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END-OF-CHAPTER PROBLEMS



Check figures for odd-numbered problems in Appendix B. Name _____ Date _____

DRILL PROBLEMS

Identify the following types of fractions: *LU 2-1(1)*

2–1. $\frac{9}{10}$ Proper **2–2.** $\frac{12}{11}$ Improper **2–3.** $\frac{25}{13}$ Improper

Convert the following to mixed numbers: *LU 2-1(2)*

2–4. $\frac{91}{10} = 9\frac{1}{10}$ **2–5.** $\frac{921}{15} = 61\frac{6}{15} = 61\frac{2}{5}$

Convert the following to improper fractions: *LU 2-1(2)*

2–6. $8\frac{7}{8} = \frac{71}{8}$ **2–7.** $19\frac{2}{3} = \frac{59}{3}$

Reduce the following to the lowest terms. Show how to calculate the greatest common divisor by the step approach. *LU 2-1(3)*

2–8. $\frac{16}{38} = \frac{16 \div 2}{38 \div 2} = \frac{8}{19}$

$$\begin{array}{r|l} 2 & 2 \\ 16\overline{)38} & 6\overline{)16} \\ 32 & 12 \\ \hline 6 & 4 \end{array} \qquad \begin{array}{r|l} 1 & 2 \\ 4\overline{)6} & 2\overline{)4} \\ 4 & 4 \\ \hline 2 & 0 \end{array}$$

2–9. $\frac{44}{52} = \frac{44 \div 4}{52 \div 4} = \frac{11}{13}$

$$\begin{array}{r|l} 1 & 5 \\ 44\overline{)52} & 8\overline{)44} \\ 44 & 40 \\ \hline 8 & 4 \end{array} \qquad \begin{array}{r|l} 2 & \\ 4\overline{)8} & \\ 8 & \\ \hline 0 & \end{array}$$

Convert the following to higher terms: *LU 2-1(3)*

2–10. $\frac{9}{10} = \frac{63}{70}$ $70 \div 10 = 7 \times 9 = 63$

Determine the LCD of the following (a) by inspection and (b) by division of prime numbers: *LU 2-2(2)*

2–11. $\frac{3}{4}, \frac{7}{12}, \frac{5}{6}, \frac{1}{5}$

Inspection 60

$2 \times 2 \times 3 \times 5 = 60$

Check

$$\begin{array}{r|l} 2 & 4 \quad 12 \quad 6 \quad 5 \\ 2 & 2 \quad 6 \quad 3 \quad 5 \\ 3 & 1 \quad 3 \quad 3 \quad 5 \\ \hline & 1 \quad 1 \quad 1 \quad 5 \end{array}$$

2–12. $\frac{5}{6}, \frac{7}{18}, \frac{5}{9}, \frac{2}{72}$

Inspection 72

$2 \times 3 \times 3 \times 4 = 72$

Check

$$\begin{array}{r|l} 2 & 6 \quad 18 \quad 9 \quad 72 \\ 3 & 3 \quad 9 \quad 9 \quad 36 \\ 3 & 1 \quad 3 \quad 3 \quad 12 \\ \hline & 1 \quad 1 \quad 1 \quad 4 \end{array}$$

2–13. $\frac{1}{4}, \frac{3}{32}, \frac{5}{48}, \frac{1}{8}$

Inspection 96

$2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96$

Check

$$\begin{array}{r|l} 2 & 4 \quad 32 \quad 48 \quad 8 \\ 2 & 2 \quad 16 \quad 24 \quad 4 \\ 2 & 1 \quad 8 \quad 12 \quad 2 \\ 2 & 1 \quad 4 \quad 6 \quad 1 \\ \hline & 1 \quad 2 \quad 3 \quad 1 \end{array}$$

Add the following and reduce to lowest terms: *LU 2-2(1), LU 2-1(3)*

2–14. $\frac{3}{9} + \frac{3}{9} = \frac{6}{9} = \frac{2}{3}$ **2–15.** $\frac{3}{7} + \frac{4}{21} = \frac{9}{21} + \frac{4}{21} = \frac{13}{21}$

2–16. $6\frac{1}{8} + 4\frac{3}{8} = 10\frac{4}{8} = 10\frac{1}{2}$ **2–17.** $6\frac{3}{8} + 9\frac{1}{24} = 6\frac{9}{24} + 9\frac{1}{24} = 15\frac{10}{24} = 15\frac{5}{12}$

2–18. $9\frac{9}{10} + 6\frac{7}{10} = 15\frac{16}{10} = 16\frac{6}{10} = 16\frac{3}{5}$

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Subtract the following and reduce to lowest terms: *LU 2-2(3), LU 2-1(3)*

2–19. $\frac{11}{12} - \frac{1}{12} = \frac{10}{12} = \frac{5}{6}$

2–20. $14\frac{3}{8} - 10\frac{5}{8}$

$13\frac{11}{8}$

$-10\frac{5}{8}$

$3\frac{6}{8} = 3\frac{3}{4}$

2–21. $12\frac{1}{9} - 4\frac{2}{3}$ $\quad 12\frac{1}{9} = 11\frac{10}{9}\left(\frac{9}{9} + \frac{1}{9}\right)$

$-4\frac{6}{9} = -4\frac{6}{9}$

$7\frac{4}{9}$

Multiply the following and reduce to lowest terms. Do not use the cancellation technique for these problems. *LU 2-3(1), LU 2-1(3)*

2–22. $17 \times \frac{4}{2} = \frac{68}{2} = 34$

2–23. $\frac{5}{6} \times \frac{3}{8} = \frac{15}{48} = \frac{5}{16}$

2–24. $8\frac{7}{8} \times 64 = \frac{71}{8} \times \frac{64}{1} = \frac{4{,}544}{8} = 568$

Multiply the following. Use the cancellation technique. *LU 2-3(1), LU 2-1(2)*

2–25. $\frac{4}{10} \times \frac{30}{60} \times \frac{6}{10} = \frac{\cancel{4}^{\,1}}{\cancel{10}_{\,5}} \times \frac{\cancel{30}^{\,3}}{\cancel{60}_{\,\cancel{10}_{\,5}}} \times \frac{\cancel{6}^{\,1}}{\cancel{10}_{\,1}} = \frac{3}{25}$

2–26. $3\frac{3}{4} \times \frac{8}{9} \times 4\frac{9}{12} = \frac{\cancel{15}^{\,5}}{\cancel{4}_{\,1}} \times \frac{\cancel{8}^{\,1}}{\cancel{9}_{\,\cancel{3}_{\,1}}} \times \frac{\cancel{57}^{\,19}}{\cancel{12}_{\,6}} = \frac{95}{6} = 15\frac{5}{6}$

Divide the following and reduce to lowest terms. Use the cancellation technique as needed. *LU 2-3(2), LU 2-1(2)*

2–27. $\frac{12}{9} \div 4 = \frac{\cancel{12}^{\,1}}{\cancel{9}_{\,3}} \times \frac{1}{\cancel{4}_{\,1}} = \frac{1}{3}$

2–28. $18 \div \frac{1}{5} = 18 \times \frac{5}{1} = 90$

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2–29. $4\frac{2}{3} \div 12 = \frac{\cancel{14}^{\,7}}{3} \times \frac{1}{\cancel{12}_{\,6}} = \frac{7}{18}$

2–30. $3\frac{5}{6} \div 3\frac{1}{2} = \frac{23}{\cancel{6}_{\,3}} \times \frac{\cancel{2}^{\,1}}{7} = \frac{23}{21} = 1\frac{2}{21}$

WORD PROBLEMS

My Money

2–31. Michael Wittry has been investing in his Roth IRA retirement account for 20 years. Two years ago, his account was worth $215,658. After losing $\frac{1}{3}$ of its original value, it then gained $\frac{1}{2}$ of its new value back. What is the current value of his Roth IRA? *LU 2-3(1)*

$\$215{,}658 \times \frac{1}{3} = \$71{,}886$ $\quad \$215{,}658 - \$71{,}886 = \$143{,}772$

$\$143{,}772 \times 1\frac{1}{2} = \$215{,}658$

2–32. Delta pays Pete Rose $180 per day to work in the maintenance department at the airport. Pete became ill on Monday and went home after $\frac{1}{6}$ of a day. What did he earn on Monday? Assume no work, no pay. *LU 2-3(1)*

$\frac{1}{6} \times \$180 = \$30$

GLOBAL

2–33. The Spanish flu infected $\frac{1}{3}$ of the worldwide population in 1918–1919. If the worldwide population was 1,500,000, how many people contracted the disease?

Population: $1{,}500{,}000 \times \frac{1}{3} = 500{,}000$ infected

2–34. Joy Wigens, who works at Putnam Investments, received a check for $1,600. She deposited $\frac{1}{4}$ of the check in her Citibank account. How much money does Joy have left after the deposit? *LU 2-3(1)*

$\frac{3}{\cancel{4}_{\,1}} \times \cancel{\$1{,}600}^{\,\$400} = \$1{,}200$

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2–35. Lee Jenkins worked the following hours as a manager for a local Pizza Hut: $14\frac{1}{4}, 5\frac{1}{4}, 8\frac{1}{2}$ and $7\frac{1}{4}$. How many total hours did Lee work? *LU 2-2(1)*

$$14\frac{1}{4}+5\frac{1}{4}+8\frac{2}{4}+7\frac{1}{4}=34\frac{5}{4}=35\frac{1}{4}\text{ hours}$$

2–36. Lester bought a piece of property in Vail, Colorado. The sides of the land measure $115\frac{1}{2}$ feet, $66\frac{1}{4}$ feet, $106\frac{1}{8}$ feet, and $110\frac{1}{4}$ feet. Lester wants to know the perimeter (sum of all sides) of his property. Can you calculate the perimeter for Lester? *LU 2-2(1)*

$$115\frac{4}{8}+66\frac{2}{8}+106\frac{1}{8}+110\frac{2}{8}=397\frac{9}{8}=398\frac{1}{8}\text{ feet}$$

2–37. Tiffani Lind got her new weekly course schedule from Roxbury Community College in Boston. Following are her classes and their length: Business Math, $2\frac{1}{2}$ hours; Introduction to Business, $1\frac{1}{2}$ hours; Microeconomics, $1\frac{1}{2}$ hours; Spanish, $2\frac{1}{4}$ hours; Marketing, $1\frac{1}{4}$ hours; and Business Statistics, $1\frac{3}{4}$ hours. How long will she be in class each week? *LU 2-2(1)*

$$2\frac{1}{2}+1\frac{1}{2}+1\frac{1}{2}+2\frac{1}{4}+1\frac{1}{4}+1\frac{3}{4}=$$

$$2\frac{2}{4}+1\frac{2}{4}+1\frac{2}{4}+2\frac{1}{4}+1\frac{1}{4}+1\frac{3}{4}=8\frac{11}{4}=10\tfrac{3}{4}\text{ hours in class each week}$$

2–38. Seventy-seven million people were born between 1946 and 1964. The U.S. Census classifies this group of individuals as baby boomers. It is said that today and every day for the next 18 years, 10,000 baby boomers will reach 65. If $\frac{1}{4}$ of the 65 and older age group uses e-mail, $\frac{1}{5}$ obtains the news from the Internet, and $\frac{1}{6}$ searches the Internet, find the LCD and determine total technology usage for this age group as a fraction. *LU 2-2(1, 2)*

$$\text{LCD}=60$$

$$\frac{1}{4}+\frac{1}{5}+\frac{1}{6}=\frac{15}{60}+\frac{12}{60}+\frac{10}{60}=\frac{37}{60}$$

2–39. At a local Walmart store, a Coke dispenser held $19\frac{1}{4}$ gallons of soda. During working hours, $12\frac{3}{4}$ gallons were dispensed. How many gallons of Coke remain? *LU 2-2(2, 3)*

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$$19\frac{1}{4}=\quad 18\frac{5}{4}\longleftarrow\left(\frac{4}{4}+\frac{1}{4}\right)$$

$$-12\frac{3}{4}=-12\frac{3}{4}$$

$$6\frac{2}{4}=6\frac{1}{2}\text{ gallons}$$

2–40. If two coronavirus vaccines have been administered to a total of 398,675,414 people in the United States, and the Pfizer-BioNTech vaccine was administered to $\frac{9}{17}$ of the U.S. population, how many people received the Moderna vaccine? Round to the nearest whole person.

$$\frac{17}{17}-\frac{9}{17}=\frac{8}{17}\times 398{,}675{,}414=187{,}611{,}959.5=187{,}611{,}960$$

2–41. A local garden center charges \$250 per cord of wood. If Logan Grace orders $3\frac{1}{2}$ cords, what will the total cost be? *LU 2-3(1)*

$$\$250\times 3\frac{1}{2}=\$250\times\frac{7}{2}=\$875$$

2–42. A local Target store bought 90 pizzas at Pizza Hut for its holiday party. Each guest ate $\frac{1}{6}$ of a pizza and there was no pizza left over. How many guests did Target have for the party? *LU 2-3(1)*

$$90\div\frac{1}{6}=90\times 6=540\text{ guests}$$

2–43. Marc, Steven, and Daniel entered into a Subway sandwich shop partnership. Marc owns $\frac{1}{9}$ of the shop and Steven owns $\frac{1}{4}$. What part does Daniel own? *LU 2-2(1, 2)*

$$\frac{4}{36}+\frac{9}{36}=\frac{13}{36}\quad 1-\frac{13}{36}=\frac{23}{36}\text{ for Daniel or }\frac{36}{36}-\frac{13}{36}=\frac{23}{36}$$

2–44. Lionel Sullivan works for Burger King. He is paid time and one-half for Sundays. If Lionel works on Sunday for 6 hours at a regular pay of \$8 per hour, what does he earn on Sunday? *LU 2-3(1)*

$$1\frac{1}{2}\times\$8=\frac{3}{2}\times\$8=\$12\quad\$12\times 6=\$72$$

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My Money

2–45. DaveRamsey.com's "Baby Step 3" out of "7 Baby Steps" for financial health recommends a $1,000 emergency fund if you have debt; and, once you are free of debt, he recommends a fully funded emergency fund of at least six months of monthly expenses depending on your job situation. If your starting goal is to have a 4-month emergency fund and your monthly expenses total $2,750, how much more do you have to save if you currently have $\frac{2}{3}$ of your fund saved? Round to the nearest dollar.

$4 \times \$2{,}750 = \$11{,}000 \times \frac{1}{3} = \$3{,}666.67 = \$3{,}667$

2–46. A trip to the White Mountains of New Hampshire from Boston will take you $2\frac{3}{4}$ hours. Assume you have traveled $\frac{1}{11}$ of the way. How much longer will the trip take? *LU 2-3(1, 2)*

$\frac{\cancel{10}^{5}}{\cancel{11}_{1}} \times \frac{\cancel{11}^{1}}{\cancel{4}_{2}} = \frac{5}{2} = 2\frac{1}{2}$ hours

2–47. Andy, who loves to cook, makes apple cobbler for his family. The recipe (serves 6) calls for $1\frac{1}{2}$ pounds of apples, $3\frac{1}{4}$ cups of flour, $\frac{1}{4}$ cup of margarine, $2\frac{3}{8}$ cups of sugar, and 2 teaspoons of cinnamon. Since guests are coming, Andy wants to make a cobbler that will serve 15 (or increase the recipe $2\frac{1}{2}$ times). How much of each ingredient should Andy use? *LU 2-3(1, 2)*

$\frac{3}{2} \times \frac{5}{2} = \frac{15}{4} = 3\frac{3}{4}$ pounds of apples

$\frac{13}{4} \times \frac{5}{2} = \frac{65}{8} = 8\frac{1}{8}$ cups of flour

$\frac{1}{4} \times \frac{5}{2} = \frac{5}{8}$ cup of margarine

$\frac{19}{8} \times \frac{5}{2} = \frac{95}{16} = 5\frac{15}{16}$ cups of sugar

$2 \times \frac{5}{2} = 5$ teaspoons of cinnamon

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2–48. Mobil allocates $1{,}692\frac{3}{4}$ gallons of gas per month to Jerry's Service Station. The first week, Jerry sold $275\frac{1}{2}$ gallons; second week, $280\frac{1}{4}$ gallons; and third week, $189\frac{1}{8}$ gallons. If Jerry sells $582\frac{1}{2}$ gallons in the fourth week, how close is Jerry to selling his allocation? *LU 2-2(4)*

$$\begin{array}{r} 275\frac{4}{8} \\ 280\frac{2}{8} \\ 189\frac{1}{8} \\ +\ 582\frac{4}{8} \\ \hline 1{,}326\frac{11}{8} = 1{,}327\frac{3}{8} \text{ gallons} \end{array} \qquad \begin{array}{r} 1{,}692\frac{6}{8} \\ -\ 1{,}327\frac{3}{8} \\ \hline 365\frac{3}{8} \text{ gallons} \end{array}$$

2–49. A marketing class at North Shore Community College conducted a viewer preference survey. The survey showed that $\frac{5}{6}$ of the people surveyed preferred Apple's iPhone over the Blackberry. Assume 2,400 responded to the survey. How many favored using a Blackberry? *LU 2-3(1, 2)*

$\frac{1}{\cancel{6}_{1}} \times \cancel{2{,}400}^{400} = 400$ people

2–50. The price of a used Toyota LandCruiser has increased to $1\frac{1}{4}$ times its earlier price. If the original price of the LandCruiser was $30,000, what is the new price? *LU 2-3(1, 2)*

$1\frac{1}{4} \times \$30{,}000 = \frac{5}{4} \times \$30{,}000 = \$37{,}500$

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2–51. Tempco Corporation has a machine that produces $12\frac{1}{2}$ baseball gloves each hour. In the last 2 days, the machine has run for a total of 22 hours. How many baseball gloves has Tempco produced? *LU 2-3(2)*

$$22 \times 12\frac{1}{2} = \overset{11}{\cancel{22}} \times \frac{25}{\underset{1}{\cancel{2}}} = 275 \text{ gloves}$$

2–52. Alicia, an employee of Dunkin' Donuts, receives $23\frac{1}{4}$ days per year of vacation time. So far this year she has taken $3\frac{1}{8}$ days in January, $5\frac{1}{2}$ days in May, $6\frac{1}{4}$ days in July, and $4\frac{1}{4}$ days in September. How many more days of vacation does Alicia have left? *LU 2-2(1, 2, 3)*

$$3\frac{1}{8} + 5\frac{4}{8} + 6\frac{2}{8} + 4\frac{2}{8} = 18\frac{9}{8} = 19\frac{1}{8}$$

$$\begin{array}{r} 23\frac{2}{8} \\ -\ 19\frac{1}{8} \\ \hline 4\frac{1}{8} \text{ days left} \end{array}$$

2–53. A Hamilton multitouch watch was originally priced at \$600. At a closing of the Alpha Omega Jewelry Shop, the watch is being reduced by $\frac{1}{4}$. What is the new selling price? *LU 2-3(1)*

$$\$600 \times \frac{3}{4} = \$450$$

2–54. Shelly Van Doren hired a contractor to refinish her kitchen. The contractor said the job would take $49\frac{1}{2}$ hours. To date, the contractor has worked the following hours:

Monday	$4\frac{1}{4}$	$4\frac{2}{8}$
Tuesday	$9\frac{1}{8}$	$9\frac{1}{8}$
Wednesday	$4\frac{1}{4}$	$4\frac{2}{8}$
Thursday	$3\frac{1}{2}$	$3\frac{4}{8}$
Friday	$10\frac{5}{8}$	$+\ 10\frac{5}{8}$
		$30\frac{14}{8} = 31\frac{6}{8} = 31\frac{3}{4}$ hours

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$$\begin{array}{r} 49\frac{2}{4} \\ -\ 31\frac{3}{4} \\ \hline \end{array} \qquad \begin{array}{r} 48\frac{6}{4} \\ -\ 31\frac{3}{4} \\ \hline 17\frac{3}{4} \text{ hours to go} \end{array}$$

How much longer should the job take to be completed? *LU 2-2(4)*

2–55. An issue of *Taunton's Fine Woodworking* included plans for a hall stand. The total height of the stand is $81\frac{1}{2}$ inches. If the base is $36\frac{5}{16}$ inches, how tall is the upper portion of the stand? *LU 2-2(4)*

$$\begin{array}{rl} 81\frac{1}{2} = & 81\frac{8}{16} \\ -36\frac{5}{16} = & -36\frac{5}{16} \\ \hline & 45\frac{3}{16} \text{ inches} \end{array}$$

2–56. Albertsons grocery planned a big sale on apples and received 750 crates from the wholesale market. Albertsons will bag these apples in plastic. Each plastic bag holds $\frac{1}{9}$ of a crate. If Albertsons has no loss to perishables, how many bags of apples can be prepared? *LU 2-3(1)*

$$750 \div \frac{1}{9} = 750 \times 9 = 6{,}750 \text{ bags}$$

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2–57. Frank Puleo bought 6,625 acres of land in ski country. He plans to subdivide the land into parcels of $13\frac{1}{4}$ acres each. Each parcel will sell for $125,000. How many parcels of land will Frank develop? If Frank sells all the parcels, what will be his total sales? *LU 2-3(1)*

$$6{,}625 \div 13\frac{1}{4} = 6{,}625 \times \frac{4}{53} = 500 \text{ parcels} \times \$125{,}000 = \$62{,}500{,}000$$

If Frank sells $\frac{3}{5}$ of the parcels in the first year, what will be his total sales for the year?

$$\frac{3}{\cancel{5}_{1}} \times \overset{100}{\cancel{500}} = 300 \times \$125{,}000 = \$37{,}500{,}000$$

2–58. A local Papa Gino's conducted a food survey. The survey showed that $\frac{1}{9}$ of the people surveyed preferred eating pasta to hamburger. If 5,400 responded to the survey, how many actually favored hamburger? *LU 2-3(1)*

$$\frac{8}{\cancel{9}_{1}} \times \overset{600}{\cancel{5{,}400}} = 4{,}800 \text{ people}$$

2–59. Tamara, Jose, and Milton entered into a partnership that sells men's clothing on the web. Tamara owns $\frac{3}{8}$ of the company and Jose owns $\frac{1}{4}$. What part does Milton own? *LU 2-2(1, 3)*

$$\frac{3}{8} + \frac{2}{8} = \frac{5}{8} \quad 1 - \frac{5}{8} = \frac{3}{8} \text{ for Milton or } \frac{8}{8} - \frac{5}{8} = \frac{3}{8}$$

2–60. *Quilters Newsletter Magazine* gave instructions on making a quilt. The quilt required $4\frac{1}{2}$ yards of white-on-white print, 2 yards blue check, $\frac{1}{2}$ yard blue-and-white stripe, $2\frac{3}{4}$ yards blue scraps, $\frac{3}{4}$ yard yellow scraps, and $4\frac{7}{8}$ yards lining. How many total yards are needed? *LU 2-2(1, 2)*

$$4\frac{1}{2} + 2 + \frac{1}{2} + 2\frac{3}{4} + \frac{3}{4} + 4\frac{7}{8} = 4\frac{4}{8} + 2 + \frac{4}{8} + 2\frac{6}{8} + \frac{6}{8} + 4\frac{7}{8} = 12\frac{27}{8} = 15\frac{3}{8} \text{ yards}$$

2–61. A trailer carrying supplies for a Krispy Kreme from Virginia to New York will take $3\frac{1}{4}$ hours. If the truck traveled $\frac{1}{5}$ of the way, how much longer will the trip take? *LU 2-3(1, 2)*

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$$\frac{\overset{1}{\cancel{4}}}{5} \times \frac{13}{\cancel{4}_{1}} = \frac{13}{5} = 2\frac{3}{5} \text{ hours}$$

2–62. Land Rover has increased the price of a FreeLander by $\frac{1}{5}$ from the original price. The original price of the FreeLander was $30,000. What is the new price? *LU 2-3(1, 2)*

$$1\frac{1}{5} = \frac{6}{\cancel{5}_{1}} \times \overset{\$6{,}000}{\cancel{\$30{,}000}} = \$36{,}000$$

CHALLENGE PROBLEMS

2–63. *Woodsmith* magazine gave instructions on how to build a pine cupboard. Lumber will be needed for two shelves $10\frac{1}{4}$ inches long, two base sides $12\frac{1}{2}$ inches long, and two door stiles $29\frac{1}{8}$ inches long. Your lumber comes in 6 foot lengths. **(a)** How many feet of lumber will you need? **(b)** If you want $\frac{1}{2}$ a board left over, is this possible with two boards? *LU 2-2(1, 2, 3, 4)*

a. $2 \times 10\frac{1}{4} \text{ inches} = \overset{1}{\cancel{2}} \times \frac{41}{\cancel{4}_{2}} = \frac{41}{2} = 20\frac{1}{2} \text{ inches}$

$2 \times 12\frac{1}{2} \text{ inches} = \overset{1}{\cancel{2}} \times \frac{25}{\cancel{2}_{1}} = 25 \text{ inches}$

$2 \times 29\frac{1}{8} \text{ inches} = 2 \times \frac{233}{8} = \frac{466}{8} = 58\frac{2}{8} = 58\frac{1}{4} \text{ inches}$

$20\frac{1}{2} + 25 + 58\frac{1}{4} = 103\frac{3}{4} \text{ inches needed}$

$103\frac{3}{4} \text{ inches} \div \frac{12}{1} = \frac{415}{4} \times \frac{1}{12} = \frac{415}{48} = 8\frac{31}{48} \text{ feet}$

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b. Board No. 1: 6 feet (72 inches)

$$\begin{aligned} 2 \text{ at } 29\tfrac{1}{8} &= 58\tfrac{1}{4} = 58\tfrac{1}{4} \\ +1 \text{ at } 12\tfrac{1}{2} &= +\,12\tfrac{1}{2} = +\,12\tfrac{2}{4} \end{aligned}$$

$70\frac{3}{4}$ inches is most you can cut from board No. 1

$72 \text{ inches} - 70\frac{3}{4} = 1\frac{1}{4}$ inches left from board No. 1

Board No. 2: 6 feet (72 inches)

$103\frac{3}{4}$ inches needed

$-70\frac{3}{4}$ used

33 inches needed to complete job

72 inches board No. 2
-33
39 inches left from board No. 2
Yes, you will have at least 3 feet (36 inches).

2–64. Jack MacLean has entered into a real estate development partnership with Bill Lyons and June Reese. Bill owns $\frac{1}{4}$ of the partnership, while June has a $\frac{1}{5}$ interest. The partners will divide all profits on the basis of their fractional ownership. The partnership bought 900 acres of land and plans to subdivide each lot into $2\frac{1}{4}$ acres. Homes in the area have been selling for $240,000. By time of completion, Jack estimates the price of each home will increase by $\frac{1}{3}$ of the current value. The partners sent a survey to 12,000 potential customers to see whether they should heat the homes with oil or gas. One-fourth of the customers responded by indicating a 5-to-1 preference for oil. From the results of the survey, Jack now plans to install a 270-gallon oil tank at each home. He estimates that each home will need five fills per year. The current price of home heating fuel is $1 per gallon. The partnership estimates its profit per home will be $\frac{1}{8}$ the selling price of each home. From the above, please calculate the following: *LU 2-1(1, 2, 3), LU 2-2(1, 2, 3, 4), LU 2-3(1, 2)*

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a. Number of homes to be built.

$$900 \div 2\frac{1}{4} = \overset{100}{\cancel{900}} \times \frac{4}{\cancel{9}_{1}} = 400 \text{ homes}$$

b. Selling price of each home.

$$1\frac{1}{3} \times \$240{,}000 = \frac{4}{\cancel{3}_{1}} \times \overset{\$80{,}000}{\cancel{\$240{,}000}} = \$320{,}000$$

c. Number of people responding to survey.

$$\frac{1}{4} \times 12{,}000 = 3{,}000 \text{ people}$$

d. Number of people desiring oil.

$$\frac{5}{6} \times 3{,}000 = 2{,}500 \text{ people}$$

e. Average monthly cost per house to heat using oil.

$$270 \times 5 = 1{,}350 \times \$1 = \frac{\$1{,}350}{12} = \$112.50$$

f. Amount of profit Jack will receive from the sale of homes.

$$\frac{1}{4} + \frac{1}{5} = \frac{5}{20} + \frac{4}{20} = \frac{9}{20}$$

$$\frac{1}{\cancel{8}_{1}} \times \overset{\$40{,}000}{\cancel{\$320{,}000}} = \$40{,}000$$

$1 - \frac{9}{20} = \frac{11}{20}$ for Jack

$\$40{,}000 \times 400 = \$16{,}000{,}000$

$$\frac{11}{20} \times \$16{,}000{,}000 = \$8{,}800{,}000$$

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SUMMARY PRACTICE TEST

Do you need help? Connect videos have step-by-step worked-out solutions.

Identify the following types of fractions. *LU 2-1(1)*

1. $5\frac{1}{8}$ Mixed **2.** $\frac{2}{7}$ Proper **3.** $\frac{20}{19}$ Improper

4. Convert the following to a mixed number. *LU 2-1(2)*

$\frac{163}{9} = 18\frac{1}{9}$

5. Convert the following to an improper fraction. *LU 2-1(2)*

$8\frac{1}{8} = \frac{64+1}{8} = \frac{65}{8}$

6. Calculate the greatest common divisor of the following by the step approach and reduce to lowest terms. *LU 2-2(1, 2)*

$\frac{63}{90} =$ $63\overline{)90}$ (1) remainder 27; $27\overline{)63}$ (2) remainder 9; $9\overline{)27}$ (3) remainder 0

$\frac{63 \div 9}{90 \div 9} = \frac{7}{10}$

7. Convert the following to higher terms. *LU 2-1(3)*

$\frac{16}{94} = \frac{?}{376}$ $\quad 376 \div 94 = 4 \times 16 = 64$

8. Find the LCD of the following by using prime numbers. Show your work. *LU 2-2(2)*

$\frac{1}{8} + \frac{1}{3} + \frac{1}{2} + \frac{1}{12}$

$2 \overline{)} 8 \quad 3 \quad 2 \quad 12$

$2 \overline{)} 4 \quad 3 \quad 1 \quad 6$

$3 \overline{)} 2 \quad 3 \quad 1 \quad 3$

$2 \quad 1 \quad 1 \quad 1$ $\quad 2 \times 2 \times 3 \times 2 \times 1 \times 1 \times 1 = 24$

9. Subtract the following. *LU 2-2(4)*

$15\frac{4}{5} = 15\frac{16}{20} = 14\frac{36}{20}$ $\left(\frac{16}{20} + \frac{20}{20}\right)$ TBEXAM.COM

$-8\frac{19}{20} = -8\frac{19}{20}$ $\quad 8\frac{19}{20}$

$6\frac{17}{20}$

Complete the following using the cancellation technique. *LU 2-3(1, 2)*

10. $\frac{3}{4} \times \frac{2}{4} \times \frac{6}{9} = \frac{\cancel{3}^{1}}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{\cancel{4}_{2}} \times \frac{\cancel{6}^{1}}{\cancel{9}_{1}} = \frac{1}{4}$ **11.** $7\frac{1}{9} \times \frac{6}{7} = \frac{64}{\cancel{9}_{3}} \times \frac{\cancel{6}^{2}}{7} = \frac{128}{21} = 6\frac{2}{21}$ **12.** $\frac{3}{7} \div 6 = \frac{\cancel{3}^{1}}{7} \times \frac{1}{\cancel{6}_{2}} = \frac{1}{14}$

13. A trip to Washington from Boston will take you $5\frac{3}{4}$ hours. If you have traveled $\frac{1}{3}$ of the way, how much longer will the trip take? *LU 2-3(1)*

$\frac{23}{4} \times \frac{2}{3} = \frac{46}{12} = 3\frac{10}{12} = 3\frac{5}{6}$ hours

14. Quiznos produces 640 rolls per hour. If the oven runs $12\frac{1}{4}$ hours, how many rolls will the machine produce? *LU 2-3(1, 2)*

$\frac{\overset{160}{\cancel{640}}}{1} \times \frac{49}{\cancel{4}_{1}} = 7{,}840$ rolls

15. A taste-testing survey of Zing Farms showed that $\frac{2}{3}$ of the people surveyed preferred the taste of veggie burgers to regular burgers. If 90,000 people were in the survey, how many favored veggie burgers? How many chose regular burgers? *LU 2-3(1)*

Veggie burgers: $\frac{2}{3} \times 90{,}000 = 60{,}000$ $\qquad$ Regular burgers: $\frac{1}{3} \times 90{,}000 = 30{,}000$

16. Jim Janes, an employee of Enterprise Co., worked $9\frac{1}{4}$ hours on Monday, $4\frac{1}{2}$ hours on Tuesday, $9\frac{1}{4}$ hours on Wednesday, $7\frac{1}{2}$ hours on Thursday, and 9 hours on Friday. How many total hours did Jim work during the week? *LU 2-2(1, 2)*

$9\frac{1}{4} + 4\frac{2}{4} + 9\frac{1}{4} + 7\frac{2}{4} + 9 = 39\frac{1}{2}$

17. JCPenney offered a $\frac{1}{3}$ rebate on its $39 hair dryer. Joan bought a JCPenney hair dryer. What did Joan pay after the rebate? *LU 2-3(1)*

$\frac{2}{3} \times \$39 = \$26$

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