet

23. $A=\frac{1}{2}ab,\ a=6.8,\ b=8.5$
$A=\frac{1}{2}(6.8)(8.5)=28.9$ square feet
Cost $=0.80(28.9)=\$23.12$

24. $A=60\times10=600$ sq. ft.
$600 \text{ sq. ft.} \times\frac{1 \text{ can}}{200 \text{ sq. ft.}}=3 \text{ cans}$

25. $3\left[x-2y(x+2y)-3y^2\right]$
$=3\left[x-2xy-4y^2-3y^2\right]$
$=3\left[x-2xy-7y^2\right]$
$=3x-6xy-21y^2$

26. $-3\left\{a+b\left[3a-b(1-a)\right]\right\}$
$=-3\left[a+b(3a-b+ab)\right]$
$=-3\left(a+3ab-b^2+ab^2\right)$
$=-3a-9ab+3b^2-3ab^2$