

S E C T I O N

# 2



# Fractions

**T**he following 10 sets of fraction problems will provide you with exercises in how to convert fractions and how to do arithmetic problems that involve fractions. (Sections 3 and 4 deal with decimals and percentages, which also show fractions of a number and are, therefore, called something else for clarity.) In order to understand arithmetic, it is important to practice and become comfortable with fractions and how they work.

You will start off with questions that just deal with numbers. After you've had a chance to practice your basic fraction skills, you can move on to some word problems involving fractions.

► **Set 11** (Answers begin on page 168.)

**161.** Name the fraction that indicates the shaded part of the following figure.



- a.  $\frac{1}{4}$
- b.  $\frac{1}{2}$
- c.  $\frac{2}{3}$
- d.  $\frac{3}{4}$

**162.** Name the fraction that indicates the shaded part of the following figure.



- a.  $\frac{2}{5}$
- b.  $\frac{3}{5}$
- c.  $\frac{5}{3}$
- d.  $\frac{5}{2}$

**163.** Which of the following represents  $\frac{42}{56}$  in lowest terms?

- a.  $\frac{21}{28}$
- b.  $\frac{6}{8}$
- c.  $\frac{3}{4}$
- d.  $\frac{7}{8}$

**164.** Express the fraction  $\frac{54}{108}$  in lowest terms.

- a.  $\frac{27}{54}$
- b.  $\frac{9}{18}$
- c.  $\frac{3}{6}$
- d.  $\frac{1}{2}$

**165.**  $\frac{5}{9} - \frac{2}{9} =$

- a.  $\frac{7}{9}$
- b.  $\frac{3}{18}$
- c.  $\frac{1}{3}$
- d.  $\frac{2}{3}$

**166.**  $\frac{1}{4} + \frac{3}{16} + \frac{7}{8} =$

- a.  $1\frac{5}{16}$
- b.  $\frac{11}{28}$
- c.  $\frac{7}{16}$
- d.  $1\frac{7}{16}$

**167.**  $5\frac{1}{3} + 7 + 2\frac{1}{3} =$

- a.  $14\frac{1}{3}$
- b.  $\frac{1}{3}$
- c. 14
- d.  $14\frac{2}{3}$

**168.**  $8\frac{9}{13} - 5\frac{2}{13} =$

- a.  $3\frac{7}{13}$
- b.  $3\frac{11}{13}$
- c.  $13\frac{7}{13}$
- d.  $13\frac{11}{13}$

**169.**  $\frac{1}{5} \times \frac{4}{7} =$

- a.  $\frac{5}{12}$
- b.  $\frac{4}{35}$
- c.  $\frac{1}{35}$
- d.  $\frac{2}{17}$

**170.**  $\frac{5}{12} - \frac{7}{18} =$

- a.  $\frac{1}{36}$
- b.  $\frac{12}{36}$
- c.  $\frac{12}{30}$
- d.  $\frac{2}{6}$

**171.**  $78\frac{2}{3} - 10\frac{4}{7} =$

- a.  $68\frac{2}{21}$
- b.  $69\frac{4}{21}$
- c.  $68\frac{4}{21}$
- d.  $58\frac{6}{10}$

**172.**  $-\frac{5}{12} \div -\frac{1}{6} =$

- a.  $-\frac{5}{72}$
- b.  $-2\frac{1}{2}$
- c.  $2\frac{1}{2}$
- d.  $\frac{5}{72}$

**173.**  $40 \div 2\frac{1}{2} =$

- a. 4
- b. 16
- c. 80
- d. 100

**174.**  $\frac{1}{3} \div \frac{2}{7} =$

- a.  $2\frac{4}{5}$
- b.  $1\frac{1}{6}$
- c.  $2\frac{1}{7}$
- d.  $1\frac{1}{5}$

**175.**  $\frac{7}{8} - \frac{3}{5} =$

- a.  $\frac{11}{40}$
- b.  $1\frac{1}{3}$
- c.  $\frac{1}{10}$
- d.  $1\frac{19}{40}$

**176.**  $4\frac{3}{5} + -1\frac{2}{5} =$

- a.  $3\frac{1}{5}$
- b. 4
- c.  $3\frac{1}{2}$
- d.  $5\frac{1}{5}$

► **Set 12** (Answers begin on page 169.)

**177.**  $76\frac{1}{2} + 11\frac{5}{6} =$

- a.  $87\frac{1}{2}$
- b.  $88\frac{1}{3}$
- c.  $88\frac{5}{6}$
- d.  $89\frac{1}{6}$

**178.**  $35\frac{7}{9} - 20\frac{2}{9} =$

- a.  $15\frac{9}{9}$
- b. 16
- c.  $15\frac{5}{9}$
- d.  $15\frac{4}{9}$

**179.**  $43\frac{2}{3} + 36\frac{3}{9} =$

- a. 100
- b. 90
- c. 80
- d. 70

**180.**  $\frac{4}{7} - \frac{1}{3} =$

- a.  $\frac{5}{10}$
- b.  $\frac{3}{4}$
- c.  $\frac{4}{21}$
- d.  $\frac{5}{21}$

**181.**  $\frac{5}{6} + \frac{3}{8} =$

- a.  $\frac{8}{14}$
- b.  $\frac{2}{14}$
- c.  $\frac{11}{24}$
- d.  $1\frac{5}{24}$

**182.**  $\frac{7}{9} \times \frac{9}{7} =$

- a. 1
- b.  $1\frac{1}{9}$
- c.  $\frac{1}{63}$
- d.  $\frac{1}{9}$

**183.**  $-\frac{1}{6} \div -\frac{1}{12} =$

- a. -2
- b. 2
- c.  $\frac{1}{72}$
- d.  $-\frac{1}{72}$

**184.**  $7\frac{3}{5} \times \frac{4}{9} =$

- a.  $7\frac{4}{15}$
- b.  $3\frac{1}{15}$
- c.  $7\frac{1}{2}$
- d.  $3\frac{17}{45}$

**185.**  $\frac{2}{6} \div 2 =$

- a.  $\frac{4}{6}$
- b.  $\frac{3}{6}$
- c.  $\frac{2}{6}$
- d.  $\frac{1}{6}$

**186.**  $2\frac{1}{4} \div 2\frac{4}{7} =$

- a.  $\frac{9}{14}$
- b.  $\frac{7}{8}$
- c.  $1\frac{2}{7}$
- d.  $5\frac{11}{14}$

**187.**  $\frac{5}{12} \times \frac{1}{6} \times \frac{2}{3} =$

- a.  $\frac{10}{12}$
- b.  $\frac{5}{6}$
- c.  $\frac{5}{108}$
- d.  $\frac{5}{216}$

**188.**  $1\frac{1}{2} \div 1\frac{5}{13} =$

- a.  $1\frac{3}{10}$
- b.  $1\frac{1}{12}$
- c.  $2\frac{1}{13}$
- d.  $3\frac{9}{10}$

**189.**  $2\frac{1}{3} \times 1\frac{1}{14} \times 1\frac{4}{5} =$

- a.  $1\frac{7}{18}$
- b.  $2\frac{1}{2}$
- c.  $3\frac{6}{7}$
- d.  $4\frac{1}{2}$

**190.**  $\frac{7}{9} \times \frac{4}{5} =$

- a.  $\frac{28}{45}$
- b.  $\frac{11}{14}$
- c.  $\frac{35}{36}$
- d.  $\frac{3}{4}$

**191.**  $2\frac{1}{4} \div \frac{2}{3} =$

- a.  $\frac{8}{27}$
- b.  $1\frac{1}{2}$
- c.  $3\frac{3}{8}$
- d.  $3\frac{1}{2}$

**192.**  $\frac{4}{7} \div \frac{8}{17} =$

- a.  $3\frac{7}{119}$
- b.  $\frac{32}{119}$
- c.  $1\frac{3}{14}$
- d.  $2\frac{3}{14}$

► **Set 13** (Answers begin on page 169.)

**193.**  $8 \times \frac{1}{5} =$

- a.  $1\frac{1}{5}$
- b.  $1\frac{3}{5}$
- c.  $\frac{5}{8}$
- d.  $\frac{1}{40}$

**194.**  $7 \times \frac{2}{5} =$

- a.  $\frac{1}{5}$
- b.  $17\frac{1}{2}$
- c.  $2\frac{4}{5}$
- d.  $2\frac{2}{5}$

**195.**  $\frac{1}{6} \div 4\frac{5}{8} =$

- a.  $\frac{4}{5}$
- b.  $27\frac{3}{4}$
- c.  $\frac{37}{48}$
- d.  $\frac{4}{111}$

**196.**  $3\frac{4}{7} \div \frac{1}{8} =$

- a.  $28\frac{4}{7}$
- b.  $28\frac{5}{7}$
- c. 29
- d.  $29\frac{4}{7}$

**197.**  $1\frac{1}{2} \div 2\frac{1}{4} =$

- a.  $\frac{2}{3}$
- b.  $1\frac{1}{2}$
- c.  $2\frac{3}{8}$
- d.  $2\frac{1}{8}$

**198.**  $2\frac{1}{3} \times 5\frac{1}{2} \times \frac{3}{11} =$

- a.  $3\frac{1}{2}$
- b.  $7\frac{1}{2}$
- c.  $10\frac{1}{22}$
- d.  $10\frac{1}{6}$

**199.**  $6\frac{2}{3} \div \frac{1}{3} =$

- a.  $6\frac{2}{9}$
- b. 20
- c.  $20\frac{2}{9}$
- d.  $2\frac{2}{9}$

**200.**  $\frac{2}{3} \times 5\frac{1}{9} =$

- a.  $3\frac{11}{27}$
- b.  $5\frac{2}{27}$
- c.  $5\frac{11}{27}$
- d.  $3\frac{2}{27}$

**201.**  $-\frac{9}{7} - \frac{5}{7} =$

- a.  $-\frac{4}{7}$
- b.  $\frac{4}{7}$
- c. -2
- d. 2

**202.**  $\frac{3}{4} \times \frac{16}{15} =$

- a.  $\frac{5}{4}$
- b.  $\frac{4}{5}$
- c.  $1\frac{4}{5}$
- d.  $1\frac{1}{4}$

**203.**  $5 \div \frac{5}{8} =$

- a. 8
- b.  $\frac{1}{8}$
- c.  $3\frac{1}{8}$
- d.  $\frac{5}{8}$

**204.**  $6\frac{2}{9} - \frac{1}{6} =$

- a.  $6\frac{1}{18}$
- b.  $6\frac{5}{27}$
- c.  $6\frac{1}{3}$
- d.  $5\frac{8}{9}$

205.  $9\frac{3}{7} + 4\frac{2}{5} =$

- a.  $13\frac{5}{12}$
- b.  $13\frac{3}{4}$
- c.  $13\frac{29}{35}$
- d.  $13\frac{37}{52}$

206.  $3\frac{5}{6} \times 4\frac{2}{3} =$

- a.  $17\frac{8}{9}$
- b.  $12\frac{7}{18}$
- c.  $16\frac{2}{3}$
- d.  $13\frac{3}{5}$

207. Which of the following is between  $\frac{1}{3}$  and  $\frac{1}{4}$ ?

- a.  $\frac{1}{5}$
- b.  $\frac{2}{3}$
- c.  $\frac{2}{5}$
- d.  $\frac{2}{7}$

208. Change  $\frac{55}{6}$  to a mixed number.

- a.  $8\frac{1}{6}$
- b.  $9\frac{1}{6}$
- c.  $9\frac{1}{55}$
- d.  $9\frac{6}{55}$

► **Set 14** (Answers begin on page 170.)

**209.** Which of the following is the equivalent of  $\frac{18}{45}$ ?

- a. 0.45
- b. 0.5
- c. 0.42
- d. 0.4

**210.** Which of the following has the greatest value?

- a.  $\frac{7}{8}$
- b.  $\frac{3}{4}$
- c.  $\frac{2}{3}$
- d.  $\frac{5}{6}$

**211.** Which of the following has the smallest value?

- a.  $\frac{3}{5}$
- b.  $\frac{8}{15}$
- c.  $\frac{17}{30}$
- d.  $\frac{2}{3}$

**212.** If each of the following represents the diameter of a circle, which is the smallest diameter?

- a.  $\frac{17}{20}$  inch
- b.  $\frac{3}{4}$  inch
- c.  $\frac{5}{6}$  inch
- d.  $\frac{7}{10}$  inch

**213.** What is the reciprocal of  $3\frac{7}{8}$ ?

- a.  $\frac{31}{8}$
- b.  $\frac{8}{31}$
- c.  $\frac{8}{21}$
- d.  $-\frac{31}{8}$

**214.** What is the reciprocal of  $4\frac{3}{5}$ ?

- a.  $\frac{23}{4}$
- b.  $\frac{4}{23}$
- c.  $\frac{5}{23}$
- d.  $\frac{23}{5}$

**215.** Change  $\frac{160}{40}$  to a whole number.

- a. 16
- b. 10
- c. 8
- d. 4

**216.** Change this improper fraction to a mixed number:  $\frac{31}{3}$ .

- a. 10
- b.  $10\frac{1}{3}$
- c.  $10\frac{1}{2}$
- d.  $11\frac{1}{3}$

**217.** Change this mixed number to an improper fraction:  $5\frac{1}{2}$ .

- a.  $\frac{11}{2}$
- b.  $\frac{5}{1}$
- c.  $\frac{7}{2}$
- d.  $\frac{5}{2}$

**218.**  $\frac{3}{5} - \frac{1}{4} =$

- a. 2
- b.  $\frac{1}{10}$
- c.  $\frac{3}{4}$
- d.  $\frac{7}{20}$

**219.** Which of the following is an improper fraction?

- a.  $\frac{22}{60}$
- b.  $\frac{66}{22}$
- c.  $\frac{90}{100}$
- d.  $\frac{1,000}{2,600}$



- 220.** Mario has finished 35 out of 45 of his test questions. Which of the following fractions of the test does he have left?
- a.  $\frac{2}{9}$
  - b.  $\frac{7}{9}$
  - c.  $\frac{4}{5}$
  - d.  $\frac{3}{5}$
- 221.** Joe gave  $\frac{1}{2}$  of his sandwich to Ed at lunchtime and ate  $\frac{1}{3}$  of it himself. How much of the sandwich did he have left?
- a.  $\frac{1}{6}$
  - b.  $\frac{3}{5}$
  - c.  $\frac{4}{5}$
  - d.  $\frac{5}{6}$
- 222.** Kevin is buying fabric for new curtains. There are three windows, each 35 inches wide. Kevin needs to buy fabric equal to  $2\frac{1}{2}$  times the total width of the windows. How much fabric should he buy?
- a.  $262\frac{1}{2}$  inches
  - b.  $175\frac{1}{3}$  inches
  - c.  $210\frac{3}{4}$  inches
  - d.  $326\frac{1}{4}$  inches
- 223.** Katie and her family ordered a pizza for dinner and ate  $\frac{3}{4}$  of it. The next day, Katie ate  $\frac{1}{2}$  of what was leftover for lunch. What fraction of the original pizza did Katie eat for lunch?
- a.  $\frac{1}{8}$
  - b.  $\frac{1}{6}$
  - c.  $\frac{1}{4}$
  - d.  $\frac{1}{2}$
- 224.** Molly needs  $\frac{5}{8}$  cup of diced onion for a recipe. After chopping all the onion she has, Molly has  $\frac{3}{5}$  cup of chopped onion. How much more chopped onion does she need?
- a.  $\frac{1}{8}$  cup
  - b.  $\frac{1}{5}$  cup
  - c.  $\frac{1}{40}$  cup
  - d.  $\frac{1}{60}$  cup

**► Set 15** (Answers begin on page 171.)

- 225.** Hans has  $5\frac{1}{2}$  pounds of sugar. He wants to make cookies for his son's kindergarten class. The cookie recipe calls for  $\frac{2}{3}$  pound of sugar per dozen cookies. How many dozen cookies can he make?
- $6\frac{1}{3}$  dozen
  - $7\frac{1}{5}$  dozen
  - $8\frac{1}{4}$  dozen
  - $9\frac{1}{2}$  dozen
- 226.** John bought two pounds of butter to make cookies. If he used  $\frac{1}{2}$  pound for chocolate chip cookies,  $\frac{1}{8}$  pound for peanut butter cookies, and  $\frac{2}{3}$  pound for sugar cookies, what part of the original two pounds is left?
- $\frac{4}{13}$
  - $\frac{22}{13}$
  - $\frac{17}{24}$
  - $\frac{31}{24}$
- 227.** Vonda is making a mosaic. Each tiny piece of glass in the artwork is  $1\frac{1}{4}$  inch by  $1\frac{3}{8}$  inch. What is the area of each piece?
- $1\frac{23}{32}$  square inches
  - $1\frac{21}{22}$  square inches
  - $1\frac{23}{25}$  square inches
  - $1\frac{29}{31}$  square inches
- 228.** Dan purchases  $6\frac{1}{2}$  pounds of potato chips for a party. If there are a total of eight people at the party, how many pounds of chips does each person get?
- $\frac{13}{16}$  pound
  - $1\frac{1}{4}$  pounds
  - 2 pounds
  - $2\frac{1}{4}$  pounds
- 229.** Marilyn has  $17\frac{3}{4}$  feet of wallpaper border. Each of the four walls in her bathroom is nine feet long. How much more wallpaper border does Marilyn need?
- $17\frac{3}{4}$  feet
  - $16\frac{1}{2}$  feet
  - $18\frac{1}{4}$  feet
  - $19\frac{1}{2}$  feet
- 230.** A recipe calls for all the liquid ingredients to be mixed together:  $2\frac{1}{4}$  cups water,  $4\frac{5}{8}$  cups chicken stock, and  $\frac{1}{2}$  cup honey. How many cups of liquid are in the recipe?
- $6\frac{7}{8}$  cups
  - $7\frac{1}{4}$  cups
  - $7\frac{3}{8}$  cups
  - $7\frac{3}{4}$  cups
- 231.** A loaf of bread has 35 slices. Ann eats eight slices, Betty eats six slices, Carl eats five slices, and Derrick eats nine slices. What fraction of the loaf is left?
- $\frac{2}{11}$
  - $\frac{1}{9}$
  - $\frac{2}{7}$
  - $\frac{1}{5}$

- 232.** Frances wants to run  $2\frac{1}{3}$  miles every day. Today she has gone  $\frac{7}{8}$  mile. How much farther does she have to go?
- $1\frac{11}{24}$  miles
  - $1\frac{1}{3}$  miles
  - $1\frac{41}{50}$  miles
  - $1\frac{307}{308}$  miles
- 233.** Ribbon in a craft store costs \$0.75 per yard. Vernon needs to buy  $7\frac{1}{3}$  yards. How much will it cost?
- \$7.33
  - \$6.95
  - \$5.50
  - \$4.25
- 234.** Linda needs to read 14 pages for her history class, 26 pages for English, 12 pages for civics, and 28 pages for biology. She has read  $\frac{1}{6}$  of the entire number of pages. How many pages has she read?
- 80
  - $13\frac{1}{3}$
  - $48\frac{1}{2}$
  - 17
- 235.** Ted has to write a  $5\frac{1}{2}$ -page paper. He's finished  $3\frac{1}{3}$  pages. How many pages does he have left to write?
- $1\frac{3}{5}$
  - $1\frac{7}{8}$
  - $2\frac{2}{3}$
  - $2\frac{1}{6}$
- 236.** Maria made \$331.01 last week. She worked  $39\frac{1}{2}$  hours. What is her hourly wage?
- \$8.28
  - \$8.33
  - \$8.38
  - \$8.43
- 237.** Virgil ate  $\frac{3}{7}$  of a chocolate chip cookie; Aristotle ate  $\frac{1}{3}$  of the same cookie. How much of the cookie is left?
- $\frac{1}{3}$
  - $\frac{3}{7}$
  - $\frac{7}{10}$
  - $\frac{5}{21}$
- 238.** Manuel has worked  $6\frac{5}{8}$  hours of his regular eight-hour day. How many more hours must he work?
- $1\frac{1}{2}$  hours
  - $1\frac{3}{8}$  hours
  - $2\frac{1}{4}$  hours
  - $1\frac{1}{4}$  hours
- 239.** Irma has read  $\frac{3}{5}$  of the novel assigned for her English class. The novel is 360 pages long. How many pages has she read?
- 216
  - 72
  - 300
  - 98
- 240.** Jerry rode his bike  $7\frac{3}{4}$  miles on Monday,  $5\frac{1}{5}$  miles on Tuesday,  $6\frac{2}{5}$  miles on Wednesday,  $7\frac{1}{2}$  miles on Thursday,  $5\frac{1}{4}$  miles on Friday, and  $6\frac{3}{5}$  miles on Saturday. How many total miles did he bike on those six days?
- 36 miles
  - 38 miles
  - $38\frac{7}{10}$  miles
  - $38\frac{14}{15}$  miles

**► Set 16** (Answers begin on page 172.)

- 241.** Meryl ordered a claw hammer, four drill bits, a work light, a large clamp, two screwdrivers, seven toggle bolts, 16 two-penny nails, three paintbrushes, and a 48-inch level from a mail order house. So far, she has received the hammer, three drill bits, the level, one screwdriver, the clamp, and all the two-penny nails. What fraction of her order has she received?
- $\frac{1}{32}$
  - $\frac{16}{23}$
  - $\frac{23}{36}$
  - $\frac{36}{23}$
- 242.** Lu makes \$7.75 an hour. He worked  $38\frac{1}{5}$  hours last week. How much money did he earn?
- \$592.10
  - \$296.05
  - \$775.00
  - \$380.25
- 243.** A lasagna recipe calls for  $3\frac{1}{2}$  pounds of noodles. How many pounds of noodles are needed to make  $\frac{1}{3}$  of a recipe?
- 1 pound
  - $1\frac{1}{2}$  pounds
  - $\frac{5}{6}$  pound
  - $1\frac{1}{6}$  pounds
- 244.** A lasagna recipe requires  $1\frac{1}{2}$  pounds of cheese. Approximately how many lasagnas can be made from a  $20\frac{1}{3}$ -pound block of cheese?
- $13\frac{1}{2}$
  - $20\frac{1}{3}$
  - $10\frac{1}{5}$
  - $25\frac{1}{4}$
- 245.** For health reasons, Amir wants to drink eight glasses of water a day. He's already had six glasses. What fraction does Amir have left to drink?
- $\frac{1}{8}$
  - $\frac{1}{6}$
  - $\frac{1}{4}$
  - $\frac{1}{3}$
- 246.** Wendy is writing a test to give to her history class. She wants the test to include 40 multiple-choice questions and 60 short-answer questions. She has written 25 of the multiple-choice questions. What fraction of the total test has she written?
- $\frac{1}{4}$
  - $\frac{5}{8}$
  - $\frac{2}{3}$
  - $\frac{5}{12}$
- 247.** Malcolm's car gets  $14\frac{1}{3}$  miles per gallon. It's  $58\frac{1}{2}$  miles from his home to work. How many gallons does Malcolm's car use on the way to work?
- $2\frac{9}{10}$  gallons
  - $3\frac{1}{16}$  gallons
  - $4\frac{7}{86}$  gallons
  - $5\frac{3}{8}$  gallons
- 248.** Felicia needs 168 six-inch fabric squares to make a quilt top. She has 150 squares. What fraction of the total does she still need?
- $\frac{25}{28}$
  - $\frac{9}{88}$
  - $\frac{25}{28}$
  - $\frac{3}{28}$

- 249.** Roger wants to paint his living room ceiling red. His ceiling is  $14\frac{1}{2}$  feet by  $12\frac{1}{3}$  feet. One gallon of paint will cover 90 square feet. How many gallons of paint will he need?
- 1 gallon
  - 2 gallons
  - 3 gallons
  - 4 gallons
- 250.** The Garcias had  $\frac{2}{5}$  of last night's meat loaf left over after dinner. Today, Uncle Jorge ate  $\frac{1}{4}$  of these leftovers. How much of the original meat loaf is left?
- $\frac{3}{4}$
  - $\frac{3}{10}$
  - $\frac{3}{20}$
  - $\frac{3}{5}$
- 251.** Millie is a night security guard at the art museum. Each night, she is required to walk through each gallery once. The museum contains 52 galleries. This night, Millie has walked through 16 galleries. What fraction of the total galleries has she already visited?
- $\frac{4}{13}$
  - $\frac{1}{16}$
  - $\frac{5}{11}$
  - $\frac{3}{14}$
- 252.** Alan has been ill and worked only  $\frac{3}{4}$  of his usual 40-hour week. He makes \$12.35 an hour. How much has he earned this week?
- \$247.00
  - \$308.75
  - \$370.50
  - \$432.25
- 253.** A recipe calls for  $\frac{1}{4}$  teaspoon of red pepper. How much red pepper would you need for half a recipe?
- $\frac{1}{10}$  teaspoon
  - $\frac{1}{8}$  teaspoon
  - $\frac{1}{6}$  teaspoon
  - $\frac{1}{2}$  teaspoon
- 254.** A recipe calls for  $\frac{1}{4}$  teaspoon of red pepper. How much red pepper would you need for a double recipe?
- $\frac{1}{10}$  teaspoon
  - $\frac{1}{8}$  teaspoon
  - $\frac{1}{6}$  teaspoon
  - $\frac{1}{2}$  teaspoon
- 255.** Juana's lawn is 30 yards by 27 yards. Yesterday, Juana mowed  $\frac{2}{3}$  of the lawn. How many square yards are left to be mowed today?
- 270 square yards
  - 540 square yards
  - 810 square yards
  - 1,080 square yards
- 256.** A thirty-minute time slot on a television network contains 24 minutes of comedy and six minutes of commercials. What fraction of the program time is devoted to commercials?
- $\frac{1}{6}$
  - $\frac{1}{4}$
  - $\frac{1}{3}$
  - $\frac{1}{5}$

**► Set 17** (Answers begin on page 172.)

- 257.** Pete's dog is on a special diet and has lost 15 pounds. If the dog has lost  $\frac{1}{8}$  of its original weight, what was the original weight?
- 105 pounds
  - 110 pounds
  - 115 pounds
  - 120 pounds
- 258.** In a cashier contest, Ona packed  $15\frac{1}{2}$  bags of groceries in three minutes. How many bags did she average per minute?
- $4\frac{1}{2}$
  - 5
  - $5\frac{1}{4}$
  - $5\frac{1}{6}$
- 259.** Cheryl lives  $5\frac{1}{3}$  miles from where she works. When traveling to work, she walks to a bus stop  $\frac{1}{4}$  of the way to catch a bus. How many miles away from her house is the bus stop?
- $5\frac{1}{3}$  miles
  - $4\frac{1}{3}$  miles
  - $2\frac{1}{3}$  miles
  - $1\frac{1}{3}$  miles
- 260.** At birth, Winston weighed  $6\frac{1}{2}$  pounds. At one year of age, he weighed  $23\frac{1}{8}$  pounds. How much weight, in pounds, did he gain?
- $16\frac{5}{8}$  pounds
  - $16\frac{7}{8}$  pounds
  - $17\frac{1}{6}$  pounds
  - $17\frac{3}{4}$  pounds
- 261.** Marcia wants to make muffins and needs  $\frac{3}{4}$  cup sugar. She discovers, however, that she has only  $\frac{2}{3}$  cup sugar. How much more sugar does she need?
- $\frac{1}{12}$  cup
  - $\frac{1}{8}$  cup
  - $\frac{1}{6}$  cup
  - $\frac{1}{4}$  cup
- 262.** How many inches are there in  $3\frac{1}{3}$  yards?
- 126 inches
  - 120 inches
  - 160 inches
  - 168 inches
- 263.** Carlin's Candy Shop opened for business on Saturday with  $22\frac{1}{4}$  pounds of fudge. During the day, they sold  $17\frac{5}{8}$  pounds of fudge. How many pounds were left?
- $4\frac{1}{2}$  pounds
  - $4\frac{5}{8}$  pounds
  - $4\frac{7}{8}$  pounds
  - $5\frac{3}{8}$  pounds
- 264.** A child's swimming pool contains  $20\frac{4}{5}$  gallons of water. If  $3\frac{1}{3}$  gallons of water are splashed out of the pool while the children are playing, how many gallons of water are left?
- $16\frac{1}{15}$  gallons
  - $16\frac{3}{5}$  gallons
  - $17\frac{7}{15}$  gallons
  - $17\frac{2}{3}$  gallons

- 265.** During the month of May,  $\frac{1}{6}$  of the buses in District A were in the garage for routine maintenance. In addition,  $\frac{1}{8}$  of the buses were in for other repairs. If a total of 28 buses were in for maintenance and repairs, how many buses did District A have altogether?
- 80
  - 84
  - 91
  - 96
- 266.** On Monday, a kindergarten class uses  $2\frac{1}{4}$  pounds of modeling clay the first hour,  $4\frac{5}{8}$  pounds of modeling clay the second hour, and  $\frac{1}{2}$  pound of modeling clay the third hour. How many pounds of clay does the class use during the three hours on Monday?
- $6\frac{3}{8}$  pounds
  - $6\frac{7}{8}$  pounds
  - $7\frac{1}{4}$  pounds
  - $7\frac{3}{8}$  pounds
- 267.** Three kittens weigh  $2\frac{1}{3}$  pounds,  $1\frac{5}{6}$  pounds, and  $2\frac{2}{3}$  pounds. What is the total weight of the kittens?
- $6\frac{1}{3}$  pounds
  - $6\frac{5}{6}$  pounds
  - $7\frac{1}{6}$  pounds
  - $7\frac{1}{3}$  pounds
- 268.** If Rachel has worked a total of  $26\frac{1}{4}$  hours so far this week, and has to work a total of  $37\frac{1}{2}$  hours, how much longer does she have to work?
- $10\frac{1}{4}$  hours
  - $11\frac{1}{4}$  hours
  - $11\frac{3}{4}$  hours
  - $13\frac{1}{2}$  hours
- 269.** On Roy's daily jog, he travels a distance of  $\frac{1}{2}$  mile to get to the track and  $\frac{1}{2}$  mile to get home from the track. One lap around the track is  $\frac{1}{4}$  mile. If Roy jogs five laps around the track, what is the total distance that he travels?
- $2\frac{1}{4}$  miles
  - $2\frac{1}{2}$  miles
  - 3 miles
  - $3\frac{1}{4}$  miles
- 270.** Suzy's pie recipe calls for  $1\frac{1}{3}$  cups sugar. If she wants to add an additional  $\frac{1}{3}$  cup to make the pie sweeter, how much sugar will she need in all?
- $1\frac{1}{9}$  cups
  - $1\frac{1}{6}$  cups
  - $1\frac{2}{9}$  cups
  - $1\frac{2}{3}$  cups
- 271.** Jonah hiked  $7\frac{3}{8}$  miles on Friday,  $6\frac{3}{10}$  miles on Saturday, and  $5\frac{1}{5}$  miles on Sunday. How many miles did he hike in all?
- $18\frac{5}{8}$  miles
  - $18\frac{7}{8}$  miles
  - $19\frac{3}{5}$  miles
  - $20\frac{1}{10}$  miles
- 272.** Miguel owns  $16\frac{3}{4}$  acres of land. If he buys another  $2\frac{3}{5}$  acres, how many acres of land will he own in all?
- $18\frac{4}{5}$  acres
  - $18\frac{9}{20}$  acres
  - $19\frac{3}{10}$  acres
  - $19\frac{7}{20}$  acres

**► Set 18** (Answers begin on page 173.)

- 273.** It takes Paula 25 minutes to wash her car. If she has been washing her car for 15 minutes, what fraction of the job has she already completed?
- $\frac{3}{5}$
  - $\frac{1}{2}$
  - $\frac{4}{15}$
  - $\frac{2}{5}$
- 274.** It takes three firefighters  $1\frac{2}{5}$  hours to clean their truck. At that same rate, how many hours would it take one firefighter to clean the same truck?
- $2\frac{4}{7}$  hours
  - $3\frac{4}{5}$  hours
  - $4\frac{1}{5}$  hours
  - $4\frac{2}{5}$  hours
- 275.** How many  $5\frac{1}{4}$ -ounce glasses can be completely filled from a  $33\frac{1}{2}$ -ounce container of juice?
- 4
  - 5
  - 6
  - 7
- 276.** If one pint is  $\frac{1}{8}$  of a gallon, how many pints are there in  $3\frac{1}{2}$  gallons of ice cream?
- $\frac{7}{16}$  pint
  - $24\frac{1}{2}$  pints
  - $26\frac{1}{16}$  pints
  - 28 pints
- 277.** Eric's walking speed is  $2\frac{1}{2}$  miles per hour. If it takes Eric six minutes to walk from his home to the bus stop, how far is the bus stop from his home?
- $\frac{1}{8}$  mile
  - $\frac{1}{4}$  mile
  - $\frac{1}{2}$  mile
  - 1 mile
- 278.** The directions on an exam allow  $2\frac{1}{2}$  hours to answer 50 questions. If you want to spend an equal amount of time on each of the 50 questions, about how much time should you allow for each one?
- 45 seconds
  - $1\frac{1}{2}$  minutes
  - 2 minutes
  - 3 minutes
- 279.** Which of these is equivalent to  $35^\circ\text{C}$ ?  
( $F = \frac{9}{5}C + 32$ )
- $105^\circ\text{F}$
  - $95^\circ\text{F}$
  - $63^\circ\text{F}$
  - $19^\circ\text{F}$
- 280.** A firefighter checks the gauge on a cylinder that normally contains 45 cubic feet of air and finds that the cylinder has only 10 cubic feet of air. The gauge indicates that the cylinder is
- $\frac{1}{4}$  full.
  - $\frac{2}{9}$  full.
  - $\frac{1}{3}$  full.
  - $\frac{4}{5}$  full.



- 281.** If the diameter of a metal spool is 3.5 feet, how many times will a 53-foot hose wrap completely around it? ( $C = \pi d$ ;  $\pi = \frac{22}{7}$ )
- 2
  - 3
  - 4
  - 5
- 282.** The high temperature in a certain city was  $113^\circ$  F. At about what temperature Celsius was this temperature?  $C = \frac{5}{9}(F - 32)$
- $45^\circ$  C
  - $45.5^\circ$  C
  - $51^\circ$  C
  - $81.5^\circ$  C
- 283.** Tank A, when full, holds 555 gallons of water. Tank B, when full, holds 680 gallons of water. If Tank A is only  $\frac{2}{3}$  full and Tank B is only  $\frac{2}{5}$  full, how many more gallons of water are needed to fill both tanks to capacity?
- 319 gallons
  - 593 gallons
  - 642 gallons
  - 658 gallons
- 284.** At a party there are three large pizzas. Each pizza has been cut into nine equal pieces. Eight-ninths of the first pizza have been eaten;  $\frac{2}{3}$  of the second pizza have been eaten;  $\frac{7}{9}$  of the third pizza have been eaten. What fraction of the three pizzas is left?
- $\frac{2}{9}$
  - $\frac{2}{7}$
  - $\frac{1}{3}$
  - $\frac{1}{6}$
- 285.** If it takes four firefighters 1 hour 45 minutes to perform a particular job, how long would it take one firefighter working at the same rate to perform the same task alone?
- $4\frac{1}{2}$  hours
  - 5 hours
  - 7 hours
  - $7\frac{1}{2}$  hours
- 286.** Joel can change one lightbulb in  $\frac{5}{6}$  minute. Working at that same rate, how many minutes would it take him to change five lightbulbs?
- $4\frac{1}{6}$  minutes
  - $4\frac{1}{3}$  minutes
  - $4\frac{2}{3}$  minutes
  - $5\frac{1}{6}$  minutes
- 287.** Ryan has two bags of jelly beans. One weighs  $10\frac{1}{4}$  ounces; the other weighs  $9\frac{1}{8}$  ounces. If Ryan puts the two bags together and then divides all of the jelly beans into five equal parts to give to his friends, how many ounces will each friend get?
- $3\frac{3}{4}$  ounces
  - $3\frac{7}{8}$  ounces
  - 4 ounces
  - $4\frac{1}{4}$  ounces
- 288.** At a certain school, half the students are female and  $\frac{1}{12}$  of the students are from outside the state. What proportion of the students would you expect to be females from outside the state?
- $\frac{1}{12}$
  - $\frac{1}{24}$
  - $\frac{1}{6}$
  - $\frac{1}{3}$

► **Set 19** (Answers begin on page 174.)

**289.** How many minutes are in  $7\frac{1}{6}$  hours?

- a. 258 minutes
- b. 430 minutes
- c. 2,580 minutes
- d. 4,300 minutes

**290.** One lap on a particular outdoor track measures  $\frac{1}{4}$  mile around. To run a total of  $3\frac{1}{2}$  miles, how many complete laps must a person run?

- a. 14
- b. 18
- c. 7
- d. 10

**291.** During the month of June, Bus #B-461 used the following amounts of oil:

June 1:  $3\frac{1}{2}$  quarts

June 19:  $2\frac{3}{4}$  quarts

June 30: 4 quarts

What is the total number of quarts used in June?

- a.  $9\frac{3}{4}$  quarts
- b. 10 quarts
- c.  $10\frac{1}{4}$  quarts
- d.  $10\frac{1}{2}$  quarts

**292.** How many ounces are in  $9\frac{1}{2}$  pounds?

- a. 192 ounces
- b. 182 ounces
- c. 152 ounces
- d. 132 ounces

**293.** Crystal's yearly income is \$25,000, and the cost of her rent for the year is \$7,500. What fraction of her yearly income does she spend on rent?

- a.  $\frac{1}{4}$
- b.  $\frac{3}{10}$
- c.  $\frac{2}{5}$
- d.  $\frac{2}{7}$

**294.** Julie counts the cars passing her house and finds that two of every five cars are foreign. If she counts for one hour, and 60 cars pass, how many of them are likely to be domestic?

- a. 12
- b. 24
- c. 30
- d. 36

**295.** A recipe calls for  $1\frac{1}{4}$  cups flour. If Larry wants to make  $2\frac{1}{2}$  times the recipe, how much flour does he need?

- a.  $2\frac{3}{4}$  cups
- b.  $3\frac{1}{8}$  cups
- c.  $3\frac{1}{4}$  cups
- d.  $3\frac{5}{8}$  cups

**296.** An auditorium that holds 350 people currently has 150 seated in it. What part of the auditorium is full?

- a.  $\frac{1}{4}$
- b.  $\frac{1}{3}$
- c.  $\frac{3}{7}$
- d.  $\frac{3}{5}$

**297.** Third-grade student Stephanie goes to the school nurse's office, where her temperature is found to be  $98^\circ$  Fahrenheit. What is her temperature in degrees Celsius?  $C = \frac{5}{9}(F - 32)$

- a.  $35.8^\circ$  C
- b.  $36.7^\circ$  C
- c.  $37.6^\circ$  C
- d.  $31.1^\circ$  C

**298.** The temperature recorded at 8 A.M. is  $30^\circ$  C. What is the equivalent of this temperature in degrees Fahrenheit?  $F = \frac{9}{5}C + 32$

- a.  $59^\circ$  F
- b.  $62^\circ$  F
- c.  $86^\circ$  F
- d.  $95^\circ$  F

**299.** If Tory donates \$210 to charitable organizations each year and  $\frac{1}{3}$  of that amount goes to the local crisis center, how much of her yearly donation does the crisis center get?

- a. \$33.00
- b. \$45.50
- c. \$60.33
- d. \$70.00

**300.** A construction job calls for  $2\frac{5}{6}$  tons of sand. Four trucks, each filled with  $\frac{3}{4}$  tons of sand, arrive on the job. Is there enough sand, or is there too much sand for the job?

- a. There is not enough sand;  $\frac{1}{6}$  ton more is needed.
- b. There is not enough sand;  $\frac{1}{3}$  ton more is needed.
- c. There is  $\frac{1}{3}$  ton more sand than is needed.
- d. There is  $\frac{1}{6}$  ton more sand than is needed.

**301.** A safety box has three layers of metal, each with a different width. If one layer is  $\frac{1}{8}$ -inch thick, a second layer is  $\frac{1}{6}$ -inch thick, and the total thickness is  $\frac{3}{4}$ -inch thick, what is the width of the third layer?

- a.  $\frac{5}{12}$  inch
- b.  $\frac{11}{24}$  inch
- c.  $\frac{7}{18}$  inch
- d.  $\frac{1}{2}$  inch

**Answer questions 302 and 303 using the following list of ingredients needed to make 16 brownies.**

**Deluxe Brownies**

- $\frac{2}{3}$  cup butter
- 5 squares (1 ounce each) unsweetened chocolate
- $1\frac{1}{2}$  cups sugar
- 2 teaspoons vanilla
- 2 eggs
- 1 cup flour

**302.** How many brownies can be made if the baker increases the recipe to include one cup of butter?

- a. 12 brownies
- b. 16 brownies
- c. 24 brownies
- d. 28 brownies

**303.** How much sugar is needed in a recipe that makes eight brownies?

- a.  $\frac{3}{4}$  cup
- b. 3 cups
- c.  $\frac{2}{3}$  cup
- d.  $\frac{5}{8}$  cup

**304.** George cuts his birthday cake into 10 equal pieces. If six people eat a piece of George's cake, what fraction of the cake is left?

- a.  $\frac{3}{5}$
- b.  $\frac{3}{10}$
- c.  $\frac{2}{5}$
- d.  $\frac{5}{6}$

**► Set 20** (Answers begin on page 175.)

- 305.** A certain congressional district has about 490,000 people living in it. The largest city in the area has 98,000 citizens. Which most accurately portrays the portion of the population made up by the city in the district?
- $\frac{1}{5}$
  - $\frac{1}{4}$
  - $\frac{2}{9}$
  - $\frac{3}{4}$
- 306.** A bag of jelly beans contains eight black beans, 10 green beans, three yellow beans, and nine orange beans. What is the probability of selecting either a yellow or an orange bean?
- $\frac{1}{10}$
  - $\frac{2}{5}$
  - $\frac{4}{15}$
  - $\frac{3}{10}$
- 307.** Each piece of straight track for Ty's electric train set is  $6\frac{1}{2}$  inches long. If five pieces of this track are laid end to end, how long will the track be?
- $30\frac{1}{2}$  inches
  - 32 inches
  - $32\frac{1}{2}$  inches
  - $32\frac{5}{8}$  inches
- 308.** How many  $\frac{1}{4}$ -pound hamburgers can be made from six pounds of ground beef?
- 18 hamburgers
  - $20\frac{1}{2}$  hamburgers
  - 24 hamburgers
  - $26\frac{1}{4}$  hamburgers
- 309.** Bart's eight-ounce glass is  $\frac{4}{5}$  full of water. How many ounces of water does he have?
- $4\frac{5}{8}$  ounces
  - 5 ounces
  - 6 ounces
  - $6\frac{2}{5}$  ounces
- 310.** Barbara can walk  $3\frac{1}{4}$  miles in one hour. At that rate, how many miles will she walk in  $1\frac{2}{3}$  hours?
- $4\frac{5}{8}$  miles
  - $4\frac{11}{12}$  miles
  - $5\frac{5}{12}$  miles
  - 6 miles
- 311.** Three friends evenly split  $1\frac{1}{8}$  pounds of peanuts. How many pounds will each person get?
- $\frac{1}{4}$  pound
  - $\frac{3}{8}$  pound
  - $\frac{1}{2}$  pound
  - $\frac{5}{8}$  pound
- 312.** Iris lives  $2\frac{1}{2}$  miles due east of the Sunnydale Mall, and Raoul lives  $4\frac{1}{2}$  miles due west of the QuikMart, which is  $1\frac{1}{2}$  miles due west of the Sunnydale Mall. How far does Iris live from Raoul?
- 8 miles
  - 8.5 miles
  - 9 miles
  - 9.5 miles

- 313.** Ingrid's kitchen is  $9\frac{3}{4}$  feet long and  $8\frac{1}{3}$  feet wide. How many square feet of tile does she need to tile the floor?
- $81\frac{1}{4}$  square feet
  - $72\frac{1}{4}$  square feet
  - $71\frac{1}{2}$  square feet
  - $82\frac{1}{2}$  square feet
- 314.** How many inches are in  $4\frac{1}{2}$  feet?
- 48 inches
  - 54 inches
  - 66 inches
  - 70 inches
- 315.** During the winter, Lucas missed  $7\frac{1}{2}$  days of kindergarten due to colds, while Brunhilda missed only  $4\frac{1}{4}$  days. How many fewer days did Brunhilda miss than Lucas?
- $3\frac{1}{4}$
  - $3\frac{1}{2}$
  - $3\frac{5}{6}$
  - 4
- 316.** To reach his tree house, Raymond has to climb  $9\frac{1}{3}$  feet up a rope ladder, then  $8\frac{5}{6}$  feet up the tree trunk. How far does Raymond have to climb altogether?
- $17\frac{7}{12}$  feet
  - $17\frac{1}{6}$  feet
  - $18\frac{1}{6}$  feet
  - $18\frac{1}{2}$  feet
- 317.** Ralph's newborn triplets weigh  $4\frac{3}{8}$  pounds,  $3\frac{5}{6}$  pounds, and  $4\frac{7}{8}$  pounds. Harvey's newborn twins weigh  $7\frac{2}{6}$  pounds and  $9\frac{3}{10}$  pounds. Whose babies weigh the most and by how much?
- Ralph's triplets by  $3\frac{1}{2}$  pounds
  - Ralph's triplets by  $2\frac{1}{4}$  pounds
  - Harvey's twins by  $1\frac{2}{3}$  pounds
  - Harvey's twins by  $3\frac{11}{20}$  pounds
- 318.** Sofia bought a pound of vegetables and used  $\frac{3}{8}$  of it to make a salad. How many ounces of vegetables are left after she makes the salad?
- 4 ounces
  - 6 ounces
  - 8 ounces
  - 10 ounces
- 319.** Dani spent \$6,300 on a used car. She paid \$630 as a down payment. What fraction of the original cost was the down payment?
- $\frac{1}{10}$
  - $\frac{1}{18}$
  - $\frac{1}{20}$
  - $\frac{1}{40}$
- 320.** During an eight-hour workday, Bob spends two hours on the phone. What fraction of the day does he spend on the phone?
- $\frac{1}{5}$
  - $\frac{1}{3}$
  - $\frac{1}{4}$
  - $\frac{1}{8}$

## ► Section 2—Fractions

### Set 11 (Page 26)

- 161. b.** Two of the four sections are shaded, so  $\frac{2}{4}$  of the figure is shaded. Reduced, the answer is  $\frac{1}{2}$ .
- 162. b.** Since there are three sections shaded out of a total of five sections, the part shaded is  $\frac{3}{5}$ .
- 163. c.** To reduce a fraction to lowest terms, find the greatest common factor of the numerator and denominator. Then, divide both by this number. The greatest common factor of 42 and 56 is 14. Therefore, the correct answer is  $\frac{3}{4}$ .
- 164. d.** Although there are other factors that 54 and 108 share, dividing both by the greatest common factor, 54, will result in the lowest terms in one step. The correct answer is  $\frac{1}{2}$ .
- 165. c.** To add or subtract fractions, it is necessary for the fractions to share a common denominator. These two fractions have a common denominator of 9. Therefore, simply subtract the numerators and keep the denominator. The result is  $\frac{3}{9}$ , but in the answer choices it is expressed in lowest terms,  $\frac{1}{3}$ .
- 166. a.** First, find the least common denominator—that is, convert all three fractions to sixteenths, and then add:  $\frac{4}{16} + \frac{3}{16} + \frac{14}{16} = \frac{21}{16}$ . Now reduce:  $1\frac{5}{16}$ .
- 167. d.** To add mixed numbers, make sure the fractions have a common denominator. Then, add the numerators and keep the denominator:  $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ . Then add the whole numbers:  $5 + 7 + 2 = 14$ . Combine these results to reach a final solution of  $14\frac{2}{3}$ .
- 168. a.** Because the fractions within the equation have a common denominator, subtract the numerators and keep the denominator to get  $\frac{7}{13}$ . Then subtract the whole numbers to get 3. Combine the results for a final answer of  $3\frac{7}{13}$ .
- 169. b.** When multiplying fractions, multiply the numerators by each other:  $1 \times 4 = 4$ . Then, multiply the denominators by each other:  $5 \times 7 = 35$ . The correct answer is  $\frac{4}{35}$ .
- 170. a.** Before subtracting, you must convert both fractions to thirty-sixths:  $\frac{15}{36} - \frac{14}{36} = \frac{1}{36}$ .
- 171. a.** First, find a common denominator for the fractions (21) and subtract:  $\frac{14}{21} - \frac{12}{21} = \frac{2}{21}$ . Then subtract the whole numbers:  $78 - 10 = 68$ . Combine for an answer of  $68\frac{2}{21}$ .
- 172. c.** When dividing fractions, multiply the first fraction by the reciprocal of the divisor:  $-\frac{5}{12} \times \frac{6}{1} = \frac{30}{12}$ . Then, convert to a mixed number:  $2\frac{1}{2}$ . The negatives cancel each other out, so the answer is positive.
- 173. b.** First, change any whole numbers or mixed numbers to improper fractions; 40 becomes  $\frac{40}{1}$  and  $2\frac{1}{2}$  becomes  $\frac{5}{2}$ . To divide fractions, multiply by the reciprocal of the number being divided by. Therefore, the expression becomes  $\frac{40}{1} \times \frac{2}{5}$ . By cross canceling common factors, this becomes  $\frac{8}{1} \times \frac{2}{1}$ , which is equal to  $\frac{16}{1}$  or 16.
- 174. b.** The correct answer is  $1\frac{1}{6}$ .
- 175. a.** Again, in order to subtract the fractions, you must first find the least common denominator, which in this case is 40. The equation is then  $\frac{35}{40} - \frac{24}{40} = \frac{11}{40}$ .
- 176. a.** Because you are adding numbers that do not have the same sign, subtract the fraction with the smaller absolute value from the fraction with the larger absolute value to find the result. There is already a common denominator of 5, so first subtract the fractional parts:  $\frac{3}{5} - \frac{2}{5} = \frac{1}{5}$ . Next, subtract the whole numbers:  $4 - 1 = 3$ . Therefore, the solution is  $3\frac{1}{5}$ .

**Set 12** (Page 28)

- 177. b.** To answer the problem you must first convert  $\frac{1}{2}$  to  $\frac{3}{6}$ , and then add. The correct answer is  $88\frac{1}{3}$ .
- 178. c.** First, subtract the whole numbers:  
 $35 - 20 = 15$ . Because the fractions have a common denominator, simply subtract the numerators and keep the denominator:  
 $\frac{7}{9} - \frac{2}{9} = \frac{5}{9}$ . Combine the whole number and fraction for the answer of  $15\frac{5}{9}$ .
- 179. c.** First, find the least common denominator of the fractions, which is 9, and then add the fractions:  $\frac{6}{9} + \frac{3}{9} = \frac{9}{9}$  or 1. Now add the whole numbers:  $43 + 36 = 79$ . Now add the results of the two equations:  $1 + 79 = 80$ .
- 180. d.** The lowest common denominator is 21:  
 $\frac{12}{21} - \frac{7}{21} = \frac{5}{21}$ .
- 181. d.** The lowest common denominator is 24:  $\frac{20}{24} + \frac{9}{24} = \frac{29}{24}$ . Convert to a mixed number:  $1\frac{5}{24}$ .
- 182. a.** The product when multiplying reciprocals is always 1.
- 183. b.** Because dividing two negatives results in a positive, the only possible answers are choices **b** and **c**. Choice **c** is incorrect, because it is the result of multiplying the fractions. Choice **b**, 2, is correct because it is the result of multiplying by the reciprocal of the divisor.
- 184. d.** Convert the mixed number to an improper fraction and multiply:  $\frac{38}{5} \times \frac{4}{9} = \frac{152}{45}$ . Convert back to a mixed number:  $3\frac{17}{45}$ .
- 185. d.** First, convert 2 to a fraction. Then, invert and multiply:  $\frac{2}{6} \times \frac{1}{2} = \frac{2}{12}$ . Reduce to lowest terms:  $\frac{1}{6}$ .
- 186. b.** First, change the mixed numbers to improper fractions. That is, for each fraction, multiply the whole number by the denominator of the fraction, then add the numerator:
- $2 \times 4 + 1 = 9$ , so the fraction becomes  $\frac{9}{4}$ ;  $2 \times 7 + 4 = 18$ , so the fraction becomes  $\frac{18}{7}$ . The equation then becomes  $\frac{9}{4} \div \frac{18}{7}$ . Now invert the second fraction and multiply the numerators and the denominators:  $\frac{9}{4} \times \frac{7}{18} = \frac{63}{72}$ . Reduced, the answer becomes  $\frac{7}{8}$ . (If you performed a multiplication operation instead of a division one, you got wrong answer choice **d**.)
- 187. c.** Multiply across:  $\frac{10}{216}$ . Then reduce to lowest terms to get the answer:  $\frac{5}{108}$ .
- 188. b.** Convert the fractions to mixed numbers:  $1\frac{1}{2} = \frac{3}{2}$ , and  $1\frac{5}{13} = \frac{18}{13}$ . Now invert the second fraction and multiply:  $\frac{3}{2} \times \frac{13}{18} = \frac{39}{36}$  or  $1\frac{3}{36}$ . Now reduce:  $1\frac{1}{12}$ . (A common error, multiplying fractions instead of dividing, is shown in choice **c**.)
- 189. d.** Properly converting the mixed numbers into improper fractions is the first step in finding the answer. Thus,  $\frac{7}{3} \times \frac{15}{14} \times \frac{9}{5} = \frac{945}{210} = 4\frac{1}{2}$ .
- 190. a.** Multiply across to get the answer:  $\frac{28}{45}$ .
- 191. c.** First, change  $2\frac{1}{4}$  to an improper fraction:  $2\frac{1}{4} = \frac{9}{4}$ . Next, in order to divide by  $\frac{2}{3}$ , invert that fraction to  $\frac{3}{2}$  and multiply:  $\frac{9}{4} \times \frac{3}{2} = \frac{27}{8} = \frac{(24+3)}{8} = \frac{24}{8} + \frac{3}{8} = 3\frac{3}{8}$ .
- 192. c.** Invert the divisor and multiply:  $\frac{4}{7} \times \frac{17}{8} = \frac{68}{56}$ . Then, reduce and change to a mixed number:  $1\frac{3}{14}$ .

**Set 13** (Page 30)

- 193. b.** To multiply a whole number by a fraction, change the whole number to a fraction by putting it over 1:  $\frac{8}{1} \times \frac{1}{5} = \frac{8}{5}$ . Change the improper fraction to a mixed number:  $1\frac{3}{5}$ .
- 194. c.** The correct answer is  $2\frac{4}{5}$ .
- 195. d.** Convert the mixed number to a fraction. Then invert it because it is the divisor. Multiply:  $\frac{1}{6} \times \frac{8}{37} = \frac{8}{222}$ . Reduce the fraction to lowest terms:  $\frac{4}{111}$ .



- 196. a.** The correct answer is  $28\frac{4}{7}$ .
- 197. a.** First, change each mixed number to an improper fraction:  $1\frac{1}{2} = \frac{3}{2}$  and  $2\frac{1}{4} = \frac{9}{4}$ . The problem becomes  $\frac{3}{2} \div \frac{9}{4}$ . To divide fractions, multiply by the reciprocal of the number being divided by:  $\frac{3}{2} \times \frac{4}{9} = \frac{12}{18} = \frac{2}{3}$ .
- 198. a.** First, change each of the mixed numbers to improper fractions. The expression becomes  $\frac{7}{3} \times \frac{11}{2} \times \frac{3}{11}$ . Cross cancel the factors of 3 and 11. Multiply across to get  $\frac{7}{2}$ , which is equal to  $3\frac{1}{2}$ .
- 199. b.** The correct answer is 20.
- 200. a.** The correct answer is  $3\frac{11}{27}$ .
- 201. c.** Because there is a common denominator, the fractions can be added. The result is  $-\frac{14}{7}$ , which can also be represented as  $-2$ .
- 202. b.** The correct answer in lowest terms is  $\frac{4}{5}$ .
- 203. a.** The correct answer is 8. In fraction form, it is  $\frac{40}{5}$ .
- 204. a.** The least common denominator for the two fractions is 18. Ignore the whole number 6 for a moment, and simply subtract the fractions:  $\frac{4}{18} - \frac{3}{18} = \frac{1}{18}$ . Now put back the 6 to find the correct answer:  $6\frac{1}{18}$ . (If you got answer choice c, you subtracted both the numerators and the denominators.)
- 205. c.** The correct answer is  $13\frac{29}{35}$ .
- 206. a.** The correct answer is  $17\frac{8}{9}$ .
- 207. d.** Find the answer by changing the fractions to decimals:  $\frac{1}{3} = 0.333$ ;  $\frac{1}{4} = 0.25$ ;  $\frac{2}{7} = 0.286$ . The decimal 0.286, or  $\frac{2}{7}$ , is between the other two.
- 208. b.** Divide the numerator by the denominator to find the whole number of the mixed number. The remainder, if any, becomes the numerator of the fraction:  $55 \div 6 = 9$ , remainder 1. The denominator stays the same. Therefore, the mixed number is  $9\frac{1}{6}$ .
- Set 14** (Page 32)
- 209. d.** Divide the numerator by the denominator to get the correct answer of 0.4.
- 210. a.** To solve this problem, you must first convert all the fractions to the lowest common denominator, which is 24;  $\frac{7}{8} = \frac{21}{24}$ ,  $\frac{3}{4} = \frac{18}{24}$ ,  $\frac{2}{3} = \frac{16}{24}$ ,  $\frac{5}{6} = \frac{20}{24}$ . The fraction with the largest numerator,  $\frac{21}{24}$ , has the greatest value.
- 211. b.** Convert each fraction to the common denominator of 30:  $\frac{3}{5} = \frac{18}{30}$ ;  $\frac{8}{15} = \frac{16}{30}$ ,  $\frac{17}{30}$  already has a denominator of 30;  $\frac{2}{3} = \frac{20}{30}$ . The fraction with the smallest numerator is  $\frac{16}{30}$ , which is equivalent to  $\frac{8}{15}$ .
- 212. d.** To solve the problem, you must first find the common denominator, in this instance, 60. Then the fractions must be converted:  $\frac{17}{20} = \frac{51}{60}$  (for choice a);  $\frac{3}{4} = \frac{45}{60}$  (for choice b);  $\frac{5}{6} = \frac{50}{60}$  (for choice c); and  $\frac{7}{10} = \frac{42}{60}$  (for the correct answer, choice d).
- 213. b.** Convert the mixed number  $3\frac{7}{8}$  to the improper fraction  $\frac{31}{8}$  and then invert to  $\frac{8}{31}$ .
- 214. c.** Convert the mixed number to an improper fraction:  $4\frac{3}{5} = \frac{23}{5}$ . Then, invert the numerator and denominator:  $\frac{5}{23}$ .
- 215. d.** Divide the top number by the bottom number:  $160 \div 40 = 4$ .
- 216. b.** Divide the numerator by the denominator, and this number becomes the whole number of the mixed number. The remainder, if any, becomes the numerator of the fraction of the mixed number. So,  $31 \div 3 = 10$  remainder 1. Therefore, the mixed number is  $10\frac{1}{3}$ .
- 217. a.** Multiply the whole number by the fraction's denominator:  $5 \times 2 = 10$ . Add the fraction's numerator to the answer:  $1 + 10 = 11$ . Now place that answer over the fraction's denominator:  $\frac{11}{2}$ .

- 218. d.** The first step is to convert each fraction to the least common denominator, which is 20. The problem becomes  $\frac{12}{20} - \frac{5}{20}$ . Subtract to get  $\frac{7}{20}$ .
- 219. b.** In an improper fraction, the top number is greater than the bottom number, so  $\frac{66}{22}$  is the correct answer.
- 220. a.** Mario has finished  $\frac{35}{45}$  of his test, which reduces to  $\frac{7}{9}$ , so he has  $\frac{2}{9}$  of the test to go.
- 221. a.** First, find the least common denominator of the two fractions, which is 6. Then add the fractions of the sandwich Joe got rid of:  $\frac{3}{6}$  (which he gave to Ed) +  $\frac{2}{6}$  (which he ate) =  $\frac{5}{6}$ . Now subtract the fraction from one whole sandwich ( $1 = \frac{6}{6}$ ):  $\frac{6}{6} - \frac{5}{6} = \frac{1}{6}$ .
- 222. a.** The total width of the three windows is 105 inches:  $105 \times 2\frac{1}{2} = \frac{105}{1} \times \frac{5}{2} = \frac{525}{2} = 262\frac{1}{2}$ .
- 223. a.** Since Katie and her family ate  $\frac{3}{4}$  of the pizza for dinner,  $\frac{1}{4}$  of it is leftover. Katie ate  $\frac{1}{2}$  of  $\frac{1}{4}$  for lunch the next day:  $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ .
- 224. c.** To subtract fractions, first convert to a common denominator, in this case,  $\frac{25}{40} - \frac{24}{40} = \frac{1}{40}$ .
- Set 15** (Page 34)
- 225. c.** To find out how many dozen cookies Hans can make, divide  $5\frac{1}{2}$  by  $\frac{2}{3}$ . First, convert  $5\frac{1}{2}$  to  $\frac{11}{2}$ , and then multiply by  $\frac{3}{2}$ , which is the same as dividing by  $\frac{2}{3}$ ;  $\frac{11}{2} \times \frac{3}{2} = \frac{33}{4}$ , or  $8\frac{1}{4}$  dozen.
- 226. c.** Add the fractions and subtract the total from 2. The least common denominator is 24, so the fractions become  $\frac{12}{24} + \frac{3}{24} + \frac{16}{24}$ , which adds to  $\frac{31}{24}$ . Two pounds is equal to  $\frac{48}{24}$ , so  $\frac{48}{24} - \frac{31}{24} = \frac{17}{24}$ .
- 227. a.** To multiply mixed numbers, convert to improper fractions, or  $\frac{5}{4} \times \frac{11}{8} = \frac{55}{32}$ , or  $1\frac{23}{32}$  square inches.
- 228. a.** Divide  $6\frac{1}{2}$  pounds by eight people;  $6\frac{1}{2} \div 8$  equals  $\frac{13}{2} \div \frac{8}{1}$ . To divide fractions, multiply by the reciprocal of the fraction being divided by:  $\frac{13}{2} \times \frac{1}{8} = \frac{13}{16}$ .
- 229. c.** It is 36 linear feet around the perimeter of the room ( $9 \times 4$ );  $36 - 17\frac{3}{4} = \frac{73}{4}$  or  $18\frac{1}{4}$ .
- 230. c.** Mixed numbers must be converted to fractions, and you must use the least common denominator of 8:  $\frac{18}{8} + \frac{37}{8} + \frac{4}{8} = \frac{59}{8}$ , which is  $7\frac{3}{8}$  after it is reduced.
- 231. d.** Since 28 of the 35 slices have been eaten, there are  $35 - 28 = 7$  slices left. This means  $\frac{7}{35}$ , or  $\frac{1}{5}$  of the loaf is left.
- 232. a.** The common denominator is 24;  $\frac{56}{24} - \frac{21}{24} = \frac{35}{24}$  or  $1\frac{11}{24}$ .
- 233. c.** Convert both the cost and the length to fractions:  $\frac{3}{4} \times \frac{22}{3} = \frac{66}{12}$  or  $5\frac{1}{2}$ , which is \$5.50.
- 234. b.** The total number of pages assigned is 80;  $\frac{1}{6} \times 80 = \frac{80}{6}$  or  $13\frac{1}{3}$ .
- 235. d.** To subtract, convert to improper fractions, find a common denominator, and subtract the numerators:  $\frac{11}{2} - \frac{10}{3} = \frac{33}{6} - \frac{20}{6} = \frac{13}{6}$  or  $2\frac{1}{6}$ .
- 236. c.** To find the hourly wage, divide the total salary by the number of hours worked, or  $331.01$  divided by  $39\frac{1}{2}$ , or  $39.5$ , which equals  $8.38$ .
- 237. d.** First, find how much of the cookie was eaten by adding the two fractions. After converting to the least common denominator, the amount eaten is  $\frac{9}{21} + \frac{7}{21} = \frac{16}{21}$ . This means  $\frac{5}{21}$  of the cookie is left.
- 238. b.** When subtracting mixed fractions, subtract the fractions first. Since 8 contains no fractions, convert to  $7\frac{8}{8}$ , and then subtract: in this case,  $\frac{8}{8} - \frac{5}{8} = \frac{3}{8}$ . Then subtract the whole numbers: in this case,  $7 - 6 = 1$  (remember, 8 was converted to  $7\frac{8}{8}$ ). Add the results:  $1\frac{3}{8}$ .

**239. a.**  $\frac{3}{5}$  of 360 is figured as  $\frac{3}{5} \times \frac{360}{1} = \frac{1,080}{5}$  or 216.

**240. c.** The least common denominator of the fractions is 20. When added together, the fraction part of each mixed number adds to  $\frac{54}{20} = 2\frac{14}{20}$ , which reduces to  $2\frac{7}{10}$ . The sum of the whole numbers is 36;  $2\frac{7}{10} + 36 = 38\frac{7}{10}$ .

### Set 16 (Page 36)

**241. c.** The total number of items ordered is 36; the total received is 23. Therefore, Meryl has received 23 of 36 items or  $\frac{23}{36}$ ;  $\frac{23}{36}$  cannot be reduced.

**242. b.** To multiply fractions, convert to improper fractions:  $7.75 = 7\frac{3}{4} = \frac{31}{4}$ ;  $38\frac{1}{5} = \frac{191}{5}$ . So,  $\frac{31}{4} \times \frac{191}{5} = \frac{5,921}{20}$  or \$296.05.

**243. d.**  $\frac{1}{3}$  of  $3\frac{1}{2}$  is expressed as  $\frac{1}{3} \times 3\frac{1}{2}$ , or  $\frac{1}{3} \times \frac{7}{2} = \frac{7}{6}$  or  $1\frac{1}{6}$ .

**244. a.** To divide  $20\frac{1}{3}$  by  $1\frac{1}{2}$ , first convert to improper fractions, or  $\frac{61}{3}$  divided by  $\frac{3}{2}$ . To divide, invert the second fraction and multiply:  $\frac{61}{3} \times \frac{2}{3} = \frac{122}{9} = 13.55$ , or approximately  $13\frac{1}{2}$  recipes.

**245. c.** There are two glasses out of eight left to drink, or  $\frac{2}{8}$ , which reduces to  $\frac{1}{4}$ .

**246. a.** There will be 100 questions on the test. Wendy has completed 25 of 100, or  $\frac{1}{4}$  of the test.

**247. c.** To figure the necessary number of gallons, divide the number of miles by the miles per gallon:  $\frac{117}{2}$  divided by  $\frac{43}{3} = \frac{351}{86}$  or  $4\frac{7}{86}$ .

**248. d.** Felicia still needs 18 squares, or  $\frac{18}{168}$ , which can be reduced to  $\frac{3}{28}$ .

**249. b.**  $14\frac{1}{2} \times 12\frac{1}{3}$ , or  $\frac{29}{2} \times \frac{37}{3} = \frac{1,073}{6}$  or 178.83 square feet. Two gallons of paint will cover 180 square feet.

**250. b.** The amount of meat loaf left is  $\frac{2}{5} - (\frac{2}{5})(\frac{1}{4}) = \frac{2}{5} - \frac{2}{20}$ . After you find the least common denominator, this becomes  $\frac{8}{20} - \frac{2}{20} = \frac{6}{20}$ , which reduces to  $\frac{3}{10}$ .

**251. a.** Millie has completed  $\frac{16}{52}$ , or  $\frac{4}{13}$ , of the total galleries.

**252. c.** First, convert \$12.35 to a fraction ( $12\frac{35}{100}$ ), and then convert it to an improper fraction ( $\frac{1,235}{100}$ ) and reduce to  $\frac{247}{20}$ ;  $\frac{3}{4}$  of the workweek is 30 hours. To multiply a whole number by a fraction, convert the whole number to a fraction,  $\frac{30}{1}$ ;  $\frac{247}{20} \times \frac{30}{1} = \frac{7,410}{20}$  or  $370\frac{1}{2}$  or \$370.50.

**253. b.**  $\frac{1}{2}$  of  $\frac{1}{4}$  is expressed as  $\frac{1}{2} \times \frac{1}{4}$  or  $\frac{1}{8}$ .

**254. d.**  $\frac{1}{4} \times 2$  is expressed as  $\frac{1}{4} \times \frac{2}{1} = \frac{2}{4}$ , or  $\frac{1}{2}$  teaspoon.

**255. a.** The total area of the lawn is 810 square yards ( $30 \times 27$ ). There is  $\frac{1}{3}$  of the yard left to mow;  $\frac{1}{3} \times \frac{810}{1} = \frac{810}{3}$  or 270.

**256. d.** The fraction of program time devoted to commercials is  $\frac{6}{30}$ , or  $\frac{1}{5}$ .

### Set 17 (Page 38)

**257. d.** Let  $x$  equal the original weight. If  $\frac{1}{8}$  of the original weight is equal to 15 pounds, then  $\frac{1}{8} \times x = 15$ . Multiply both sides by 8 to get  $x = 120$  pounds.

**258. d.** To determine the number of bags each minute, divide the total bags by the total minutes, or  $15\frac{1}{2}$  divided by 3, or  $\frac{31}{2}$  divided by  $\frac{3}{1}$ , or  $\frac{31}{2}$  times  $\frac{1}{3}$ , which is equal to  $\frac{31}{6}$  or  $5\frac{1}{6}$  bags per minute.

**259. d.** To determine  $\frac{1}{4}$  of  $5\frac{1}{3}$ , multiply  $\frac{1}{4}$  and  $5\frac{1}{3}$ . Change the mixed number to an improper fraction:  $\frac{1}{4} \times \frac{16}{3} = \frac{16}{12} = \frac{4}{3} = 1\frac{1}{3}$ .

- 260. a.** This is a subtraction of mixed numbers problem. The common denominator is 8. Convert  $\frac{1}{2}$  to  $\frac{4}{8}$ . Because  $\frac{4}{8}$  is larger than  $\frac{1}{8}$ , you must borrow from the whole number 23. Then subtract:  $22\frac{9}{8} - 6\frac{4}{8} = 16\frac{5}{8}$ .
- 261. a.** This is a subtraction problem. First, find the lowest common denominator, which is 12;  $\frac{3}{4} = \frac{9}{12}$  and  $\frac{2}{3} = \frac{8}{12}$ . Then subtract:  $\frac{9}{12} - \frac{8}{12} = \frac{1}{12}$ .
- 262. b.** To solve this problem, you must first convert yards to inches. There are 36 inches in one yard;  $36 \times 3\frac{1}{3} = \frac{36}{1} \times \frac{10}{3} = \frac{360}{3} = 120$ .
- 263. b.** This is a subtraction of fractions problem. The common denominator is 8. Convert  $22\frac{1}{4}$  to  $22\frac{2}{8}$ . Because  $\frac{5}{8}$  is larger than  $\frac{2}{8}$ , you must borrow. Then, subtract:  $21\frac{10}{8} - 17\frac{5}{8} = 4\frac{5}{8}$ .
- 264. c.** This is a simple subtraction problem with mixed numbers. First, find the lowest common denominator, which is 15;  $\frac{4}{5} = \frac{12}{15}$  and  $\frac{1}{3} = \frac{5}{15}$ . Then subtract:  $20\frac{12}{15} - 3\frac{5}{15} = 17\frac{7}{15}$ .
- 265. d.** First you must add the two fractions to determine what fraction of the total number of buses was in for maintenance and repair. The common denominator for  $\frac{1}{6}$  and  $\frac{1}{8}$  is 24, so  $\frac{1}{6} + \frac{1}{8} = \frac{4}{24} + \frac{3}{24}$ , or  $\frac{7}{24}$ . Next, divide 28 by  $\frac{7}{24}$ :  $28 \div \frac{7}{24} = \frac{28}{1} \times \frac{24}{7} = \frac{672}{7} = 96$ .
- 266. d.** Mixed numbers must be converted to fractions, and you must use the least common denominator of 8:  $\frac{18}{8} + \frac{37}{8} + \frac{4}{8} = \frac{59}{8}$ , which is  $7\frac{3}{8}$  after it is changed to a mixed number.
- 267. b.** This is a problem involving addition of mixed numbers. First, find the common denominator, which is 6. Convert the fractions and add:  $\frac{2}{6} + \frac{5}{6} + \frac{4}{6} = \frac{11}{6}$ . Next, reduce the fraction:  $\frac{11}{6} = 1\frac{5}{6}$ . Finally, add the whole numbers and the mixed number:  $2 + 1 + 2 + 1\frac{5}{6} = 6\frac{5}{6}$ .
- 268. b.** Solve this problem with the following equation:  $37\frac{1}{2}$  hours  $- 26\frac{1}{4}$  hours  $= 11\frac{1}{4}$  hours.
- 269. a.** Solve this problem with the following equations:  $\frac{1}{2} + \frac{1}{2} + (5 \times \frac{1}{4}) = 1 + 1\frac{1}{4} = 2\frac{1}{4}$  miles.
- 270. d.** This is an addition problem with fractions. Add the top numbers of the fractions:  $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ . Then add the whole number:  $1 + \frac{2}{3} = 1\frac{2}{3}$ .
- 271. b.** This is an addition problem with mixed numbers. First, add the fractions by finding the lowest common denominator; in this case, it is 40:  $\frac{15}{40} + \frac{12}{40} + \frac{8}{40} = \frac{35}{40}$ . Next, reduce the fraction:  $\frac{35}{40} = \frac{7}{8}$ . Then add the whole numbers:  $7 + 6 + 5 = 18$ . Finally, add the results:  $18 + \frac{7}{8} = 18\frac{7}{8}$ .
- 272. d.** This is an addition problem. To add mixed numbers, first add the fractions: To do this, find the lowest common denominator; in this case, it is 20:  $\frac{3}{4} = \frac{15}{20}$  and  $\frac{3}{5} = \frac{12}{20}$ . Now add:  $\frac{15}{20} + \frac{12}{20} = \frac{27}{20}$ . Next, reduce:  $\frac{27}{20} = 1\frac{7}{20}$ . Finally, add the whole numbers to get the result:  $16 + 2 + 1\frac{7}{20} = 19\frac{7}{20}$ .

**Set 18** (Page 40)

- 273. a.** In this problem, you must find the fraction. Paula has completed 15 of the 25 minutes, or  $\frac{15}{25}$ . Reduce the fraction:  $\frac{15}{25} = \frac{3}{5}$ .
- 274. c.** This is a multiplication problem. To multiply a whole number by a mixed number, first convert the mixed number to a fraction:  $1\frac{2}{5} = \frac{7}{5}$ . Then, multiply:  $\frac{7}{5} \times \frac{3}{1} = \frac{21}{5}$ . Now reduce:  $\frac{21}{5} = 4\frac{1}{5}$ .
- 275. c.** This is a division problem with mixed numbers. First, convert the mixed numbers to fractions:  $33\frac{1}{2} = \frac{67}{2}$  and  $5\frac{1}{4} = \frac{21}{4}$ . Next, invert the second fraction and multiply:  $\frac{67}{2} \times \frac{4}{21} = \frac{134}{21}$ . Reduce to a mixed number:  $\frac{134}{21} = 6\frac{8}{21}$ . With this result, you know that only six glasses can be completely filled.

- 276. d.** This is a division problem. First, change the mixed number to a fraction:  $3\frac{1}{2} = \frac{7}{2}$ . Next, invert  $\frac{1}{8}$  and multiply:  $\frac{7}{2} \times \frac{8}{1} = 28$ .
- 277. b.** This is a multiplication problem with fractions. Six minutes is  $\frac{6}{60}$  of an hour, which is reduced to  $\frac{1}{10}$ ;  $2\frac{1}{2} = \frac{5}{2}$ . Next, multiply:  $\frac{1}{10} \times \frac{5}{2} = \frac{1}{4}$ .
- 278. d.** First, convert the  $2\frac{1}{2}$  hours to minutes by multiplying  $2\frac{1}{2} \times 60$  to get 150 minutes. Then divide the answer by 50, the number of questions:  $150 \div 50 = 3$ .
- 279. b.** Use 35 for C:  $F = (\frac{9}{5} \times 35) + 32$ . Therefore,  $F = 63 + 32$ , or 95.
- 280. b.** Because the answer is a fraction, the best way to solve the problem is to convert the known to a fraction:  $\frac{10}{45}$  of the cylinder is full. By dividing both the numerator and the denominator by 5, you can reduce the fraction to  $\frac{2}{9}$ .
- 281. c.** Solving this problem requires determining the circumference of the spool by multiplying  $\frac{22}{7}$  by  $3\frac{1}{2} (\frac{7}{2})$ . Divide the total (11) into 53. The answer is 4.8, so the hose will completely wrap only four times.
- 282. a.** Convert Fahrenheit temperature to Celsius temperature using the given formula. Use  $F = 113$ ;  $C = \frac{5}{9}(113 - 32) = \frac{5}{9}(81) = 45$ .
- 283. b.** To solve this problem, find the number of gallons of water missing from each tank ( $\frac{1}{3}$  from Tank A,  $\frac{3}{5}$  from Tank B), and then multiply by the number of gallons each tank holds when full (555 for Tank A; 680 for Tank B):  $\frac{1}{3} \times 555 = 185$  for Tank A;  $\frac{3}{5} \times 680 = 408$  for Tank B. Now add the number of gallons missing from both tanks to get the number of gallons needed to fill them:  $185 + 408 = 593$ .
- 284. a.** This is a multistep problem. First, determine how many pieces of pizza have been eaten. Eight pieces ( $\frac{8}{9}$ ) of the first pizza have been eaten; 6 pieces ( $\frac{6}{9}$ ) of the second pizza have been eaten; 7 pieces ( $\frac{7}{9}$ ) of the third pizza have been eaten. Next, add the eaten pieces;  $8 + 6 + 7 = 21$ . Since there are 27 pieces of pizza in all, 6 pieces are left, or  $\frac{6}{27}$ . Reduce the fraction:  $\frac{6}{27} = \frac{2}{9}$ .
- 285. c.** To solve the problem, you have to first convert the total time to minutes (for the correct answer choice **c**, this is 105 minutes), then multiply by 4 (420 minutes), and then convert the answer back to hours by dividing by 60 minutes to arrive at the final answer (7 hours). Or you can multiply  $1\frac{3}{4}$  hours by 4 to arrive at the same answer.
- 286. a.** In this problem, you must multiply a fraction by a whole number:  $\frac{5}{6} \times \frac{5}{1} = \frac{25}{6}$ . Convert to a mixed number:  $\frac{25}{6} = 4\frac{1}{6}$ .
- 287. b.** This is a two-step problem involving both addition and division. First, add the two mixed numbers to find out how many ounces of jelly beans there are in all:  $10\frac{1}{4} + 9\frac{1}{8} = 19\frac{3}{8}$ . Convert the result to a fraction:  $19\frac{3}{8} = \frac{155}{8}$ . Next, to divide by 5, invert the whole number and multiply:  $\frac{155}{8} \times \frac{1}{5} = \frac{31}{8}$ . Convert to a mixed number:  $\frac{31}{8} = 3\frac{7}{8}$ .
- 288. b.** If half the students are female, then you would expect half of the out-of-state students to be female. One half of  $\frac{1}{12}$  equals  $\frac{1}{2} \times \frac{1}{12}$ , or  $\frac{1}{24}$ .
- Set 19** (Page 42)
- 289. b.** There are 60 minutes in one hour. Multiply  $60 \times 7\frac{1}{6}$  by multiplying  $60 \times 7 = 420$  and  $60 \times \frac{1}{6} = 10$ . Then add  $420 + 10$  to get 430 minutes.

- 290. a.** To solve this problem, you must convert  $3\frac{1}{2}$  to  $\frac{7}{2}$  and then divide  $\frac{7}{2}$  by  $\frac{1}{4}$ . The answer,  $\frac{28}{2}$ , is then reduced to 14.
- 291. c.** The simplest way to add these three numbers is first to add the whole numbers, and then add the fractions:  $3 + 2 + 4 = 9$ . Then,  $\frac{1}{2} + \frac{3}{4} = \frac{2}{4} + \frac{3}{4} = \frac{5}{4}$ , or  $1\frac{1}{4}$ . Then,  $9 + 1\frac{1}{4} = 10\frac{1}{4}$ .
- 292. c.** This is a multiplication problem involving a whole number and a mixed number. There are 16 ounces in one pound, so you must multiply  $16 \times 9\frac{1}{2}$ . First, change the whole number and the mixed number to fractions:  $\frac{16}{1} \times \frac{19}{2} = \frac{304}{2}$ . Then convert:  $\frac{304}{2} = 152$  ounces.
- 293. b.** In this problem you must find the fraction:  $\frac{7,500}{25,000}$ . Next, reduce the fraction. The easiest way to reduce is to first eliminate zeros in the numerator and the denominator:  $\frac{7,500}{25,000} = \frac{75}{250}$ . Then, further reduce the fraction:  $\frac{75}{250} = \frac{3}{10}$ .
- 294. d.** If two of five cars are foreign, three of five are domestic:  $\frac{3}{5} \times 60$  cars = 36 cars.
- 295. b.**  $2\frac{1}{2}$  is equal to 2.5;  $1\frac{1}{4}$  is equal to 1.25;  $2.5 \times 1.25$  is equal to 3.125 or  $3\frac{1}{8}$ .
- 296. c.** If 150 of the 350 seats are filled, then  $\frac{150}{350}$  represents the part of the auditorium that is full. Divide each by the greatest common factor of 50 to reduce to  $\frac{3}{7}$ .
- 297. b.** Use the formula beginning with the operation in parentheses:  $98 - 32 = 66$ . Then multiply 66 by  $\frac{5}{9}$ , first multiplying 66 by 5 to get 330;  $330 \div 9 = 36.67$ , which is rounded up to 36.7.
- 298. c.** Substitute  $C = 30$  into the formula provided;  $F = \frac{2}{5}(30) + 32$ ;  $F = 54 + 32$ ;  $F = 86$ .
- 299. d.** This is a multiplication of fractions problem:  $\frac{1}{3} \times \frac{210}{1} = 70$ .
- 300. d.** This is a two-step problem involving multiplication and simple subtraction. First, determine the amount of sand contained in the four trucks:  $\frac{3}{4} \times \frac{4}{1} = \frac{12}{4}$ . Reduce:  $\frac{12}{4} = 3$ . Then subtract:  $3 - 2\frac{5}{6} = \frac{1}{6}$ . There is  $\frac{1}{6}$  ton more than is needed.
- 301. b.** To solve the problem, you must first find the common denominator, in this instance, 24. Then the fractions must be converted:  $\frac{1}{8} = \frac{3}{24}$ ;  $\frac{1}{6} = \frac{4}{24}$ ;  $\frac{3}{4} = \frac{18}{24}$ . Add the values for first and second layers together:  $\frac{3}{24} + \frac{4}{24} = \frac{7}{24}$ , and then subtract the sum from the total thickness ( $\frac{18}{24}$ ):  $\frac{18}{24} - \frac{7}{24} = \frac{11}{24}$ .
- 302. c.** The recipe for 16 brownies calls for  $\frac{2}{3}$  cup butter. An additional  $\frac{1}{3}$  cup would make 8 more brownies, for a total of 24 brownies.
- 303. a.** The recipe is for 16 brownies. Half of that, 8, would reduce the ingredients by half. Half of  $1\frac{1}{2}$  cups of sugar is  $\frac{3}{4}$  cup.
- 304. c.** In this problem you must find the fraction:  $\frac{6}{10}$  of the cake has been eaten, so  $\frac{4}{10}$  of the cake is left. Now reduce the fraction:  $\frac{4}{10} = \frac{2}{5}$ .

**Set 20** (Page 45)

- 305. a.** Rounding to close numbers helps. This is approximately  $100,000 \div 500,000 = 0.20$  or  $\frac{1}{5}$ .
- 306. b.** Yellow beans + orange beans = 12. There are 30 total beans;  $\frac{12}{30}$  is reduced to  $\frac{2}{5}$ .
- 307. c.** In this problem, you must multiply a mixed number by a whole number. First, rewrite the whole number as a fraction:  $5 = \frac{5}{1}$ . Then rewrite the mixed number as a fraction:  $6\frac{1}{2} = \frac{13}{2}$ . Then multiply:  $\frac{5}{1} \times \frac{13}{2} = \frac{65}{2}$ . Finally, convert to a mixed number:  $\frac{65}{2} = 32\frac{1}{2}$ .
- 308. c.** This is a division of fractions problem. First, change the whole number to a fraction:  $6 = \frac{6}{1}$ . Then invert the second fraction and multiply:  $\frac{6}{1} \times \frac{4}{1} = 24$ .

- 309. d.** In this problem, you must multiply a fraction by a whole number. First, rewrite the whole number as a fraction:  $8 = \frac{8}{1}$ . Next, multiply:  $\frac{8}{1} \times \frac{4}{5} = \frac{32}{5}$ . Finally, convert to a mixed number:  $\frac{32}{5} = 6\frac{2}{5}$ .
- 310. c.** This is a multiplication with mixed numbers problem. First, change both mixed numbers to fractions:  $3\frac{1}{4} = \frac{13}{4}$ ;  $1\frac{2}{3} = \frac{5}{3}$ . Next, multiply the fractions:  $\frac{13}{4} \times \frac{5}{3} = \frac{65}{12}$ . Finally, change the result to a mixed number:  $\frac{65}{12} = 5\frac{5}{12}$ .
- 311. b.** This is a division problem. First, change the mixed number to a fraction:  $1\frac{1}{8} = \frac{9}{8}$ . Invert the whole number 3 and multiply:  $\frac{9}{8} \times \frac{1}{3} = \frac{3}{8}$ .
- 312. b.** This is a basic addition problem. First, change the fractions to decimals. Then, you might think of the problem this way: For Iris to get to Raoul's house, she must go 2.5 miles west to the Sunnydale Mall, then on west 1.5 miles to the QuikMart, and then on 4.5 miles to Raoul's house. So,  $2.5 + 1.5 + 4.5 = 8.5$  miles.
- 313. a.** To find the area of the floor in square feet, multiply the length by the width:  $9\frac{3}{4} \times 8\frac{1}{3}$ . To multiply mixed numbers, first convert to improper fractions, or  $\frac{39}{4} \times \frac{25}{3} = \frac{975}{12}$  or  $81\frac{1}{4}$ .
- 314. b.** There are 12 inches in one foot. Change the mixed number to a decimal: 4.5. Now multiply:  $4.5 \times 12 = 54$ .
- 315. a.** First, change the mixed numbers to decimals:  $7\frac{1}{2} = 7.5$  and  $4\frac{1}{4} = 4.25$ . Now subtract:  $7.5 - 4.25 = 3.25$ . Now change the decimal back to a fraction:  $3.25 = 3\frac{1}{4}$ .
- 316. c.** First, find the least common denominator of the fractions, which is 6. Then add:  $9\frac{2}{6} + 8\frac{5}{6} = 17\frac{7}{6}$ , or  $18\frac{1}{6}$ .
- 317. d.** First, add the weight of Ralph's triplets:  $4\frac{3}{8} + 3\frac{5}{6} + 4\frac{7}{8}$ , or (after finding the least common denominator)  $4\frac{9}{24} + 3\frac{20}{24} + 4\frac{21}{24} = 11\frac{50}{24}$ , or  $13\frac{2}{24}$ , or  $13\frac{1}{12}$ . Now find the weight of Harvey's twins:  $7\frac{2}{6} + 9\frac{3}{10}$ , or (after finding the least common denominator)  $7\frac{10}{30} + 9\frac{9}{30} = 16\frac{19}{30}$ . Now subtract:  $16\frac{19}{30} - 13\frac{1}{12} = 16\frac{38}{60} - 13\frac{5}{60} = 3\frac{33}{60} = 3\frac{11}{20}$ . So Harvey's twins outweigh Ralph's triplets by  $3\frac{11}{20}$  pounds. (No further reduction of the fraction is possible.)
- 318. d.** If she uses  $\frac{3}{8}$  of a pound, then  $\frac{5}{8}$  of a pound is left. The question asks for the number of ounces left, so convert one pound to 16 ounces. Then find  $\frac{5}{8}$  of 16 ounces by multiplying:  $\frac{5}{8} \times 16 = 10$  ounces.
- 319. a.** To find the fraction, compare the down payment with the total cost of the car;  $\frac{630}{6,300}$  reduces to  $\frac{1}{10}$ .
- 320. c.** Change the information into a fraction:  $\frac{2}{8}$ . Now, reduce the fraction:  $\frac{1}{4}$ .