Business Math 11th edition Cleaves Solutions Manual

SKU: 9780134496436-SOLUTIONS

Chapter 2 Review of Fractions

Section Exercises

2-1, p. 51

1. proper **2.** improper **3.** improper **4.** proper **5.** proper **6.** improper

7. $7\overline{)12}\ 1\frac{5}{7}$, -7, 5 **8.** $20\overline{)21}\ 1\frac{1}{20}$, -20, 1 **9.** $18\overline{)18}\ 1$, -18 **10.** $7\overline{)17}\ 2\frac{3}{7}$, -14, 3 **11.** $8\overline{)16}\ 2$, -16 **12.** $16\overline{)387}\ 24\frac{3}{16}$, -32, 67, -64, 3

13. $\frac{1{,}300}{1{,}000}=\frac{13}{10}=1\frac{3}{10}$ phones per person **14.** $\frac{1{,}500}{1{,}000}=\frac{3}{2}=1\frac{1}{2}$ phones per person **15.** $(4\times 6)+1=25;\ \frac{25}{4}$

16. $(5\times 27)+2=137;\ \frac{137}{5}$ **17.** $(3\times 2)+1=7;\ \frac{7}{3}$ **18.** $(5\times 3)+4=19;\ \frac{19}{5}$

19. $(8\times 1)+5=13;\ \frac{13}{8}$ **20.** $(3\times 6)+2=20;\ \frac{20}{3}$ **21.** $\frac{12\div 3}{15\div 3}=\frac{4}{5}$

22. $\frac{12\div 4}{20\div 4}=\frac{3}{5}$ **23.** $\frac{20\div 4}{24\div 4}=\frac{5}{6}$ **24.** $\frac{18\div 18}{36\div 18}=\frac{1}{2}$ **25.** $\frac{24\div 12}{36\div 12}=\frac{2}{3}$

26. $\frac{13\div 13}{39\div 13}=\frac{1}{3}$ **27.** $\frac{400\text{ million}}{9{,}000\text{ million}}=\frac{2}{45}$ **28.** $\frac{4{,}000\text{ million}}{24{,}000\text{ million}}=\frac{1}{6}$

29. $21\overline{)36}\ 1\text{ R}15$, -21, 15 ; $15\overline{)21}\ 1\text{ R}6$, -15, 6 ; $6\overline{)15}\ 2\text{ R}3$, -12, 3 ; $3\overline{)6}\ 2\text{ R}0$, -6, 0 GCD $=3$ $\frac{21}{36}=\frac{21\div 3}{36\div 3}=\frac{7}{12}$

30. $15\overline{)24}\ 1\text{ R}9$, -15, 9 ; $9\overline{)15}\ 1\text{ R}6$, -9, 6 ; $6\overline{)9}\ 1\text{ R}3$, -6, 3 ; $3\overline{)6}\ 2\text{ R}0$, -6, 0 GCD $=3$ $\frac{15}{24}=\frac{15\div 3}{24\div 3}=\frac{5}{8}$

31. $18\overline{)48}\ 2\text{ R}12$, -36, 12 ; $12\overline{)18}\ 1\text{ R}6$, -12, 6 ; $6\overline{)12}\ 2\text{ R}0$, -12, 0 GCD $=6$ $\frac{18}{48}=\frac{18\div 6}{48\div 6}=\frac{3}{8}$

32. $15\overline{)40}\ 2\text{ R}10$, -30, 10 ; $10\overline{)15}\ 1\text{ R}5$, -10, 5 ; $5\overline{)10}\ 2\text{ R}0$, -10, 0 GCD $=5$ $\frac{15}{40}=\frac{15\div 5}{40\div 5}=\frac{3}{8}$

33. $8\overline{)16}\ \frac{2}{}$ $\frac{3\times 2}{8\times 2}=\frac{6}{16}$ **34.** $5\overline{)20}\ \frac{4}{}$ $\frac{4\times 4}{5\times 4}=\frac{16}{20}$ **35.** $8\overline{)32}\ \frac{4}{}$ $\frac{3\times 4}{8\times 4}=\frac{12}{32}$

36. $9\overline{)27}\ \frac{3}{}$ $\frac{5\times 3}{9\times 3}=\frac{15}{27}$ **37.** $3\overline{)15}\ \frac{5}{}$ $\frac{1\times 5}{3\times 5}=\frac{5}{15}$ **38.** $5\overline{)15}\ \frac{3}{}$ $\frac{3\times 3}{5\times 3}=\frac{9}{15}$

Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

2-2, p. 59

1.
$$\begin{array}{r} \frac{1}{9} \\ \frac{2}{9} \\ +\frac{5}{9} \\ \hline \frac{8}{9} \end{array}$$

2.
$$\begin{array}{r} \frac{7}{8} \\ +\frac{5}{8} \\ \hline \end{array}$$
$$\frac{12}{8} = 1\frac{4}{8} = 1\frac{1}{2}$$

3.
$$\begin{array}{r|l} 2 & 6 \;\; 9 \;\; 12 \\ 2 & 3 \;\; 9 \;\; 6 \\ 3 & 3 \;\; 9 \;\; 3 \\ 3 & 1 \;\; 3 \;\; 1 \\ \hline & 1 \;\; 1 \;\; 1 \end{array}$$
$2 \times 2 \times 3 \times 3 = 36$
The LCD is 36.

4.
$$\begin{array}{r|l} 2 & 12 \;\; 4 \;\; 15 \\ 2 & 6 \;\; 2 \;\; 15 \\ 3 & 3 \;\; 1 \;\; 15 \\ 5 & 1 \;\; 1 \;\; 5 \\ \hline & 1 \;\; 1 \;\; 1 \end{array}$$
$2 \times 2 \times 3 \times 5 = 60$
The LCD is 60.

5.
$$\begin{array}{r} \frac{5}{6} = \frac{25}{30} \\ +\frac{7}{15} = +\frac{14}{30} \\ \hline \end{array}$$
$$\frac{39}{30} = 1\frac{9}{30} = 1\frac{3}{10}$$

6.
$$\begin{array}{r} \frac{5}{8} = \frac{15}{24} \\ +\frac{7}{12} = +\frac{14}{24} \\ \hline \end{array}$$
$$\frac{29}{24} = 1\frac{5}{24}$$

7.
$$\begin{array}{r} 4\frac{5}{6} = 4\frac{5}{6} \\ +7\frac{1}{2} = +7\frac{3}{6} \\ \hline \end{array}$$
$$11\frac{8}{6} = 12\frac{2}{6} = 12\frac{1}{3}$$

8.
$$\begin{array}{r} 23\frac{5}{12} = 23\frac{20}{48} \\ +48\frac{7}{16} = +48\frac{21}{48} \\ \hline \end{array}$$
$$71\frac{41}{48}$$

9.
$$\begin{array}{r} 51\frac{5}{18} = 51\frac{20}{72} \\ +86\frac{9}{24} = +86\frac{27}{72} \\ \hline \end{array}$$
$$137\frac{47}{72}$$

10.
$$\begin{array}{r} 5\frac{7}{12} = 5\frac{7}{12} \\ 3\frac{1}{4} = 3\frac{3}{12} \\ +2\frac{2}{3} = +2\frac{8}{12} \\ \hline \end{array}$$
$$10\frac{18}{12} = 11\frac{6}{12} = 11\frac{1}{2}$$

11.
$$\begin{array}{r} \frac{7}{8} = \frac{21}{24} \\ 2\frac{3}{24} = 2\frac{3}{24} \\ +6\frac{1}{6} = +6\frac{4}{24} \\ \hline \end{array}$$
$$8\frac{28}{24} = 9\frac{4}{24} = 9\frac{1}{6}$$

12.
$$\begin{array}{r} 3\frac{5}{9} = 3\frac{20}{36} \\ 5\frac{1}{12} = 5\frac{3}{36} \\ +2\frac{2}{3} = +2\frac{24}{36} \\ \hline \end{array}$$
$$10\frac{47}{36} = 11\frac{11}{36}$$

13.
$$\begin{array}{r} \frac{7}{8} \\ -\frac{3}{8} \\ \hline \end{array}$$
$$\frac{4}{8} = \frac{1}{2}$$

14.
$$\begin{array}{r} \frac{8}{9} \\ -\frac{2}{9} \\ \hline \end{array}$$
$$\frac{6}{9} = \frac{2}{3}$$

15.
$$\begin{array}{r} \frac{3}{4} = \frac{21}{28} \\ -\frac{5}{7} = -\frac{20}{28} \\ \hline \end{array}$$
$$\frac{1}{28}$$

16.
$$\begin{array}{r} 9\frac{2}{3} = 9\frac{4}{6} \\ -6\frac{1}{2} = -6\frac{3}{6} \\ \hline \end{array}$$
$$3\frac{1}{6}$$

17.
$$\begin{array}{r} 15 = 14\frac{9}{9} \\ -12\frac{7}{9} = -12\frac{7}{9} \\ \hline \end{array}$$
$$2\frac{2}{9}$$

18.
$$\begin{array}{r} 21\frac{3}{5} = 21\frac{6}{10} = 20\frac{16}{10} \\ -12\frac{7}{10} = -12\frac{7}{10} = -12\frac{7}{10} \\ \hline \end{array}$$
$$8\frac{9}{10}$$

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

19. $15\frac{8}{15} = 15\frac{32}{60}$

$-7\frac{5}{12} = -7\frac{25}{60}$

$8\frac{7}{60}$

20. $23\frac{1}{8} = 23\frac{3}{24} = 22\frac{27}{24}$

$-\frac{7}{12} = -\frac{14}{24} = -\frac{14}{24}$

$22\frac{13}{24}$

21. $8\frac{1}{3}$

-5

$3\frac{1}{3}$

22. $12\frac{1}{5} = 11\frac{6}{5}$

$-7\frac{4}{5} = -7\frac{4}{5}$

$4\frac{2}{5}$

23. $11\frac{3}{4}+11\frac{3}{4}+18\frac{5}{8} =$

$11\frac{6}{8}+11\frac{6}{8}+18\frac{5}{8} =$

$40\frac{17}{8} = 42\frac{1}{8}$ yards

24. $42\frac{3}{8}+37\frac{5}{8}+12\frac{3}{8}+23\frac{3}{4} =$

$42\frac{3}{8}+37\frac{5}{8}+12\frac{3}{8}+23\frac{6}{8} =$

$114\frac{17}{8} = 116\frac{1}{8}$ feet

25. $10\frac{3}{4}+10\frac{3}{4}+12\frac{5}{8}+12\frac{5}{8}+12\frac{5}{8}$

$+12\frac{5}{8}+8\frac{1}{2}+8\frac{1}{2} =$

$10\frac{6}{8}+10\frac{6}{8}+12\frac{5}{8}+12\frac{5}{8}+12\frac{5}{8}$

$+12\frac{5}{8}+8\frac{4}{8}+8\frac{4}{8} = 84\frac{40}{8} = 89$ feet

26. $4\frac{4}{5}+4\frac{4}{5}+4\frac{4}{5}+7\frac{3}{8}+7\frac{3}{8} =$

$4\frac{32}{40}+4\frac{32}{40}+4\frac{32}{40}+7\frac{15}{40}+7\frac{15}{40} =$

$26\frac{126}{40} = 29\frac{3}{20}$ inches

27. $45-42\frac{1}{8} = 44\frac{8}{8}-42\frac{1}{8} =$

$2\frac{7}{8}$ yards; she can use the fabric.

28. $12-10\frac{3}{4} = 11\frac{4}{4}-10\frac{3}{4} = 1\frac{1}{4}$ feet

29. $13\frac{15}{16}-12\frac{5}{8} = 13\frac{15}{16}-12\frac{10}{16} = 1\frac{5}{16}$ feet

$14\frac{1}{8}-12\frac{5}{8} = 13\frac{9}{8}-12\frac{5}{8} = 1\frac{4}{8} = 1\frac{1}{2}$ feet

$14-12\frac{5}{8} = 13\frac{8}{8}-12\frac{5}{8} = 1\frac{3}{8}$ feet

$13\frac{13}{16}-12\frac{5}{8} = 13\frac{13}{16}-12\frac{10}{16} = 1\frac{3}{16}$ feet

30. $8\frac{3}{4}+8\frac{3}{4} = 16\frac{6}{4} = 17\frac{2}{4} = 17\frac{1}{2}$

$36-17\frac{1}{2} = 35\frac{2}{2}-17\frac{1}{2}$

$= 18\frac{1}{2}$ inches

2-3, p. 65

1. $\frac{3}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{5} = \frac{3}{10}$

2. $\frac{5}{7} \times \frac{1}{6} = \frac{5}{42}$

3. $\frac{23}{4} \times \frac{35}{9} = \frac{805}{36} = 22\frac{13}{36}$

4. $\frac{3}{\cancel{8}_{1}} \times \frac{\cancel{24}^{3}}{1} = 9$

5. $\frac{12}{7}$

6. $\frac{5}{3}$

7. $\frac{1}{9}$

8. $\frac{1}{12}$

9. $5\frac{4}{7} = \frac{39}{7}; \frac{7}{39}$

10. $3\frac{3}{8} = \frac{27}{8}; \frac{8}{27}$

11. $\frac{5}{8} \div \frac{3}{4} = \frac{5}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{3} = \frac{5}{6}$

12. $\frac{3}{5} \div \frac{9}{10} = \frac{\cancel{3}^{1}}{\cancel{5}_{1}} \times \frac{\cancel{10}^{2}}{\cancel{9}_{3}} = \frac{2}{3}$

Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

13. $2\frac{2}{5} \div 1\frac{1}{7} = \frac{12}{5} \div \frac{8}{7} = \frac{\overset{3}{\cancel{12}}}{5} \times \frac{7}{\underset{2}{\cancel{8}}} = \frac{21}{10} = 2\frac{1}{10}$

14. $5\frac{1}{4} \div 2\frac{2}{3} = \frac{21}{4} \div \frac{8}{3} = \frac{21}{4} \times \frac{3}{8} = \frac{63}{32} = 1\frac{31}{32}$

15. $\frac{1}{5} \times \frac{7}{8} = \frac{1 \times 7}{5 \times 8} = \frac{7}{40}$

Each store will receive $\frac{7}{40}$ of the original order.

16. $\frac{1}{4} \times \frac{4}{5} = \frac{1 \times \overset{1}{\cancel{4}}}{\underset{1}{\cancel{4}} \times 5} = \frac{1}{5}$

Each store will receive $\frac{1}{5}$ of the original order.

17. $4 \times 4\frac{1}{8} = \frac{\overset{1}{\cancel{4}}}{1} \times \frac{33}{\underset{2}{\cancel{8}}} = \frac{33}{2} = 16\frac{1}{2}$ feet

Yes, if no more than a total of $\frac{1}{8}$ inch is needed for spacing between the desks.

18. $4 \times 18\frac{5}{8} = \frac{\overset{1}{\cancel{4}}}{1} \times \frac{149}{\underset{2}{\cancel{8}}} = \frac{149}{2} = 74\frac{1}{2}$ feet

19. $3\frac{1}{4} \times 28 = \frac{13}{\underset{1}{\cancel{4}}} \times \frac{\overset{7}{\cancel{28}}}{1} = \frac{91}{1} = 91$ inches long

$28 \div 2 = 14$ inches wide

91 inches long $\times$ 14 inches wide

20. $75 \div 1\frac{1}{8} = \frac{75}{1} \div \frac{9}{8} = \frac{\overset{25}{\cancel{75}}}{1} \times \frac{8}{\underset{3}{\cancel{9}}}$

$= \frac{200}{3}$

$= 66\frac{2}{3}$, or 67 sheets

21. $\frac{3}{4} \div 5 = \frac{3}{4} \div \frac{5}{1} = \frac{3}{4} \times \frac{1}{5} = \frac{3}{20}$

22. $40 \div 8\frac{3}{4} = 40 \div \frac{35}{4} = \frac{\overset{8}{\cancel{40}}}{1} \times \frac{4}{\underset{7}{\cancel{35}}} = \frac{32}{7}$

$= 4\frac{4}{7}$; 4 boxes

23. $200 \div 9\frac{3}{4} = 200 \div \frac{39}{4} = \frac{200}{1} \times \frac{4}{39} = \frac{800}{39}$

$= 20\frac{20}{39}$ rooms

24. $21 \div 3\frac{1}{2} = \frac{21}{1} \div \frac{7}{2} = \frac{\overset{3}{\cancel{21}}}{1} \times \frac{2}{\underset{1}{\cancel{7}}} = 6$

6 cabinets will exactly fit along the wall.

Exercise Set, p. 72

1. Examples will vary, $\frac{3}{5}, \frac{7}{9}, \frac{5}{8}, \frac{100}{301}, \frac{41}{53}$; proper fractions

2. Examples will vary, $\frac{4}{4}, \frac{8}{5}, \frac{12}{4}, \frac{132}{89}, \frac{7}{1}$; improper fractions

3. proper

4. improper

5. improper

6. improper

7. $20\frac{2}{3}$

8. 7

9. $8\frac{1}{2}$

10.
$$\begin{array}{r} 20\frac{3}{4} \\ 4\overline{)83} \\ \underline{8} \\ 3 \\ \underline{0} \\ 3 \end{array}$$

11.
$$\begin{array}{r} 3\frac{7}{15} \\ 15\overline{)52} \\ \underline{45} \\ 7 \end{array}$$

12.
$$\begin{array}{r} 1\frac{9}{10} \\ 10\overline{)19} \\ \underline{10} \\ 9 \end{array}$$

13.
$$\begin{array}{r} 7 \\ 11\overline{)77} \\ \underline{77} \end{array}$$

 Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

14. $\frac{(6\times5)+5}{6}=\frac{35}{6}$

15. $\frac{(3\times4)+1}{3}=\frac{13}{3}$

16. $\frac{(3\times33)+1}{3}=\frac{100}{3}$

17. $\frac{(8\times7)+3}{8}=\frac{59}{8}$

18. $\frac{(5\times10)+1}{5}=\frac{51}{5}$

19. $\frac{15\div3}{18\div3}=\frac{5}{6}$

20. $\frac{20\div10}{30\div10}=\frac{2}{3}$

21. $\frac{30\div6}{48\div6}=\frac{5}{8}$

22. $\frac{27\div9}{36\div9}=\frac{3}{4}$

23. $\frac{18\div2}{20\div2}=\frac{9}{10}$

24. $\frac{78\div6}{96\div6}=\frac{13}{16}$

25. $\frac{18\div9}{63\div9}=\frac{2}{7}$

26. $\frac{4\times7}{7\times7}=\frac{28}{49}$

27. $\frac{5\times4}{8\times4}=\frac{20}{32}$

28. $\frac{5\times2}{6\times2}=\frac{10}{12}$

29. $\frac{9\times13}{11\times13}=\frac{117}{143}$

30. $\frac{8}{30}=\frac{4}{15}$ of the class

31. $\frac{15}{105}=\frac{1}{7}$ of the employees

32.
$$\begin{array}{r|lll} 2 & 4 & 12 & 16 \\ \hline 2 & 2 & 6 & 8 \\ \hline 2 & 1 & 3 & 4 \\ \hline 2 & 1 & 3 & 2 \\ \hline 3 & 1 & 3 & 1 \\ \hline & 1 & 1 & 1 \end{array}$$

$2\times2\times2\times2\times3=48$

33.
$$\begin{array}{r|llll} 2 & 56 & 24 & 12 & 42 \\ \hline 2 & 28 & 12 & 6 & 21 \\ \hline 2 & 14 & 6 & 3 & 21 \\ \hline 3 & 7 & 3 & 3 & 21 \\ \hline 7 & 7 & 1 & 1 & 7 \\ \hline & 1 & 1 & 1 & 1 \end{array}$$

$2\times2\times2\times3\times7=168$

34.
$$\begin{array}{r|lll} 2 & 1 & 5 & 10 & 6 \\ \hline 3 & 1 & 5 & 5 & 3 \\ \hline 5 & 1 & 5 & 5 & 1 \\ \hline & 1 & 1 & 1 & 1 \end{array}$$

$2\times3\times5=30$

35.
$$\begin{array}{r|llll} 2 & 8 & 9 & 12 & 24 \\ \hline 2 & 4 & 9 & 6 & 12 \\ \hline 2 & 2 & 9 & 3 & 6 \\ \hline 3 & 1 & 9 & 3 & 3 \\ \hline 3 & 1 & 3 & 1 & 1 \\ \hline & 1 & 1 & 1 & 1 \end{array}$$

$2\times2\times2\times3\times3=72$

36.
$$\begin{array}{r|lll} 2 & 8 & 20 & 16 \\ \hline 2 & 4 & 10 & 8 \\ \hline 2 & 2 & 5 & 4 \\ \hline 2 & 1 & 5 & 2 \\ \hline 5 & 1 & 5 & 1 \\ \hline & 1 & 1 & 1 \end{array}$$

$2\times2\times2\times2\times5=80$

37.
$$\begin{array}{r|ll} 2 & 12 & 15 \\ \hline 2 & 6 & 15 \\ \hline 3 & 3 & 15 \\ \hline 5 & 1 & 5 \\ \hline & 1 & 1 \end{array}$$

$2\times2\times3\times5=60$

38. $\frac{1}{4}+\frac{11}{12}+\frac{7}{16}=$

$\frac{12}{48}+\frac{44}{48}+\frac{21}{48}=\frac{77}{48}=1\frac{29}{48}$

39. $\frac{7}{8}+\frac{1}{8}=\frac{8}{8}=1$

40. $3\frac{1}{4}+2\frac{1}{3}+3\frac{5}{6}=$

$3\frac{3}{12}+2\frac{4}{12}+3\frac{10}{12}=$

$8\frac{17}{12}=9\frac{5}{12}$

41. $\frac{3}{5}+\frac{4}{5}=\frac{7}{5}=1\frac{2}{5}$

42. $\frac{2}{5}+\frac{2}{3}=\frac{6}{15}+\frac{10}{15}=\frac{16}{15}=1\frac{1}{15}$

43. $7\frac{1}{2}+4\frac{3}{8}=7\frac{4}{8}+4\frac{3}{8}=11\frac{7}{8}$

44. $11\frac{5}{6}+8\frac{2}{3}=11\frac{5}{6}+8\frac{4}{6}=19\frac{9}{6}=19\frac{3}{2}=20\frac{1}{2}$

45. $12\frac{3}{8}+16\frac{5}{8}=28\frac{8}{8}=29$ yards

46. $5\frac{3}{8}+7\frac{1}{2}+9\frac{3}{4}=5\frac{3}{8}+7\frac{4}{8}+9\frac{6}{8}$

$=21\frac{13}{8}=22\frac{5}{8}$

47. $\frac{6}{7}-\frac{5}{14}=\frac{12}{14}-\frac{5}{14}=$

$\frac{7}{14}=\frac{1}{2}$

48.
$$\begin{array}{r} 4\frac{1}{2}= \\ -3\frac{6}{7}= \\ \hline \end{array} \quad \begin{array}{r} 4\frac{7}{14}= \\ -3\frac{12}{14}= \\ \hline \end{array} \quad \begin{array}{r} 3\frac{21}{14} \\ -3\frac{12}{14} \\ \hline \frac{9}{14} \end{array}$$

49.
$$\begin{array}{r} 12 \\ -4\frac{1}{8}= \\ \hline \end{array} \quad \begin{array}{r} =11\frac{8}{8} \\ -4\frac{1}{8} \\ \hline 7\frac{7}{8} \end{array}$$

50.
$$\begin{array}{r} 4\frac{1}{5}= \\ -2\frac{3}{10}= \\ \hline \end{array} \quad \begin{array}{r} 4\frac{2}{10}= \\ -2\frac{3}{10}= \\ \hline \end{array} \quad \begin{array}{r} 3\frac{12}{10} \\ -2\frac{3}{10} \\ \hline 1\frac{9}{10} \end{array}$$

Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

51.
$$\begin{array}{r} 7\frac{4}{5} = 7\frac{8}{10} \\ -4\frac{1}{2} = -4\frac{5}{10} \\ \hline 3\frac{3}{10} \end{array}$$

52. $\frac{5}{12} - \frac{3}{12} = \frac{2}{12} = \frac{1}{6}$

53.
$$\begin{array}{r} 5 = 4\frac{5}{5} \\ -3\frac{2}{5} = -3\frac{2}{5} \\ \hline 1\frac{3}{5} \end{array}$$

54.
$$\begin{array}{r} 4\frac{5}{6} = 4\frac{5}{6} \\ -3\frac{1}{3} = -3\frac{2}{6} \\ \hline 1\frac{3}{6} = 1\frac{1}{2} \end{array}$$

55.
$$\begin{array}{r} 7\frac{3}{4} = 7\frac{3}{4} \\ 5\frac{1}{2} = 5\frac{2}{4} \\ 6\frac{1}{4} = 6\frac{1}{4} \\ 9\frac{1}{4} = 9\frac{1}{4} \\ 8\frac{3}{4} = 8\frac{3}{4} \\ \hline 35\frac{10}{4} = 37\frac{2}{4} = 37\frac{1}{2} \text{ hours} \end{array}$$

$$\begin{array}{r} 40 = 39\frac{2}{2} \\ -37\frac{1}{2} = -37\frac{1}{2} \\ \hline 2\frac{1}{2} \text{ hours} \end{array}$$

Maxine Ford worked $2\frac{1}{2}$ hours more than George Mackie.

56.
$$\begin{array}{r} 6 = 5\frac{8}{8} \\ -3\frac{5}{8} = -3\frac{5}{8} \\ \hline 2\frac{3}{8} \text{ feet} \end{array}$$

57. $\frac{5}{18}$

58. $\frac{5}{1} \times \frac{2}{3} = \frac{10}{3} = 3\frac{1}{3}$

59. $\frac{\overset{28}{\cancel{56}}}{\underset{1}{\cancel{9}}} \times \frac{\overset{1}{\cancel{9}}}{\underset{1}{\cancel{2}}} = 28$

60. $\frac{27}{40}$

61. $\frac{3}{7} \times \frac{8}{1} = \frac{24}{7} = 3\frac{3}{7}$

62. $\frac{\overset{1}{\cancel{9}}}{\underset{5}{\cancel{10}}} \times \frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{5}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{9}}} \times \frac{3}{7} = \frac{3}{35}$

63. $10\frac{1}{2} \times 1\frac{5}{7} = \frac{\overset{3}{\cancel{21}}}{\underset{1}{\cancel{2}}} \times \frac{\overset{6}{\cancel{12}}}{\underset{1}{\cancel{7}}} = 18$

64. $10\frac{2}{3} \times \frac{3}{8} = \frac{\overset{4}{\cancel{32}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{8}}} = 4$ cakes

65. $\frac{3}{2}$

66. $8 = \frac{8}{1}; \frac{1}{8}$

67. $2\frac{3}{8} = \frac{19}{8}; \frac{8}{19}$

68. $5\frac{1}{12} = \frac{61}{12}; \frac{12}{61}$

69. 4

70. $3\frac{1}{4} = \frac{13}{4}; \frac{4}{13}$

71. $\frac{3}{4} \div \frac{1}{4} = \frac{3}{\cancel{4}} \times \frac{\overset{1}{\cancel{4}}}{1} = 3$

72. $7\frac{1}{2} \div 2 = \frac{15}{2} \div \frac{2}{1} = \frac{15}{2} \times \frac{1}{2} = \frac{15}{4} = 3\frac{3}{4}$

73. $3\frac{1}{7} \div 5\frac{1}{2} = \frac{22}{7} \div \frac{11}{2} = \frac{\overset{2}{\cancel{22}}}{7} \times \frac{2}{\underset{1}{\cancel{11}}} = \frac{4}{7}$

74. $\frac{5}{6} \div \frac{1}{8} = \frac{5}{\underset{3}{\cancel{6}}} \times \frac{\overset{4}{\cancel{8}}}{1} = \frac{20}{3} = 6\frac{2}{3}$

75. $7\frac{1}{2} \div 1\frac{2}{3} = \frac{15}{2} \div \frac{5}{3}$

$= \frac{\overset{3}{\cancel{15}}}{2} \times \frac{3}{\underset{1}{\cancel{5}}} = \frac{9}{2} = 4\frac{1}{2}$

76. $15 \div \frac{3}{4} = \frac{\overset{5}{\cancel{15}}}{1} \times \frac{4}{\underset{1}{\cancel{3}}} = 20$

77. $\frac{5}{8} + \frac{3}{4} - \frac{1}{8} = \frac{5}{8} + \frac{6}{8} - \frac{1}{8} = \frac{10}{8} = \frac{5}{4} = 1\frac{1}{4}$ inches

78. $8 - 2\frac{3}{16} = 7\frac{16}{16} - 2\frac{3}{16} = 5\frac{13}{16}$ feet

79. $1\frac{1}{5} + 2\frac{3}{4} + 1\frac{1}{2} = 1\frac{4}{20} + 2\frac{15}{20} + 1\frac{10}{20} = 4\frac{29}{20} = 5\frac{9}{20}$ feet

80. $1 - \frac{1}{3} = \frac{3}{3} - \frac{1}{3} = \frac{2}{3}; \frac{2}{\underset{1}{\cancel{3}}} \times \frac{\overset{96}{\cancel{\$\,288}}}{1} = \$192$

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

81. $8 \times 1\frac{5}{8} = \frac{\overset{1}{\cancel{8}}}{1} \times \frac{13}{\underset{1}{\cancel{8}}} = 13$ feet

82. $\frac{2}{\underset{1}{\cancel{3}}} \times \frac{\overset{6}{\cancel{18}}}{1} = 12$ hours

83. $244 \div 7\frac{5}{8} = \frac{244}{1} \div \frac{61}{8} = \frac{\overset{4}{\cancel{244}}}{1} \times \frac{8}{\underset{1}{\cancel{61}}} = 32$ pieces

84. $91 \div 1\frac{5}{8} = \frac{91}{1} \div \frac{13}{8} = \frac{\overset{7}{\cancel{91}}}{1} \times \frac{8}{\underset{1}{\cancel{13}}} = 56$ pieces

Practice Test, p. 76

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

2. $\frac{5}{3}$

3. $1\frac{3}{5} = \frac{8}{5}; \frac{5}{8}$

4.
$$13\overline{)56}\ 4\tfrac{4}{13}$$
$$\underline{52}$$
$$4$$

5.
$$9\overline{)21}\ 2\tfrac{3}{9} = 2\tfrac{1}{3}$$
$$\underline{18}$$
$$3$$

6. $\frac{(12 \times 3) + 1}{12} = \frac{37}{12}$

7. $\frac{(8 \times 2) + 5}{8} = \frac{21}{8}$

8. $\frac{12 \div 3}{15 \div 3} = \frac{4}{5}$

9. $\frac{15 \div 5}{35 \div 5} = \frac{3}{7}$

10. $\frac{21 \div 3}{51 \div 3} = \frac{7}{17}$

11. $\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$

12. $\frac{5}{8} + \frac{9}{10} = \frac{25}{40} + \frac{36}{40} = \frac{61}{40} = 1\frac{21}{40}$

13. $\frac{\overset{1}{\cancel{5}}}{8} \times \frac{7}{\underset{2}{\cancel{10}}} = \frac{7}{16}$

14. $\frac{5}{6} \div \frac{3}{4} =$

$\frac{5}{\underset{3}{\cancel{6}}} \times \frac{\overset{2}{\cancel{4}}}{3} = \frac{10}{9} = 1\frac{1}{9}$

15. $10\frac{1}{2} \div 5\frac{3}{4} =$

$\frac{21}{2} \div \frac{23}{4} =$

$\frac{21}{\underset{1}{\cancel{2}}} \times \frac{\overset{2}{\cancel{4}}}{23} =$

$\frac{42}{23} = 1\frac{19}{23}$

16. $56 \times 32\frac{6}{7} =$

$\frac{\overset{8}{\cancel{56}}}{1} \times \frac{230}{\underset{1}{\cancel{7}}} = 1{,}840$

17. $2\frac{1}{2} + 3\frac{1}{3} =$

$2\frac{3}{6} + 3\frac{2}{6} = 5\frac{5}{6}$

18. $137 - 89\frac{4}{5} =$

$136\frac{5}{5} - 89\frac{4}{5} = 47\frac{1}{5}$

19. $\frac{3}{3} =$ entire load

$\frac{3}{3} - \frac{1}{3} = \frac{2}{3}$ Part of the $\frac{3}{4}$ truckload to be unloaded

$\frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{1}{\cancel{3}}}{\underset{2}{\cancel{4}}} = \frac{1}{2}$ of the truckload remains to be unloaded

20. $\frac{87 \div 29}{580 \div 29} = \frac{3}{20}$

Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

21. $62\frac{1}{2} \div \frac{5}{8} =$

$\frac{125}{2} \div \frac{5}{8} =$

$\frac{\overset{25}{\cancel{125}}}{\underset{1}{\cancel{2}}} \times \frac{\overset{4}{\cancel{8}}}{\underset{1}{\cancel{5}}} = 100$ sheets

22. $5\frac{1}{2}\% + 2\frac{1}{4}\% =$

$5\frac{2}{4}\% + 2\frac{1}{4}\% = 7\frac{3}{4}\%$

23. $\frac{\$80}{\$200} = \frac{2}{5}$

The main course cost was $\frac{2}{5}$ of the total budget.

24. $1\frac{1}{4} \times \frac{900}{36} = \frac{5}{\underset{1}{\cancel{4}}} \times \frac{\overset{225}{\cancel{900}}}{36} = \frac{1{,}125}{36} = \frac{125}{4} = 31\frac{1}{4}$

The recipe for 900 cupcakes requires $31\frac{1}{4}$ cups of sugar.

Critical Thinking, p. 78

1. The two operations that require a common denominator are addition and subtraction of fractions.

2. The number 1 can be written as any fraction that has a denominator and numerator that are the same. $\frac{21}{21} = 1$

3. The product of any number and its reciprocal is 1.

Examples will vary. $\frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{5}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{3}}} = 1$

4. Division requires the use of the reciprocal of a fraction. Answers will vary. One example is:

$\frac{3}{7} \div \frac{8}{15} = \frac{3}{7} \times \frac{15}{8} = \frac{45}{56}$

5. The parts that are known must be added. The sum of the known parts is then subtracted from the total to give the one unknown part. Examples will vary. The deductions for a paycheck are; Withholding tax, $261; Credit Union, $100; Insurance, $217; and Dues, $15. The Social Security tax is not known. Find the Social Security tax if the deductions total $680.

6. To find the reciprocal of a mixed number, first change the mixed number to an improper fraction by multiplying the denominator by the whole number and adding the numerator to get the numerator of the improper fraction. The denominator of the improper fraction is the denominator of the mixed number. Then, interchange the numerator and denominator of the improper fraction to write its reciprocal. $3\frac{1}{3} = \frac{10}{3}$; reciprocal $= \frac{3}{10}$

7. Two fractions are equal if the lowest terms of both fractions are the same.

$\frac{3}{7} \times \frac{2}{2} = \frac{6}{14} = \frac{3}{7}$

$\frac{3}{7} \times \frac{3}{3} = \frac{9}{21}; \frac{6}{14} = \frac{9}{21} = \frac{3}{7}$

Therefore, $\frac{6}{14}$ and $\frac{9}{21}$ are equivalent or equal fractions.

8. Answers will vary.

$12 \div \frac{1}{2} = 12 \times 2 = 24$

$12 \div \frac{3}{4} = \frac{\overset{4}{\cancel{12}}}{1} \times \frac{4}{\underset{1}{\cancel{3}}} = \frac{16}{1} = 16$

$15 \div \frac{2}{3} = \frac{15}{1} \times \frac{3}{2} = \frac{45}{2} = 22\frac{1}{2}$

9. A whole number, like 5, divided by a proper fraction, like $\frac{1}{2}$, means the wholes are being broken up into halves, so you have more parts (pieces) than you started with.

$5 \div \frac{1}{2} = \frac{5}{1} \times \frac{2}{1} = 10.$

10. A proper fraction has a value that is less than 1 and an improper fraction has a value that is greater than or equal to 1**.**

The division should be written as a multiplication by the reciprocal of the divisor (second number).

$\frac{4}{9} \div 2\frac{1}{4} =$

$\frac{4}{9} \div \frac{9}{4} =$

$\frac{4}{9} \times \frac{4}{9} = \frac{16}{81}$

 Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

11. The fraction in the minuend cannot be subtracted from the fraction in the subtractend. The minuend must be rewritten so the fraction has a larger numerator.

$$12\frac{1}{4} = 11 + \frac{4}{4} + \frac{1}{4} = 11\frac{5}{4}$$
$$\underline{-7\frac{3}{4}} \qquad\qquad \underline{-7\frac{3}{4}}$$
$$4\frac{2}{4} = 4\frac{1}{2}$$

12. Prior to the death, each of the 5 partners would hold a 1 out of 5, or $\frac{1}{5}$ ownership share. After the death, each of the remaining owners would hold a 1 out of 4, or $\frac{1}{4}$ ownership share.

Challenge Problems p. 79

1. $25\frac{1}{2} \times 32\frac{3}{4} = \frac{51}{2} \times \frac{131}{4}$

$$= \frac{6{,}681}{8} = 835\frac{1}{8} \text{ square feet}$$

$$\frac{6{,}681}{8} \div 9 = \frac{6{,}681}{8} \times \frac{1}{9} = \frac{6{,}681}{72} \text{ square yards}$$

$$\frac{6{,}681}{72} = 92\frac{19}{24}$$

Because a portion of the 93rd square yard is needed, we will buy 93 yards and 4 additional yards for matching.

$93 + 4 = 97$
$97 \times 12 = \$1{,}164$

It will cost $\$1{,}164$ to cover the floor with carpet.

2. The carpet costs $\$2{,}883$.

Case Studies

2-1, p. 80

1. $2\frac{1}{2} = \frac{5}{2}$

$\frac{5}{2}\left(\frac{4}{1}\right) = \frac{20}{2} = 10$ cups apples
$\frac{5}{2}\left(\frac{1}{2}\right)$ cup $= \frac{5}{4} = 1\frac{1}{4}$ cups brown sugar
$\frac{5}{2}\left(\frac{1}{2}\right)$ tsp $= \frac{5}{4} = 1\frac{1}{4}$ tsp cinnamon
$\frac{5}{2}\left(\frac{1}{4}\right)$ tsp $= \frac{5}{8}$ tsp each nutmeg/cloves
$\frac{5}{2}\left(\frac{2}{1}\right)$ tsp $= \frac{10}{2} = 5$ tsp lemon juice
$\frac{5}{2}\left(\frac{2}{3}\text{ cup}\right) = \frac{10}{6} = 1\frac{2}{3}$ cups sugar
$\frac{5}{2}\left(\frac{1}{8}\text{ tsp}\right) = \frac{5}{16}$ tsp salt
$\frac{5}{2}\left(\frac{3}{4}\text{ cup}\right) = \frac{15}{8} = 1\frac{7}{8}$ cups flour
$\frac{5}{2}\left(\frac{1}{3}\text{ cup}\right) = \frac{5}{6}$ cup butter
$\frac{5}{2}\left(\frac{1}{4}\text{ cup}\right) = \frac{5}{8}$ cup walnuts

2. 4 cups + 4 cups = 8 cups apples
$\frac{1}{2}$ cup + $\frac{1}{2}$ cup = 1 cup brown sugar
$\frac{1}{2}$ tsp + $\frac{1}{2}$ tsp = 1 tsp cinnamon
$\frac{1}{4}$ tsp + $\frac{1}{4}$ tsp = $\frac{1}{2}$ tsp each nutmeg/cloves
2 tsp + 2 tsp = 4 tsp lemon juice
$\frac{2}{3}$ cup + $\frac{2}{3}$ cup = $1\frac{1}{3}$ cup sugar
$\frac{1}{8}$ tsp + $\frac{1}{8}$ tsp = $\frac{1}{4}$ tsp salt
$\frac{3}{4}$ cup + $\frac{3}{4}$ cup = $\frac{6}{4} = 1\frac{1}{2}$ cups flour
$\frac{1}{3}$ cup + $\frac{1}{3}$ cup = $\frac{2}{3}$ cup butter
$\frac{1}{4}$ cup + $\frac{1}{4}$ cup = $\frac{1}{2}$ cup walnuts

3. $\left(\frac{1}{2}\right)\frac{1}{2}$ cup $= \frac{1}{4}$ cup brown sugar; $\left(\frac{3}{1}\right)\frac{1}{4} = \frac{3}{4}$ cup for all 3 batches
$\left(\frac{1}{2}\right)\frac{2}{3}$ cup $= \frac{1}{3}$ cup granulated sugar; $\left(\frac{3}{1}\right)\frac{1}{3} = 1$ cup granulated sugar for 3 batches

Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

2-2, p. 81

1. $\$240{,}000 \times \frac{1}{2} = \frac{\$240{,}000}{1} \times \frac{1}{2} = \frac{\$240{,}000}{2} = \$120{,}000$ materials

$\$240{,}000 \times \frac{1}{3} = \frac{\$240{,}000}{1} \times \frac{1}{3} = \frac{\$240{,}000}{3} = \$80{,}000$ labor

$\$240{,}000 - (\$120{,}000 + \$80{,}000) = \$40{,}000$ profit

or $\frac{40{,}000}{240{,}000} = \frac{1}{6}$ fraction of cost

2. $400 \text{ ft} \times 400 \text{ ft} = 160{,}000$ square feet

$\frac{40{,}000}{160{,}000} = \frac{1}{4}; \frac{5{,}000}{160{,}000} = \frac{1}{32}; \frac{10{,}000}{160{,}000} = \frac{1}{16}; \frac{80{,}000}{160{,}000} = \frac{1}{2}$

3. $160{,}000 - (40{,}000 + 5{,}000 + 10{,}000 + 80{,}000) = 25{,}000$ square feet

$\frac{25{,}000}{160{,}000} = \frac{5}{32}$ is the fractional portion that remains for a water garden

4. $\$120{,}000 \times \frac{5}{32} = \frac{\$120{,}000}{1} \times \frac{5}{32} = \frac{\$600{,}000}{32} = \$18{,}750$ additional will be available for the water garden

 Copyright © 2018 Pearson Education, Inc.

Business Math 11th edition Cleaves Solutions Manual

CHAPTER BY CHAPTER TEACHING TIPS AND CLASS PRESENTATION OUTLINES

Business Math, Eleventh Edition, and its accompanying instructional resources have been designed to enable students to experience mathematics. Every instructor brings a different personality and teaching style to the mathematics classroom. No one can be an effective instructor by mimicking someone else's style when that style does not match the instructor's personality. We encourage you to experiment with a wide variety of activities and projects that are included in the text and this manual. We have found that the activities that are most beneficial will vary with the personality of a class. A variety of approaches will help an instructor provide rich business experiences for students with a wide range of learning styles.

Impromptu Classroom Collaborative Activities

College students often are reluctant to form study groups with their classmates. Instructors can be helpful by encouraging collaboration by giving students opportunities during class time to get to know some fellow classmates. Mini-sets of exercises can be used during class time. The exercises can be selected from the even-numbered exercises or practice test at the end of the chapter since these answers are not in the text. A plan for incorporating collaborative learning could be:

1. Select one to three problems for students to work individually in class. Allow a reasonable amount of time for students to complete the problems.
2. Have each student compare results with a study partner and each pair should reach a consensus on the correct answers.
3. Have each pair of students compare results with another pair of students. The four students should reach a consensus on the correct answers.
4. Record and display the answers of each group of four. If there is more than one answer given for any problem, engage the class in a discussion to reach a class consensus on the correct answers.

Team Projects

Some of the activities suggested in the text and in this manual are short activities that can be completed in one class period or less or in an overnight assignment. However, others will require a longer commitment of time. A plan that has been successful in our classes for building teamwork skills and for helping students realize the usefulness of business mathematics is the team project. Students can form their own working groups or they can be assigned to a group of three or four students. Each team selects one or more case studies from the chapters that are covered in the course. Even if two teams select the same project, the teams generally develop an entirely different approach to the project.

A reproducible handout on forming teams and giving instructions for a team project is included in the Reproducible Activities section of this manual.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

1 REVIEW OF WHOLE NUMBERS AND INTEGERS

Most students benefit from a review of basic skills. Even though they have mastered many of the skills previously, it is helpful to refresh these skills. This review, however, needs to be innovative and action-packed. Supplement with meaningful activities and applications so that students' interest can be maintained. The time spent on this review will pay big dividends in the business topics that follow.

The Five-Step Problem-Solving Strategy. The Five-Step Problem-Solving Strategy is introduced in this chapter and is used throughout the text. Students have found this framework useful in developing their problem-solving skills.

Estimating Emphasized. Developing one's number sense and being able to anticipate characteristics of a reasonable answer are very important skills. Estimating and developing a number sense continue to be an important feature.

Calculator Strategies. Calculator strategies are included in tip boxes to introduce the calculator as a tool. Students are encouraged to develop investigative skills by experimenting with the calculator. Several suggested calculator activities are given in the AIE notes.

Collaborative Classroom Activities. Several collaborative classroom activities are suggested in the AIE Notes. These activities allow students to get to know each other and pave the way for more in-depth teamwork activities later.

Excel templates. Excel templates are available for 1-2 Section Exercises, #39, p. 25 and for Challenge Problem 2, p. 40.

Activities. Several Expanding the text Suggestions in AIE; Suggested Team Project: Establishing a Home Business

Outline

1-1 Place Value and Our Number System
- A. Define place value system
- B. Explain how to read a whole number.
- C. Identify reasons for rounding numbers.
- D. Explain how to round a whole number.
- E. Define integers.
- F. Relate reading and rounding integers to the same skills in whole numbers.
- G. Identify business terms that are associated with negative numbers

1-2 Operations with Whole Numbers and Integers
- A. Add whole numbers.
- B. Estimate a sum.
- C. Subtract two whole numbers.
- D. Estimate a difference.
- E. Introduce the calculator as a tool and emphasize estimation.
- F. Introduce the Five-Step Problem-Solving Strategy.
- G. Add and subtract integers.
- H. Multiply two whole numbers.
- I. Estimate a product.
- J. Describe shortcuts in multiplying numbers containing zeros.

Specific Points

- The place value system contains 10 digits, and consists of groups of such units, tens, hundreds, thousands, millions, and billions. Commas are used to separate numbers into groups.
- Read a whole number from left to right by reading the numerals in each group and saying the group name. Do not use the word *and* in reading whole numbers.
- Rounding is used when making estimates to check calculations.
- Integers are positive and negative while numbers and zero.
- The addends (numbers being added) give a results, called a sum, when they are totaled. Be sure to carry when a sum of one column is more than 10.
- The minuend is the original amount and should be placed over the subtrahend or the amount being taken away.
- Borrowing may be necessary when a smaller digit is in the minuend.
- Calculators accept numbers differently and round differently. Determine how a calculator operates by working a problem you can do mentally. It is important that students understand their calculator.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

K. Divide two whole numbers.
L. Estimate a quotient.
M. Multiply or divide two integers with the same sign.
N. Multiply or divide two integers with different signs.
O. Apply the standard order of operations to a series of calculations.

- Success in problem-solving is dependent on working through a well-organized plan, whether this is done on paper or mentally.
- Add two integers that have the same signs by adding the numbers without regard to the signs. Give the sum the sign of the two numbers.
- Add two integers that have different signs by subtracting the numbers without regard to the signs. Examine the numbers without the signs and choose the *larger* of these numbers. Assign the sum the sign that is in front of the selected number.
- Subtract two integers by changing the subtraction to addition and changing the sign of the subtrahend (second number) to its opposite sign. Decide if the two resulting numbers have the same signs or different signs and proceed as in adding signed numbers
- The standard order of operations is groupings first, the multiplications and divisions as they appear from left to right, and then additions and subtractions as they appear from left to right. Later a step of exponents and roots will be inserted after groupings.

2 REVIEW OF FRACTIONS

These review topics should be interspersed with meaningful activities and applications. Since fractions are an integral part of many business math topics, this review is very important for most students.

Organization. Many users prefer that the basic skills be grouped together before the introduction of business topics. Business applications and case studies have been incorporated into the early chapters so that studying the basic skills will be more meaningful.

Excel Template. An Excel template is available for Challenge Problem 2, p. 79.

Activities: Expanding the Text Suggestions in AIE

Outline

2-1 Fractions
A. Define the parts of a fraction.
B. Define proper fraction.
C. Define improper fraction.
D. Define mixed number.
E. Convert an improper fraction to a whole or mixed number.
F. Convert a mixed number or whole number to an improper fraction.
G. Reduce a fraction to lowest terms.
1. Explain rules for determining divisibility.
2. Find the greatest common divisor.
H. Express a fraction in higher terms.

Specific Points

- The numerator is smaller than the denominator in a proper fraction.
- The numerator is equal to or larger than the denominator in an improper fraction.
- Mixed numbers contain a whole number and a fraction.
- Change an improper fraction to a mixed number by dividing the numerator by the denominator and then writing the remainder over the denominator.
- Change a mixed number to an improper fraction by multiplying the denominator by the whole number and adding the numerator; write the answer over the original denominator.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

- The rules for divisibility can help in reducing fractions.
- The GCD reduces a fraction to lowest terms.
- The numerator and denominator are multiplied by the same amount when changing a fraction to higher terms.

2-2 Adding and subtracting fractions
- A. Add fractions and mixed numbers.
  1. with the same denominator.
  2. with different denominators.
  3. Define prime numbers.
- B. Subtract fractions and mixed numbers.
  1. with the same denominators.
  2. with different denominators.
  3. with borrowing in mixed numbers.

- To add fractions with different denominators, find the least common denominator first. Then, change each fraction to be added to an equivalent fraction with the common denominator.
- To subtract fractions with different denominators, find the LCD and change to equivalent fractions having common denominators. Borrowing is often necessary in subtracting mixed numbers.

2-3 Multiplying and dividing fractions
- A. Multiply
  1. proper fractions.
  2. mixed numbers.
- B. Divide fractions.
  1. Define reciprocal.
  2. Divide proper fractions.
  3. Divide mixed numbers.

- To multiply fractions, multiply the numerators, multiply the denominators. Reduce before or after multiplying.
- Mixed numbers should be changed to improper fractions before multiplying.
- The reciprocal of the divisor is used in dividing fractions.
- All whole or mixed numbers must be expressed as improper fractions before dividing.
- Division of fractions is performed by multiplying the dividend by the reciprocal of the divisor.

3 DECIMALS

Decimals allow you to incorporate many interesting applications involving money. Estimation continues to be an important skill for strengthening one's number sense.

Excel Templates. Excel templates are given for Practice Test, #29, p. 106 and for Challenge Problem 2, p. 107.

Activities. Several Expanding the Text and Collaborative Classroom Activities are included in AIE notes; Excel templates; Suggested team project: Comparative Shopping

Outline

3-1 Decimals and the place-value system
- A. Define decimals
  1. a pure decimal.
  2. a mixed decimal.
  3. a complex decimal.
- B. Read decimals
  1. pure decimals.
  2. mixed and complex decimals.
- C. Round decimals.

Specific Points

- Read a pure number as a whole number with the place value at the end.
- The word *and* is used for the decimal in a mixed decimal.
- Similar procedures are used for rounding deci-mals and whole numbers.
- To add decimal numbers, line up the decimals first. A number without a decimal is understood to have a decimal point to the right of the last digit.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

3-2	Operations with decimals A. Add decimals. B. Subtract decimals. C. Multiply decimals. D. Divide 1. decimal by a whole number. 2. decimal by a decimal. 3. whole number by a decimal. 4. decimal by a power of 10.	• Subtract decimals by lining up the decimals first. Add zeros after the decimal until both the subtrahend and minuend have the same number of decimal places. • The product has the same number of decimal places as the total places in the multiplier and multiplicand. • To multiply a decimal number by a power of 10, move the decimal to the right as many places as there are zeros in the power of 10. • To divide a decimal number by a whole number, write the decimal in the quotient above the decimal in the dividend and divide. • To divide a decimal or whole number by a decimal, move the decimal point in the divisor to the right so that it becomes a whole number. Then, move the decimal point in the dividend the same number of places. • To divide a decimal number by a power of 10, move the decimal to the left as many places as there are zeros in the power of 10.
3-3	Decimals and fraction conversions A. Convert fractions to decimals. 1. a proper fraction to a decimal 2. a mixed number to a decimal B. Convert decimals to fractions. 1. a pure decimal to a fraction 2. a mixed decimal to a fraction	• Change a fraction to a decimal by dividing the numerator by the denominator. • Change a mixed number to a decimal by (a) changing to an improper fraction and then dividing by the denominator or (b) converting the fraction to a decimal and then adding to the whole number. • Change a decimal or mixed decimal to a fraction by writing the place value of the rightmost digit as the denominator.

4 BANKING

Bank records is the first business topic introduced following the development of the basic skills. It is a skill that is of general interest to all student regardless of their career choice. While electronic banking has become the norm of the day, the basic concepts for making deposits and withdrawals are the same and the need for recordkeeping is essential.

Reconciliation Procedure. The reconciliation procedure is refined and greatly enhanced with the inclusion of a form for guiding students through the process. This improvement was a direct result of user comments. An Excel template is given for reconciliation.

Revisions Based on Changes in Banking Technology. The narrative portions have been revised based on the extensive advances that banking has undergone recently as a result of technology changes.

Excel templates. Excel templates are available for Exercise Set, #28, p. 140 and for Challenge Problems 1 and 2, pp. 144-145.

Activities: Ten Expanding the Text Suggestions in AIE; Excel templates; Reproducible Activities: Transposing Digits; Suggested Team Project: Bank Debit Cards.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

Outline		Specific Points
4-1	Checking account transactions A. Complete a deposit slip. B. Describe the bank check and its features. C. Describe a check stub. D. Complete an account register. E. Explain the types of check endorsements.	• A deposit slip is a form that tells the bank which account should receive the cash and checks being deposited. • A check is a piece of paper ordering the bank to pay someone an amount of money from the account given on the check. • A check stub is a form that provides spaces to record information about checks written and deposits made. • An account register is set of forms used to record all transactions made in an account. • A check endorsement is required as a safeguard against misuse of a check.
4-2	Bank statements A. Explain the features of a bank statement. B. Explain fees that may be charged: 1. service charge 2. nonsufficient funds charge or returned check fee 3. FDIC insurance premium C. Discuss the steps in reconciling a bank statement.	• A bank statement is a monthly record that shows all transactions made in an account during a month. • The account holder uses the bank statement to compare the records of the bank with his or her own records. • Bank reconciliation is the process of comparing the transactions recorded in the account register with those listed on the bank statement.

5 EQUATIONS

Equations and formulas are the basis of most business math topics and it is helpful for students to have an early introduction to these skills. When a systematic approach is used, students can overcome some of their apprehensions associated with word problems.

Outcome for Equations That Are Proportions: To show the usefulness of proportions in problem solving, proportions are examined as a type of equation.

Increased Emphasis on Estimation and Checking. The emphasis has increased for examining the reasonableness of a solution by estimating through critical thinking rather than just pencil and paper calculations with rounded amounts.

Excel templates. Excel templates are available for Exercise Set, #44, p. 181 and for Challenge Problem 2, p. 186.

Activities: Expanding the Text Suggestions in AIE; Excel templates; Suggested Team Projects: Using Formulas and Using Spreadsheets.

Outline		Specific Points
5-1	Equations A. Explain an equation. B. Solve an equation with one operation. C. Solve an equation with more than one operation. D. Solve an equation containing parentheses. E. Solve equations with multiple unknowns.	• An equation must contain an equal sign, showing that the left side has the same value as the right side. • Unknowns are represented by letters, called variables. To solve an equation is to find the value of the unknown, the variable. • To solve an equation with one operation, do the opposite of the operation to both sides.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

F. Solve equations that are proportions.	• When an equation contains more than one operation, do the opposite of addition and subtraction first; do the opposite of multiplication and division last. • If an equation contains parentheses, multiply by the number in front of the parentheses to remove them. • Combine all unknowns and all numbers before following steps to solve the equation. • If an equation is a proportion, first cross multiply, then divide.
5-2 Using equations to solve problems A. Write relationships as equations. B. Discuss key words in a problem.	• Key words in a problem tell which operations are used and how to write the equation. • The relationships step in the decision key approach can be written as an equation. • The symbols used should express the key words in the problem. • Check the answer! Be sure it is appropriate for the situation described in the words of the problem.
5-3 Formulas A. Evaluate a formula. B. Find a variation of a formula by rearranging the formula.	• Substitute numbers for letters in formula. • Use the order of operations to evaluate the formula. • Treat the variable in the formula that you want to isolate as the unknown and all other variables as knowns. Use the operations to undo each variable that is related to the variable that is being isolated.

6 PERCENTS

Percents are used in many business math topics. The understanding of percent concepts is very important.

Excel Templates. Excel templates are available for Exercise Set, #89, p. 218 and for Challenge Problem 2, p. 222.

Activities: Expanding the Text Suggestions in AIE; Excel Template; Suggested Team Project: Distributing Pay Raises

Outline	**Specific Points**
6-1 Percent Equivalents A. Explain the meaning of percents. B. Convert a whole number or a decimal to a percent. C. Convert a fraction to a percent. D. Change a percent to a whole number or a decimal. E. Change a mixed percent to a decimal. F. Change a percent to a fraction.	• Percent means per hundred; percents are used for comparisons. • A whole number or a decimal is converted to a percent by moving the decimal two places to the right. Insert zeros as necessary. • Change a fraction to a decimal by dividing the numerator by the denominator. Then change the decimal to a percent. • Percents are converted to a decimal or a fraction before many calculations are performed.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

- A percent is converted to a decimal by moving the decimal point two places to the left.
- If the percent contains a fraction, convert the fraction to a decimal and then move the decimal point two places to the left.
- To convert a percent to a fraction, divide by 100 percent and reduce or simplify.

6-2 Solving percentage problems
A. Identify the rate, base, and portion (percentage).
B. Use the percentage formula to find the unknown value when two values are known.

- There are three basic types of percent problems in business, all of which can be solved by using the percentage formula: The base is the total or entire quantity in a problem; the portion (percentage) is a part of the total and the rate is the percent. If the base is multiplied by a rate (%), the percentage is found.
- By rearranging the percentage formula, the base or rate can be found: the base can be found by dividing the percentage by the rate; the rate can be found by dividing the percentage by the base.
- Analyze the words in a percentage problem to determine which values are given and which are to be found.
- The rate is expressed as a percent in the problem.
- The number that expresses the total or original amount is the base and often follows the word *of*.
- The number that expresses a part of the total or original amount is the percentage.

6-3 Increases and Decreases
A. Find the amount of increase or decrease.
B. Find the new amount.
C. Find the rate or base.

- In a percent increase or decrease problem, the portion is the amount of increase or decrease and the original amount is the base.

7 BUSINESS STATISTICS

Organizing and analyzing data continue to be important skills in the business world. The early introduction of these topics allows for a wider variety of applications and activities throughout the text.

Excel templates. Excel templates are available for Exercise Set, #47, p. 264, Practice Test, #14, p. 267, and for Challenge Problem 1, pp. 268-269.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestion in AIE; Reproducible Activities: Circle, Bar, and Line Graphs; Critiquing Graphs; Suggested Team Project: Marketing Research.

Outline

7-1 Graphs and Charts
A. Interpret and draw a bar graph.
B. Interpret and draw a line graph.
C. Interpret and draw a circle graph.

Specific Points

- Bar graphs may be vertical or horizontal and relate two or more different values.
- A line graph shows trends, increases, decreases, or fluctuations.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

- A circle graph shows how some whole quantity is being divided. A circle has 360°; each item being graphed is a fractional part of the circle. A protractor is needed to draw the angles represented by the degrees in each part.

7-2 Measures of Central Tendency
- A. Find the mean.
- B. Find the median.
- C. Find the mode.
- D. Interpret these statistics in a given situation.
- E. Make and interpret a frequency distribution
- F. Find the mean of grouped data.

- Statistics are values that describe information and show how the pieces of information relate to one another.
- The mean is the sum of the values divided by the number of values.
- The median is the middle value in a group of values that are arranged in numerical order.
- The mode is the value that occurs the most frequently.
- The mean, median, and mode give measures of central tendency or locate the center of the data.
- Frequency distributions are used to categorize data.
- To find a grouped mean, use the data from a frequency distribution.

7-3 Measures of dispersion
- A. Find the range.
- B. Find the standard deviation.

- The range is the difference between the largest value and the smallest value; it gives an idea of the spread of the data.
- The standard deviation is another measure of how a data set is spread. The normal distribution can be used in relationship to the standard deviation.

8 Trade and Cash Discounts

This chapter is a good chapter for demonstrating that new topics do not necessarily require learning all new skills. Many of the skills used in this chapter have been used previously in a different context. Also, many of the new skills introduced in this chapter, like complements, will be used again in a different context in future chapters.

Better Connections. Enhanced explanations better connect common business practices with mathematical skills previously learned in percents.

Excel templates. Excel templates are available for Exercise Set, #48 and #50, p. 299, Practice Test #20, p. 301, and for Challenge Problem 1, p. 304.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE; Suggested Team Project: Buying Groups and Trade and Cash Discounts.

Outline

8-1 Single trade discounts
- A. Define a discount.
- B. Explain reasons discounts are given in business.
- C. Describe the path of a product from manufacturer to retailer to customer.
- D. Define list price.
- E. Explain trade discount and discount rate.

Specific Points

- A discount is an amount of money subtracted from the original price of products.
- Manufacturers and distributors use discounts as incentives to buy or to price products to retailers. Products usually go from manufacturers to wholesaler to retailer to consumer.
- The list price, suggested retail price, or catalog price is the price the consumer pays.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

	F. Calculate the net price using the complement method.	• The amount the manufacturer deducts from the list price is called a trade discount. The trade discount is the product of the list price and the single discount rate. • The net price, the retailer's price, is the difference between the list price and the trade dis- count. The complement of a percent is the difference between 100% and the given percent. • The net price can also be found by multiplying the list price by the complement of the single discount rate.
8-2	Trade discount series A. Find the net price with the net decimal equivalent for a trade discount series. B. Find the amount of discount using the single discount equivalent.	• To encourage buying or to promote a particular product, additional discounts may be offered as a trade discount series. • Find the product of the complements of the trade discount rates in the series to get the net decimal equivalent. • The product of the list price and the net decimal equivalent is the net price. • The single discount equivalent is the difference between 100% and the net decimal equivalent written as a percent. • Find the amount of discount by multiplying the list price by the single discount equivalent.
8-3	Cash discounts and sales terms A. Discuss the due date and discount date on a bill. B. Explain credit terms on a bill. C. Find the amount due on a bill given terms and the date the bill is paid. D. Calculate an end-of-month discount. E. Calculate a receipt-of-goods discount. F. Calculate the amount of the outstanding balance after a partial payment is made. G. Explain the freight terms *FOB shipping point* and *FOB destination*.	• Cash discounts are given to encourage prompt payment of bills. • The number of days in a month is important in calculating the date that payment of a bill is due. • An end-of-month discount is taken if the bill is paid during the given number of days of the month after the month in the date of the invoice. • When partial payments are made, a discount is allowed only on the amount of the partial pay- ment. • *FOB destination* means the freight is paid by the seller. If the freight is paid by the buyer, the term *FOB shipping point* is used.

9 MARKUP AND MARKDOWN

There is generally widespread interest in markup and markdown. There is a wealth of real-life examples available in local newspapers. More and more often retailers are using the concept of discount series in promoting retail sales. This is a good reinforcement of the skills learned in the previous chapter.

Better Connections: The current topic is connected with previously learned skills using rate of change. Series discounts that were introduced in the last chapter are now extended to retail sales.

Excel templates. Excel templates are available for Exercise Set, #5, p. 343 and for Challenge Problem 1, p. 351.

Activities: Expanding the Text Suggestions in AIE

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

Outline

9-1 Markup based on cost

A. Define terms used in the retail business
1. selling price
2. cost
3. markup
4. operating expenses
5. gross profit
6. gross loss
7. net profit
8. net loss
9. markdown
10. reduced price

- Markup is the amount added to the cost to get the selling price; it must cover expenses and profit.
- Operating expenses are the costs of running a business.
- Net profit is the amount that remains after expenses and merchandise have been paid for.
- The reduced price is the sale price after the markdown.

9-2 Markup based on selling price and markup comparisons

A. Calculate the amount of markup and the selling price when the percent of markup is based on selling price.
B. Compare the two types of markup.
C. Convert from markup based on cost to markup based on selling price.
D. Convert from markup based on selling price to markup based on cost.

- To find the amount of markup based on cost, multiply the percent markup by the cost. The selling price is the sum of the cost and the amount of markup.
- When markup is based on selling price, the selling price is the base.
- To find the selling price when the markup is based on selling price, divide the cost by the difference between 100% and the percent markup. The selling price minus the cost equals the amount of markup.

9-3 Markdown, series of markdowns, and perishables

A. Explain reasons to reduce prices.
B. Calculate the amount of markdown.
C. Calculate the percent of markdown.
D. Calculate the sale price.
E. Calculate the final selling price, given a series of markdowns and markups.
F. Find the selling price on perishable or seasonable items.

- Items may need to be reduced or marked down for reasons such as damage, changing of styles or seasons, length of time the item has been in stock, or competition.
- Markdown problems can be solved using the percentage formulas, where B is the original selling price; P is the amount of markdown; and R is the percent of markdown.
- To calculate a series of markdowns and markups:
  1. Multiply the previous selling price by the decimal complement of the markdown percent to find the new price after a markdown.
  2. Multiply the previous selling price by 1 plus the decimal form of the markup percent to find the new price after a markup.

To set the price on perishable items, find the total cost, markup required, and total selling price if all items are sold. Determine the number of items likely to sell and divide the total selling price by this number.

10 PAYROLL

Most students nowadays have had at least a part-time job during their lifetime. Their experiences can enrich the study of payroll procedures. Some may be willing to share samples of payroll sheets that they have used or pay stubs that they may have received on their jobs.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

Revisions Based on Changes in Laws and IRS Requirements. An overall update has been made to reflect current laws and requirements.

Excel templates. Excel templates are available for 10-2 Section Exercises, #11, p. 377 and for Challenge Problem 1, p. 394.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE; Reproducible Activity: What Percent Did I Really Pay?

Outline		Specific Points
10-1	Gross pay A. Define gross pay. B. Define net pay. C. Calculate gross pay when given the annual salary for: 1. monthly paychecks. 2. semimonthly paychecks. 3. biweekly paychecks. 4. weekly paychecks. D. Calculate gross pay for hourly wages: 1. without overtime. 2. with overtime. 3. with special overtime. E. Calculate gross pay for piecework wages: 1. at a constant rate. 2. at a differential piece rate. F. Calculate gross pay for: 1. straight commission. 2. salary plus commission.	• Find gross pay for a salaried employee by dividing the annual salary by the number of paychecks issued during the year. • Calculate gross pay for hourly wages by multiplying the total hours worked by the hourly rate. • Multiply the number of overtime hours by 1.5 times the regular pay rate to find overtime pay. • To find gross pay based on piecework, multiply the rate per unit produced by the total production. Differential piece rate increases as the number of units produced increases. • Gross pay for an employee on straight commission is based on a percent of total sales. An employee who is paid a salary plus commission receives a basic salary plus a percent of sales.
10-2	Payroll deductions A. Find the amount of the deductions for federal income tax: 1. by the table method. 2. by the percentage method. B. Find the amount of the deduction for Social Security tax: 1. by the table method. 2. by multiplying 4.2%. C. Find the amount of the deduction for Medicare tax: 1. by the table method. 2. by multiplying by 1.45%. D. Find net earnings.	• Net pay is the amount left after all deductions and is also called take-home pay. • The amount of federal withholding tax is based on salary, pay period, filing status, and the number of withholding allowances. • Federal withholding tax can be found in a table or by the percentage method. • The amount of Social Security is based on salary and can be found by the percentage method. • Other deductions may include insurance, state taxes, dues, and contributions.
10-3	Employer's payroll taxes A. Find the employer's amount of: 1. federal unemployment taxes. 2. state unemployment taxes. B. Discuss the employer's payroll register. C. Discuss the employee's earnings record.	• FUTA tax is federal unemployment tax, paid by the employer. • SUTA tax is state unemployment tax, paid by the employer. • The employer keeps records of the employee's earnings and taxes paid.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

11 SIMPLE INTEREST AND SIMPLE DISCOUNT

A scientific, business, or graphics calculator can be used to show how table values were determined. This removes the mystique of table values. It also improves the basic understanding of the purpose and limitations of tables. If resources permit, electronic spreadsheets or computer algebra systems can be used to generate tables. Even if resources do not permit student participation in computer and calculator activities, students will still benefit from technology demonstrations.

Tables Values Versus Calculated Amounts. Parallels can be made with table values and calculated amounts. This enriches the students' understanding of using a table and provides more flexibility for making calculations for values not included in the table.

Excel templates. Excel templates are available for Exercise Set, #1-4, p. 425 and for Challenge Problems 1-2, pp. 431-432.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestions in AIE

Outline		**Specific Points**
11-1	Simple interest formula A. Explain simple interest. B. Define principal, rate, and time. C. Use the simple interest formula to find interest. D. Find the maturity value of a loan. E. Convert months into a fractional part of a year. F. Use the simple interest formula to find: 1. principal. 2. rate. 3. time.	• Simple interest is used when a loan or investment is repaid in a lump sum. • The simple interest formula is $I = PRT$. To find the principal, use $P = I/RT$. To find rate, use $R = I/PT$. To find time in years, use $T = I/PR$. • The maturity value of a loan is the sum of the principal and the interest. • When the rate is a percent per year, months are converted to a fractional part of a year.
11-2	Ordinary and exact interest A. Compare ordinary and exact time. B. Use the day of the year table. C. Find ordinary and exact time for a loan. D. Discuss leap year within a loan period. E. Find the due date of a loan. F. Discuss the difference in rate fractions for ordinary and exact interest. G. Discuss the difference in time fractions for ordinary and exact time. H. Use a simple interest table. I. Make a partial payment before the maturity date.	• In ordinary time, a month is considered to have 30 days. • To find exact time, use a day chart to find the exact number of days of the loan. • To calculate exact interest in exact time, the rate is converted to a rate per day by dividing the rate per year by 365 or 366. The days are expressed in exact time. • Ordinary interest using exact time is called the bankers' rule because of the higher interest. • The time using the banker's rule is the exact number of days; the rate per day is the annual rate divided by 360.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

11-3 Promissory notes
- A. Discuss the parts of a promissory note:
  1. marker
  2. payee
  3. term
  4. due date
  5. rate
  6. face value
  7. maturity value
- B. Calculate the bank discount and proceeds on a single discount note.
- C. Explain the difference between a simple interest note and a simple interest discount note.
- D. Explain a discounted note and how it is used.
- E. Calculate the bank discount and proceeds for a third-party discounted note.

- For a simple discount note, the maker receives the proceeds of the note, the difference between the principal and the bank discount.
- The difference between the simple interest note and the simple discount note is that with the simple discount note the interest is figured on the maturity value, but the borrower uses only the proceeds.
- Businesses that accept notes as payment for goods may sell the note to a bank. The note is called a third-party discounted note.

12 CONSUMER CREDIT

In addition to broadening students' business sense, this chapter also helps students become better informed consumers. Many students have already experienced consumer credit even if they have not understood how rates and amounts were determined.

Clearer Presentation of Formulas and Procedures: The explanations of procedures and formulas introduced in this chapter have been revised to improve understanding. Additional explanations have been included for formulas that involve complex fractions and to justify shortcuts.

Excel templates. Excel templates are available for Exercise Set, #10-15, p. 458, #16-23, pp. 458-459 and for Challenge Problems 1-2, p. 465.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE; Reproducible Activity: Analyzing Your Credit Card Monthly Statement

Outline

12-1 Installment loans and closed-end credit
- A. Define:
  1. installment loans
  2. finance charges
  3. cash price
  4. total price
  5. down payment
- B. Find the total price of an installment purchase.
- C. Find the amount financed.
- D. Find the amount of an installment payment.

Specific Points

- The total price of an installment purchase is the down payment plus the product of the amount of each payment and the number of payments.
- The amount financed equals the installment price minus the down payment.
- The amount of an installment payment is the amount financed divided by the number of payments.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

12-2 Paying off a loan before it is due

A. Define the date of maturity.
B. Explain the rule of 78 to find the refund fraction.
C. Find a finance charge refund on an installment loan paid off before it is due.
D. Use the shortcut method for finding the sum of the number of payments.

- The maturity date is the date of the last payment.
- The rule of 78 is a method, based on the sum of numbers 1 through 12, to find the denominator of the interest refund fraction of a one year loan.
- An interest refund fraction is used to find the amount of interest refunded if an installment loan is paid before the maturity date.
- Multiply the interest refund fraction by the total finance charge to find the finance charge refund.
- The sum of the number of payments can be found by

$$\frac{\text{number of payments} \times (\text{number of payments} + 1)}{2}$$

12-3 Open-end credit

A. Explain revolving charge accounts.
B. Find the finance charge based on the unpaid balance on a revolving charge account.
C. Find the new unpaid balance on a revolving charge account.
D. Find the average daily balance.
E. Find the finance charge based on the average daily balance method.

- The finance charge based on an unpaid balance is the product of the unpaid balance and the rate per month charged by the company.
- Find the new unpaid balance by adding the previous balance plus finance charge plus purchases or cash advances; subtract the payment made.
- To find the average daily balance, divide the sum of daily balances by the number of days in the billing cycle.
- To find the finance charge based on the average daily balance method, multiply the average daily balance times the interest rate per cycle.

13 Compound Interest, Future Value, and Present Value

Most students are aware of the notion of compound interest and associate the concept with tedious and boring calculation after calculation. They are usually fascinated to discover that tables and calculators allow them to quickly see the effects of compound interest. These topics help students become more informed consumers as they make investment and purchasing decisions.

Reciprocal Formulas. The relationships among formulas are pointed out to enhance student understanding of the concepts.

Calculator Applications. Steps for the BA-II Plus, TI-84 Plus, and Casio fx-CG10 calculators and Excel are displayed in examples. These are called calculator applications because the known facts are entered using specific keys and internal formulas in the calculator are used to calculate the desired result.

Excel templates. Excel templates are available for Exercise Set, #7-14, p. 496, #23-30, p. 497, and for Challenge Problems 2-3, p. 503.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestions in AIE; Reproducible Activities: Developing Table Values, What Is the Natural Exponential *e*?, and Compounded Amount and Compounded Interest

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

Outline		Specific Points
13-1	Compound interest and future value A. Explain differences in simple interest and compound interest. B. Define future value and interest periods. C. Calculate future value. D. Calculate future value using compound interest table. E. Define compounding: 1. annually. 2. semiannually. 3. quarterly. 4. monthly. 5. daily. F. Calculate future value for periods of less than a year. G. Explain effective rate. H. Use a daily compounding table to find interest compounded daily.	• When interest is added to the principal before the interest is calculated for the next compounding period, the process is called compounding interest. • To find future value, find the interest for each compounding period, based on the sum of the previous principal and interest using the simple interest formula. The future value is the compound amount or the accumulated value. • To calculate a compound amount using a table, find the number of periods on the left and move across to the correct percent column; multiply this table value by the principal to get the future value. • The compound interest is the difference between the future value and the original principal. • To find future value for periods of less than a year, multiply the number of years by the periods per year, and divide the annual rate by the number of periods per year. Use these numbers on the compound interest table. • Divide the total interest for 1 year by the principal to find the effective or actual rate. • To find interest compounded daily using a table, find the number of days on the left side of the table and move across to the given percent column; multiply by the principal.
13-2	Present value A. Define present value. B. Calculate present value for an amount compounded annually. C. Use the present value table. D. Find the present value using a formula.	• Present value is the amount of money needed at the present time to yield a specified amount in the future. To find the present value needed today to produce a desired future value, divide the specified future value by the sum of 1 and the decimal form of the annual interest rate. • To use a present value table, multiply the number of years by the periods per year; divide the annual interest rate by the periods per year. Use these numbers on the table.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

14 ANNUITIES AND SINKING FUNDS

In the study of compounded interest, present value, and future value in Chapter 13, the students learn very quickly that they are limited to dealing with lump sum investments and lump sum loan payments. This is not the way investments and loans in real life are most often handled. Annuities and sinking funds are of great interest to students since they can more easily identify with this type of investment plan or loan-payoff strategy.

This chapter presents an excellent opportunity to let students discover the benefits of starting to save early in life. You may also want to have students compare the amount of payback on home loans which are financed over 20, 25, or 30 years.

Better Connection to Interest. The narrative and examples have an increased emphasis on the interest earned or paid for annuities and sinking funds, rather than just the accumulated amounts involved.

Excel templates. Excel templates are available for Exercise Set, #1-8, p. 538, 9-16, p. 538. #17-24, p. 539, and for Challenge Problems 2-3, p. 546.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE; Reproducible Activities: Developing Table Values; Suggested Team Project: Annuities/Sinking Funds

Outline

14-1 Future value of an annuity

A. Define:
   1. annuity
   2. amounts of an annuity
   3. annuities certain
   4. contingent annuities
   5. ordinary annuities

B. Calculate the amount of an ordinary annuity manually.

C. Calculate the amount of an ordinary annuity by table.

D. Calculate the amount of annuity due manually.

E. Calculate the amount of annuity due by table.

F. Find the future value of an ordinary annuity or an annuity due using a formula.

Specific Points

- Ordinary annuity payments are made at the end of each period.
- To calculate the amount of an ordinary annuity manually, find the interest on the annuity account for one period; then add another payment. Repeat this process for the total number of periods. Interest is not earned in the first period.
- To calculate the amount of an ordinary annuity by table, use Table 11-1 to find the appropriate factor, and multiply by the annuity payment.
- Annuity due payments are made at the beginning of each period.
- To calculate the amount of an annuity due manually, find the interest on the annuity account for the period; then add another payment. Repeat this process for the total number of periods. Interest is earned in the first period.
- To calculate the amount of an annuity due by table, find the ordinary annuity table value for the appropriate number of periods and the period rate. Multiply the table value times (1 + period rate) times the amount of the annuity payment.
- Use the formula given at the bottom of the table and a calculator to find future value.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

14-2	Sinking funds and the present value of an annuity A. Define sinking fund. B. Calculate a sinking fund payment using a table or formula.	• A sinking fund is an annuity that is to produce a specific amount at a given future date. Values in a sinking fund table are reciprocals of corresponding entries in a future value of an annuity table. • To calculate the amount of a sinking fund payment by table, locate the number of periods of the sinking fund and the interest rate per period on Table 11-3. Multiply the future amount desired times the table factor.
	Present value of an annuity A. Calculate the present value of an annuity.	• The present value of an annuity is the lump sum amount that, invested at compound interest, will give the same future value as on the annuity. • To calculate the present value of an annuity by table, locate the number of periods of the annuity and the interest rate per period on Table 11-2. Multiply the annuity times the table factor.

15 BUILDING WEALTH THROUGH INVESTMENTS

With the continuation of low interest rates for savings investments, the general public has gotten more involved and invested in the stock market. This is another topic for which there exists a wealth of current information that can be used for in-class or out-of-class activities or projects.

Excel templates. Excel templates are available for Exercise Set, #46-48, p. 576, #50-52, p. 576, and for Challenge Problem 2, p. 581.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE; Suggested Team Projects: Investing in Commodities

Outline		**Specific Points**
15-1	Stocks A. Describe two types of stocks: 1. preferred stock 2. common stock B. Explain how prices of stock shares are determined. C. Read a stock listing in a daily newspaper. D. Explain the profit of a company and how it is used. E. Discuss the types of preferred stock: 1. convertible 2. participating 3. cumulative F. Distribute dividends from an amount of available money. G. Calculate the current stock yield. H. Calculate the price-earnings ratio.	• Stocks offer part ownership in a company and are sold to raise money to operate or expand. • Preferred stockholders have first claim to dividends but have no voting rights; common stockholders have voting rights in the company. • Buying and selling is done by a stock broker in the stock market. • The current yield (yield %) shows how great the dividend is compared to today's closing price for the stock. • The price-earnings (PE) ratio measures how much the stock is selling for compared with its per share earnings.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

15-2 Bonds

A. Discuss why a company offers bonds.
B. Read a bond listing in a daily newspaper.
C. Calculate the price of a bond.
D. Calculate the net receipt from a sale of bonds.
E. Calculate the accrued interest.
F. Calculate the current bond yield.
G. Compare the current yield of two investments.

- To raise money without diluting the rights of the existing stockholders, a company may sell corporate bonds.
- The price of a bond can be calculated from a bond listing by multiplying the given percent by $1,000.
- The net receipt is the difference between gross receipts and commission.
- To calculate the accrued interest on bonds, divide the number of days interest has been earned by 360 and multiply by the annual interest rate and by the face value.
- The current bond yield (cur yld) gives a measure of how profitable the investment is.
- The current bond yield is the quotient of the annual interest per bond divided by current price per bond.
- To determine which of two investments is performing better, compare the percent current yields of the two.

15-3 Mutual Funds

A. Define a mutual fund.
B. Examine a mutual fund listing
C. Calculate the return on investment (ROI)

- A mutual fund is a collection of stocks, bonds, and other securities that is managed by a mutual fund company.
- The value of one share of a mutual fund is the net asset value (NAV).
- The return on investment (ROI) is a performance measure used to evaluate the efficiency of an investment, express as a percentage or ration.
- ROI is the total gain or loss divided by the total cost of an investment.

16 MORTGAGES

A home is one of the most significant purchases that a consumer makes. This chapter shows how monthly payments are determined and how to prepare an amortization schedule.

Calculator Applications. Steps for applying the calculator applications using TI BA II Plus, TI-84 Plus, and Casio fx-CG10 calculators and Excel are included.

Excel templates. Excel templates are available for Exercise Set, #1-8, #9-16, p. 603, #27, p. 605, #29, p. 606, and for Challenge Problems 2-3, p. 609.

Outline

16-1 Mortgage payments

A. Calculate the monthly payment (principal plus interest) and total interest.
B. Find the total interest on a mortgage and the PITI.

Specific Points

- To find the monthly payment (principal plus interest) using an amortization chart, divide the amount financed by 1,000. Multiply this quotient by the appropriate amount from the amortization chart.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

16-2 Amortization schedules and qualifying ratios.

A. Prepare a partial amortization schedule by hand
B. Prepare an amortization table using Excel.
C. Calculate qualifying ratios.

- An amortization schedule includes the amount of the monthly payment applied to the principal, the amount of interest per payment, and the end-of-period balance.

17 DEPRECIATION

Updating With Respect to IRS Changes. The latest IRS changes have been incorporated and examples and exercises have been updated to reflect these changes.

Excel templates. Excel templates are available for Exercise Set, #20, p. 637 and for Challenge Problem 2, p. 643.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestions in AIE; Reproducible Activity: Calculating MACRS Depreciation Without Using Tables

Outline

17-1 Depreciation methods for financial statement reporting

A. Explain the assets of a business.
B. Explain the estimated or useful life of an asset.
C. Discuss depreciation of an asset.

Methods of depreciation used for accounting purposes to find yearly depreciation

1. Use straight-line method.
2. Use units-of-production method.
3. Use sum-of-the-year's digits method.
4. Use declining-balance method.

Specific Points

- The estimated or useful life of an asset is the number of years that the item is expected to be usable.
- Depreciation is the amount an asset decreases in value from the original cost.
- The depreciable amount of an asset is the difference between the cost of the equipment minus the salvage value divided by the expected life. The yearly depreciation for the straight-line method is the depreciable amount divided by the years of useful life.
- The straight-line depreciation rate is 1 divided by the expected useful life.
- The unit depreciation of an asset can be found by dividing the depreciable amount by the expected life, in units produced. The depreciation amount is the product of the unit depreciation and the units produced.
- To use the sum-of-the-year's method, multiply the depreciable amount by the depreciation rate fraction.
- In preparing a depreciation schedule, each year multiply by the book value minus the depreciation amount of the previous year until the remaining book value is equal to or less than the salvage value.
- To use the double-declining balance method, multiply the straight-line depreciation rate by 2.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

17-2 Depreciation methods for IRS reporting
A. Use MACRS system.
B. Section 179 Deduction

- The MACRS for depreciation is used for federal income tax purposes and depends on the type of property as well as the number of recovery years. A table gives the cost recovery percentages.
- The MACRS for depreciation is used for property put in use after 1986.
- A deduction that can be taken on a certain business property the same tax year the property is purchased and placed in service.

18 INVENTORY

Most businesses keep inventory and overhead records for tax purposes; but, these records can also be used in making expansion, reduction, and reallocation decisions. Students can be encouraged to list situations when inventory and overhead information would be helpful in decision-making.

Using Conversion Factors. Establishing and using conversion factors are introduced to help students see the parallels with proportions, percent, and other concepts and to see how these factors can reduce the calculations. Using conversion factors also draws attention to the patterns that develop in these calculations.

Excel templates. Excel templates are available for Exercise Set, #24, p. 677, and for Challenge Problem 2, p. 683.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE

Outline

18-1 Inventory
A. Define inventory.
B. Explain two types of inventory:
1. periodic
2. perceptual
C. Find the cost of goods sold.

Specific Points

- Inventory is the value of the merchandise that is available for sale on a specific date.
- Cost of goods sold is equal to cost of goods available for sale minus cost of ending inventory.

Methods of assigning a value to inventory
A. Discuss specific identification method.
B. Discuss weighted-average method.
C. Discuss FIFO method.
D. Discuss LIFO method.
E. Discuss retail method of estimating inventory.
F. Discuss advantages and disadvantages of the methods.

- To use the specific inventory method, multiply the number of units available by the price per unit minus the cost of the ending inventory.
- The weighted average uses the total cost of available goods divided by total number of units available to find the average unit cost.
- The FIFO method is based on the assumption that the ending inventory is made up of the most recently purchased goods.
- The LIFO method is based on the assumption that the ending inventory is made up of the oldest goods.
- The retail method of estimating inventory uses a cost ratio, the cost of goods available for sale at cost over the cost of goods available for sale at retail. The ending inventory at cost is the product of the ending inventory at retail multiplied by the cost ratio.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

18-2 Turnover and overhead

A. Define inventory turnover.
B. Find the inventory turnover rate:
   1. at cost.
   2. at retail.
C. Calculate inventory turnover rate at cost and at retail.

- Inventory turnover is the rate at which the inventory of merchandise is sold and replaced.
- The inventory turnover rate at cost is the cost of goods sold divided by the average inventory at cost.
- The inventory turnover rate at retail is the net sales divided by the average inventory at retail.

Overhead

A. Define overhead.
B. Find overhead:
   1. based on the total sales.
   2. based on floor space.

- To find overhead based on total sales, find a sales fraction for each department and multiply by the total overhead.
- To find overhead based on floor space, find a floor space fraction for each department and multiply by the total overhead.

19 INSURANCE

Many students have had some exposure to automobile insurance, but not necessarily fire and life insurance. Students should discuss why homeowners and renters insurance is important protection even for the younger students who have very few assets. Also, discuss the circumstances in which life insurance is a must and in which it is a luxury. Then, how much life insurance and what type of insurance is the most practical. When students can personalize what they are learning, it is more meaningful to them.

Excel templates. Excel templates are available for Exercise Set, #19-24, p. 710, and for Challenge Problem 2, p. 716.

Activities: Classroom Collaborative Activity Suggestions in AIE; Expanding the Text Suggestions in AIE

Outline

19-1 Life insurance

A. Discuss the need for insurance.
B. Define:
   1. insured
   2. insurer
   3. policy
   4. premium
   5. face value
   6. beneficiary
C. Describe the types of life insurance policies:
   1. term insurance
   2. whole-life insurance
   3. universal life insurance
D. Determine annual premium rates for life insurance policies.
E. Discuss other types of insurance.

Specific Points

- Insurance provides protection against unexpected financial loss.
- Life insurance provides financial payments to surviving beneficiaries at the time of the insured's death.
- Term insurance is purchased for a certain period of time and payments are made for that period of time.
- Whole-life premiums are paid by the insured for a lifetime; the policy has a cash value.
- Universal life insurance provides permanent life protection, but the insured pays higher premiums for a specified period of time.
- Annual premiums are calculated with the use of a table and are determined by age, sex, and type of policy.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

19-2 Property insurance

A. Discuss the protection provided by renters and homeowners insurance.
B. Describe factors involved in establishing rates.
C. Calculate the annual insurance premium.
D. Explain a coinsurance clause.
E. Calculate compensation with a coinsurance clause.

- Renters and homeowners insurance provides protection against loss or damage to property caused by fire, storms, burglary, etc.
- Renters and homeowners insurance rates vary according to structure, location, deductible, and credit rating. A table is used to find the rate charged on a building and its contents.
- A coinsurance clause means that the insured gets compensation up to the face value of the policy if the property is insured for at least 80% of its value.

19-3 Motor vehicle insurance

A. Describe the types of motor vehicle insurance:
   1. liability
   2. comprehensive
   3. collision
   4. no-fault
B. Discuss factors that affect the cost of auto insurance.
C. Find the annual premium.
D. Discuss the deductible clause in a policy.

- Liability insurance covers the owner of a vehicle when an accident causes personal injury or property damage and the accident is the fault of the insured or the driver of the insured's vehicle.
- Comprehensive insurance protects the insured for damages to a vehicle caused by fire, theft, vandalism, etc.
- Collision insurance covers the insured for personal and property damage caused by a vehicle accident in which the insured is not at fault.
- In a no-fault insurance program, each person involved in an accident submits a claim to his or her own insurance company.
- The cost of auto insurance is determined by location, distance traveled for work and pleasure, types of use, age and sex of drivers, driving record, insured's credit rating, and liability limits.
- Use a table to determine annual premiums.
- Collision insurance policies usually include a deductible clause, which means the company pays after the insured has paid a specified amount of the damages.

20 TAXES

While IRS regulations are constantly changing, the procedures for making calculations have remained fairly constant for many years. Shortly after a text is published IRS forms are updated. Students can still learn the procedures using tables and schedules that are a year or so old. This chapter can easily be supplemented by supplying the current forms for students to use.

Updating to Reflect IRS Changes: A general update has been made throughout the chapter to reflect changes in IRS tax rates and procedures.

Excel templates. Excel templates are available for Exercise Set, #46-49, p. 746, and for Challenge Problem 2, p. 751.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestions in AIE; Reproducible Activity: What Percent Tax Do I Really Pay?

An effective collaborative classroom or out-of-class activity is to repeat some of the text assignments using more current tables and schedules and compare the results with those found by using tables in the text.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

Outline		**Specific Points**
20-1	Sales tax and excise tax A. Define taxes and the services for which they provide. B. Find the amount of sales tax by: 1. using a table. 2. multiplying by the tax rate. C. Find the marked price of an item, given the total price and the sales tax rate.	• A tax is money collected by government for its own support and to provide services. • To find the amount of sales tax without a table, multiply the amount of purchase by the tax rate and round to the nearest cent. • To find the marked price of an item, divide the total price by 1 + the sales tax rate.
20-2	Property tax A. Define the market value and assessed value of property. B. Calculate the assessed value of property. C. Find the tax on property if the tax rate is: 1. a percent 2. an amount per $100 of assessed value. 3. an amount per $1,000 of assessed value. 4. expressed in mills. D. Discuss how a tax rate is determined.	• The market value of property is the expected selling price. • The assessed value is a specified percent of the market value of the property. • If the tax rate is a percent, change the percent to a decimal before multiplying. • If the tax rate is expressed as a specified amount per $100, divide the assessed value by 100 before multiplying. • If the tax rate is expressed as a specified amount per $1,000, divide the assessed value by 1,000 before multiplying. • If the tax rate is expressed in mills, move the decimal three places to the left before multiplying.
20-3	Income taxes A. Explain the relationships among: 1. gross income. 2. adjusted gross income. 3. taxable income. B. Explain exemptions and deductions. C. Discuss filing status. D. Use a tax table. E. Use a tax rate schedule.	• Gross income comes from salary, investments, etc., before exemptions and deductions. • Adjusted gross income is gross income minus allowable deductions such as IRAs, student loan interest, tuition and fees, alimony paid, and so on. • Taxable income is the adjusted gross income minus exemptions and deductions. • Each taxpayer is allowed one exemption for himself or herself and one each for a spouse and other dependents under certain circumstances. • The amount of tax paid on taxable income depends on the taxpayer's filing status. • Use a tax table if your taxable income is less than $100,000. • Use a tax rate schedule if your taxable income is $100,000 or more.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

21 FINANCIAL STATEMENTS

Large corporations prepare financial statements to keep stockholders informed of the business of the corporations. Small businesses will be required to prepare financial statements when applying for loans or when seeking investors. Using and analyzing financial statements can also assist the small business owner in making informed decisions. Students continually want to know when and how they will use the concepts they are learning. You may want to have students list situations when information from a financial statement would be useful.

Better Connections. Increased attention is given to the use of previously learned percent skills. The procedures for analyzing financial statements have incorporated some of the familiar percent terminology.

Excel templates. Excel templates are available for Exercise Set, #3-4, p. 792, and for Challenge Problems 2-3, p. 801.

Activities: Classroom Collaborative Activity Suggestion in AIE; Expanding the Text Suggestions in AIE

Outline		**Specific Points**
21-1	Balance sheet A. Discuss the information provided in a balance statement: 1. assets 2. liabilities 3. owner's equity B. Describe types of assets. C. Describe types of liabilities. D. Prepare a balance sheet. E. Prepare a vertical analysis of a balance sheet. F. Prepare a comparative balance sheet. G. Prepare a horizontal analysis of a balance sheet.	• A balance sheet indicates the financial condition of a business as of a certain date and uses the basic accounting equation: assets = liabilities + owner's equity. • On a balance sheet, the total assets must equal the total liabilities and owner's equity. • A vertical analysis of a balance sheet shows the relationship of the items on the balance sheet to the total assets, using the rate version of the percentage formula. • A comparative balance sheet shows the balance sheet for two or more years side by side. • A horizontal analysis of a balance sheet compares the same items in different years by finding the percent increase or decrease, with the earlier year's amounts as the base.
21-2	Income statements A. Discuss the information provided in an income statement: 1. net sales 2. gross profit 3. net income B. Prepare an income statement. C. Prepare a vertical analysis of an income statement. D. Prepare a comparative income statement. E. Prepare a horizontal analysis of an income statement.	• An income statement shows the net income of a business over a period of time. • A vertical analysis of an income statement indicates the percent of net sales for each item. • A comparative income statement shows the information for two or more income statements. • A horizontal analysis of an income statement compares the same items in different years by finding the percent increase or decrease, with the earlier year's amounts as the base.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual

21-3 Financial statement ratios

A. Explain the purposes of financial ratios.
B. Find the current ratio of a business.
C. Find the acid-test ratio of a business.
D. Discuss the purpose of income statement ratios.
E. Find the ratio to net sales.
   1. operating ratio
   2. gross profit margin

- Financial ratios take information from the financial statement and show the relationships between parts of a business, allowing an evaluation of the business.
- A current ratio tells how the current assets relate to current liabilities; by dividing the current assets by the current liabilities. The ratio is expressed in the decimal form.
- The acid-test ratio compares the quick current assets, such as cash and accounts receivable, to the current liabilities. The acid-test ratio of a business in good condition is more than 1:1.
- Income statement ratios determine whether the changes found on a comparative income statement are favorable or unfavorable.
- The operating ratio is the sum of the cost of goods sold and operating expenses divided by the net sales; the ratio should be less than 1:1. It indicates the portion of sales dollars used for goods and operating expenses.
- The gross profit ratio shows the average spread between cost of goods sold and selling price. Find the gross profit margin, which varies from business to business, by dividing the difference of net sales and cost of goods sold by the net sales. The minimum acceptable current ratio is usually 2:1.

Copyright © 2018 Pearson Education, Inc.
Business Math 11th edition Cleaves Solutions Manual