# Pre-requisite Skills for 7th Grade Math

**Directions:** Use this packet as a guide to be sure you know how to do each type of problem. **Every problem does not have to be completed.** Answer pages are given after each section so that you can check your work. Turn this packet in **along with your scratch work** on the first day of seventh grade. Note that there are 6th Grade IXL categories for each concept, and you are welcome to do these for extra practice.

## Fractions (IXL categories I, J, K, L)

- Write equivalent fractions and put fractions in simplest form
- Convert fluently between improper fractions and mixed numbers
- Add and subtract fractions and mixed numbers
- Multiply and divide fractions and mixed numbers

## Decimals (IXL categories F, G, H)

- Add and subtract 2- and 3- digit decimals
- Multiply and divide 2- and 3- digit decimals (including long division

## Factors and Multiples (IXL category E)

- Know divisibility rules for 2, 3, 4, 5, 6, 9, and 10
- Find the prime factorization of a number
- Know what a factor of a number is and can list the factors of a number
- Find the GCF of 2 numbers
- Know what a multiple is and can list several multiples of a number
- Find the LCM of 2 numbers

## Ratios and Rates (IXL category R)

- Find equivalent ratios (equivalent fractions)
- Find unit rates

## Percents (IXL category S)

- Convert fluently between fractions, decimals, and percents
- Find the percent of a number

## The Coordinate Plane (IXL category X)

- Graph points in four quadrants

Name _____ Class _____ Date _____

# Reteaching 4-5

## Equivalent Fractions

*Equivalent fractions* are fractions that name the same amount.

To find equivalent fractions, multiply or divide the numerator and denominator by the same number.

$\frac{2}{5} \overset{\times 2}{=} \frac{4}{10}$ $\qquad$ $\frac{4}{10} \overset{\div 2}{=} \frac{2}{5}$

So, $\frac{2}{5} = \frac{4}{10}$.

To write a fraction in *simplest form,* divide the numerator and denominator by their greatest common factor.

*Example:* Write $\frac{8}{12}$ in simplest form.

① Find the greatest common factor.

8: 1, 2, **4,** 8
12: 1, 2, 3, **4,** 6, 12

The GCF is 4.

② Divide the numerator and denominator by the GCF.

$\frac{8}{12} \overset{\div 4}{=} \frac{2}{3}$

$\frac{8}{12}$ in simplest form is $\frac{2}{3}$.

**Write two fractions equivalent to each fraction.**

1. $\frac{5}{6}$ _____ 2. $\frac{3}{7}$ _____ 3. $\frac{7}{8}$ _____
4. $\frac{3}{11}$ _____ 5. $\frac{3}{6}$ _____ 6. $\frac{1}{5}$ _____

**State whether each fraction is in simplest form. If it is not, write it in simplest form.**

7. $\frac{12}{15}$ _____ 8. $\frac{8}{15}$ _____
9. $\frac{15}{22}$ _____ 10. $\frac{14}{30}$ _____

**Write each fraction in simplest form.**

11. $\frac{12}{24}$ _____ 12. $\frac{10}{200}$ _____ 13. $\frac{56}{64}$ _____
14. $\frac{3}{9}$ _____ 15. $\frac{130}{170}$ _____ 16. $\frac{12}{16}$ _____
17. $\frac{7}{49}$ _____ 18. $\frac{22}{33}$ _____ 19. $\frac{30}{225}$ _____

20. There are 420 girls out of 1,980 people attending a state fair. In simplest form, what fraction of the people attending are girls?

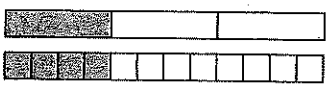
_____

Name _____ Class _____ Date _____

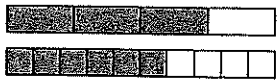
# Practice 4-5

## Equivalent Fractions

**Name the fractions modeled and determine if they are equivalent.**

1. 

2. 

3. 

_____ _____ _____

**By what number can you multiply the numerator and denominator of the first fraction to get the second fraction?**

4. $\frac{2}{3}, \frac{4}{6}$ _____

5. $\frac{3}{8}, \frac{15}{40}$ _____

6. $\frac{7}{10}, \frac{42}{60}$ _____

7. $\frac{3}{4}, \frac{9}{12}$ _____

**By what number can you divide the numerator and denominator of the first fraction to get the second fraction?**

8. $\frac{6}{8}, \frac{3}{4}$ _____

9. $\frac{70}{80}, \frac{7}{8}$ _____

10. $\frac{15}{60}, \frac{1}{4}$ _____

11. $\frac{75}{100}, \frac{3}{4}$ _____

**Write two equivalent fractions for each fraction.**

12. $\frac{3}{10}$ _____

13. $\frac{7}{8}$ _____

14. $\frac{5}{6}$ _____

15. $\frac{3}{4}$ _____

16. $\frac{15}{20}$ _____

17. $\frac{8}{12}$ _____

18. $\frac{15}{45}$ _____

19. $\frac{8}{32}$ _____

**State whether each fraction is in simplest form. If it is not, write it in simplest form.**

20. $\frac{15}{35}$ _____

21. $\frac{22}{55}$ _____

22. $\frac{25}{32}$ _____

23. $\frac{34}{36}$ _____

24. $\frac{19}{57}$ _____

25. $\frac{125}{200}$ _____

26. $\frac{27}{54}$ _____

27. $\frac{30}{41}$ _____

28. $\frac{85}{110}$ _____

29. A library has 10 camping guide books, 4 fishing guide books, and 6 hiking guide books. In simplest form, what fraction of the guide books are camping or hiking guide books?

_____

30. An orchard has 48 apple trees, 30 peach trees, and 42 pear trees. In simplest form, what fraction of the trees are peach trees?

_____

Name _____ Class _____ Date _____

# Practice 4-6

Mixed Numbers and Improper Fractions

**What mixed number represents the amount shaded?**

1.  _____

2.  _____

3.  _____

4.  _____

**Write each mixed number as an improper fraction.**

5. $1\frac{7}{8}$ _____

6. $2\frac{3}{4}$ _____

7. $7\frac{1}{3}$ _____

8. $3\frac{3}{4}$ _____

9. $4\frac{1}{4}$ _____

10. $5\frac{5}{6}$ _____

11. $2\frac{3}{8}$ _____

12. $4\frac{7}{8}$ _____

13. $2\frac{3}{5}$ _____

14. $3\frac{11}{12}$ _____

15. $2\frac{7}{12}$ _____

16. $5\frac{4}{15}$ _____

**Write each improper fraction as a mixed number in simplest form.**

17. $\frac{15}{2}$ _____

18. $\frac{8}{3}$ _____

19. $\frac{5}{2}$ _____

20. $\frac{11}{10}$ _____

21. $\frac{7}{6}$ _____

22. $\frac{9}{8}$ _____

23. $\frac{27}{12}$ _____

24. $\frac{26}{18}$ _____

25. $\frac{35}{21}$ _____

26. $\frac{17}{5}$ _____

27. $\frac{17}{6}$ _____

28. $\frac{36}{15}$ _____

29. Find the improper fraction with a denominator of 6 that is equivalent to $5\frac{1}{2}$.

_____

30. Find the improper fraction with a denominator of 12 that is equivalent to $10\frac{1}{4}$.

_____

# Chapters 1–4 Answers (continued)

team students and 5 rows of 5 color guard students

## Practice (adapted) 4-4

**1.** 4 **2.** 9 **3.** 1 **4.** 12 **6.** 6 **7.** 5 **8.** 25 **9.** 7 **10.** 8 **11.** 5 **12.** 1 **13.** 4 **14.** 9 **15.** 5 **16.** 3 **17.** 24 **18.** 7 **19.** 1,700 and 2,550 **20.** 958 and 1,437

## Activity Lab 4-4

**1.** 12 centerpieces; 3 carnations, 2 roses, 4 tulips
**2.** 6 centerpieces; 6 carnations; 4 roses, 8 tulips, 5 daisies
**3.** 2 centerpieces; 18 carnations, 12 roses, 20 tulips, 15 daisies
**4.** 9 bouquets; 3 red, 4 blue, 6 green **5.** 9 bouquets; 3 red, 4 blue, 6 green, 12 yellow **6.** 9 bouquets; 3 red, 4 blue, 6 green, 10 yellow

## Reteaching 4-4

**1.** 1, 2, 5, 10; 1, 3, 5, 15; 5 **2.** 1, 2, 7, 14; 1, 3, 7, 21; 7 **3.** 1, 3, 9; 1, 3, 7, 21; 3 **4.** 1, 2, 3, 4, 6, 12; 1, 13; 1 **5.** 1, 3, 5, 15; 1, 5, 25; 5 **6.** 1, 3, 5, 15; 1, 2, 3, 6, 9, 18; 3 **7.** 1, 2, 3, 4, 6, 9, 12, 18, 36; 1, 2, 3, 4, 6, 8, 12, 16, 24, 48; 12 **8.** 1, 2, 3, 4, 6, 8, 12, 24; 1, 2, 3, 5, 6, 10, 15, 30; 6 **9.** 3 **10.** 15 **11.** 6 **12.** 10 **13.** 4 **14.** 24

## Enrichment 4-4

**1.** 12 and 18 **2.** 24 and 56 **3.** 8, 16, and 24 **4.** 9 and 54, 18 and 45, 27 and 36 **5.** 5, 15, and 25; 5, 10 and 30; 10, 15, and 20
**6.** Check students' answers.

## Puzzle 4-4

**1.** 3 **2.** 12 **3.** 30 **4.** 4 **5.** 14 **6.** 15 **7.** 21 **8.** 9

## Practice (regular) 4-5

**1.** $\frac{1}{3}; \frac{4}{12}$; yes **2.** $\frac{1}{2}; \frac{3}{5}$; no **3.** $\frac{3}{4}; \frac{6}{10}$; no **4.** 2 **5.** 5 **6.** 6 **7.** 3 **8.** 2 **9.** 10 **10.** 15 **11.** 25 **12–19.** Sample answers are given. **12.** $\frac{6}{20}; \frac{9}{30}$ **13.** $\frac{14}{16}; \frac{21}{24}$ **14.** $\frac{10}{12}; \frac{15}{18}$ **15.** $\frac{9}{12}; \frac{15}{20}$ **16.** $\frac{3}{4}; \frac{6}{8}$ **17.** $\frac{2}{3}; \frac{4}{6}$ **18.** $\frac{1}{3}; \frac{3}{9}$ **19.** $\frac{1}{4}; \frac{3}{12}$ **20.** no; $\frac{3}{7}$ **21.** no; $\frac{2}{5}$ **22.** yes **23.** no; $\frac{17}{18}$ **24.** no; $\frac{1}{3}$ **25.** no; $\frac{5}{8}$ **26.** no; $\frac{1}{2}$ **27.** yes **28.** no; $\frac{17}{22}$ **29.** $\frac{4}{5}$ **30.** $\frac{1}{4}$

## Guided Problem Solving 4-5

**1.** Explain why the engineers wrote the driving time differently. **2.** They are the same. **3.** Sample answers: seconds, minutes, hours, days, weeks, months, years **4.** minutes **5.** hours **6.** One engineer wrote the time in minutes and the other wrote it in hours. **7.** Sample answer: Minutes and hours are reasonable units when talking about driving time between two towns. **8.** 15 minutes

## Practice (adapted) 4-5

**1.** $\frac{1}{3}; \frac{4}{12}$; yes **2.** $\frac{1}{2}; \frac{3}{5}$; no **3.** $\frac{3}{4}; \frac{6}{10}$; no **4.** 2 **5.** 5 **6.** 6 **7.** 2 **8.** 10 **9.** 15 **10–15.** Sample answers are given. **10.** $\frac{6}{20}; \frac{9}{30}$ **11.** $\frac{14}{16}; \frac{21}{24}$ **12.** $\frac{10}{12}; \frac{15}{18}$ **13.** $\frac{3}{4}; \frac{6}{8}$ **14.** $\frac{2}{3}; \frac{4}{6}$ **15.** $\frac{1}{3}; \frac{3}{9}$ **16.** no; $\frac{3}{7}$ **17.** no; $\frac{2}{5}$ **18.** no; $\frac{17}{18}$ **19.** no; $\frac{1}{3}$ **20.** no; $\frac{1}{2}$ **21.** yes **22.** $\frac{4}{5}$

## Activity Lab 4-5

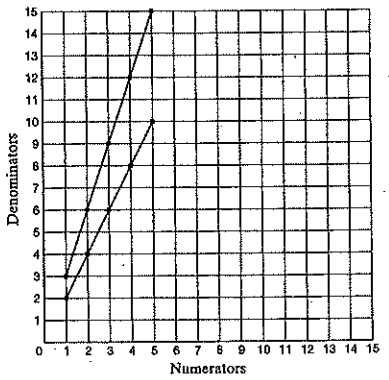
**1.** Check students' work. **2.** $\frac{1}{4}$ **3.** $\frac{1}{4}$ unit **4a.** $\frac{1}{2}$ **4b.** $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$
**5.** $C = \frac{1}{16}$ unit; Area of piece $D = \frac{1}{32}$ unit **6a.** $E = 2C$
**6b.** $E = \frac{1}{8}$ unit **7a.** $\frac{5}{32}$ unit **7b.** $F = D + 2C = \frac{5}{32}$ unit
**8.** Check that the sum of the areas of the pieces is 1.

## Reteaching 4-5

**1–6.** Sample answers are given. **1.** $\frac{10}{12}; \frac{15}{18}$ **2.** $\frac{6}{14}; \frac{9}{21}$ **3.** $\frac{14}{16}; \frac{28}{32}$ **4.** $\frac{6}{22}; \frac{9}{33}$ **5.** $\frac{6}{12}; \frac{1}{2}$ **6.** $\frac{2}{10}; \frac{5}{25}$ **7.** no; $\frac{4}{5}$ **8.** yes **9.** yes **10.** no; $\frac{7}{15}$ **11.** $\frac{1}{2}$ **12.** $\frac{1}{20}$ **13.** $\frac{7}{8}$ **14.** $\frac{1}{3}$ **15.** $\frac{13}{17}$ **16.** $\frac{3}{4}$ **17.** $\frac{1}{7}$ **18.** $\frac{2}{3}$ **19.** $\frac{2}{15}$ **20.** $\frac{7}{33}$

## Enrichment 4-5

**1–5.** Sample answers are given.
**1.** Sample: $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}$
**2.**




**3.** Points form a line segment, and each point is one space right and three spaces up from the prior point. **4.** Points will form a line segment, and each point is one space right and two spaces up from the prior point. **5.** Sample answer: $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$; Check students' answers. **6.** The line segment for $\frac{1}{3}$ is steeper than the line segment for $\frac{1}{2}$. The larger the denominator, the steeper the line segment will be.

## Puzzle 4-5

**1.** I **2.** J **3.** R **4.** U **5.** T **6.** P **7.** E
JUPITER

## Practice (regular) 4-6

**1.** $2\frac{3}{4}$ **2.** $3\frac{5}{6}$ **3.** $4\frac{5}{8}$ **4.** $6\frac{2}{5}$ **5.** $\frac{15}{8}$ **6.** $\frac{11}{4}$ **7.** $\frac{22}{3}$ **8.** $\frac{15}{4}$ **9.** $\frac{17}{4}$ **10.** $\frac{35}{6}$ **11.** $\frac{19}{8}$ **12.** $\frac{39}{8}$ **13.** $\frac{13}{5}$ **14.** $\frac{47}{12}$ **15.** $\frac{31}{12}$ **16.** $\frac{79}{15}$ **17.** $7\frac{1}{2}$ **18.** $2\frac{2}{3}$

# Chapters 1–4 Answers (continued)

**19.** $2\frac{1}{2}$ **20.** $1\frac{1}{10}$ **21.** $1\frac{1}{6}$ **22.** $1\frac{1}{8}$ **23.** $2\frac{1}{4}$ **24.** $1\frac{4}{9}$ **25.** $1\frac{2}{3}$ **26.** $3\frac{2}{5}$ **27.** $2\frac{5}{6}$ **28.** $2\frac{2}{5}$ **29.** $\frac{33}{6}$ **30.** $\frac{123}{12}$

## Guided Problem Solving 4-6

**1.** two slices; 50 guests; 12 slices **2.** Write the number of melons as a mixed number; then find out how many whole melons are needed. **3.** 100 slices **4.** 12 slices **5.** division **6.** $8\frac{1}{3}$ melons **7.** 9 melons **8.** Parts of melons are not usually sold in bulk. **9.** $6\frac{11}{16}$; 7 buses

## Practice (adapted) 4-6

**1.** $2\frac{3}{4}$ **2.** $3\frac{5}{6}$ **3.** $4\frac{5}{8}$ **4.** $\frac{15}{8}$ **5.** $\frac{11}{4}$ **6.** $\frac{22}{3}$ **7.** $\frac{15}{4}$ **8.** $\frac{17}{4}$ **9.** $\frac{35}{6}$ **10.** $\frac{19}{8}$ **11.** $\frac{39}{8}$ **12.** $\frac{13}{5}$ **13.** $7\frac{1}{2}$ **14.** $2\frac{2}{3}$ **15.** $2\frac{1}{2}$ **16.** $1\frac{1}{10}$ **17.** $1\frac{1}{6}$ **18.** $1\frac{1}{8}$ **19.** $2\frac{1}{4}$ **20.** $1\frac{4}{9}$ **21.** $1\frac{2}{3}$ **22.** $\frac{33}{6}$

## Activity Lab 4-6

**1.** $\frac{27}{4}$ **2.** $5\frac{3}{7}$ **3.** $\frac{58}{7}$ **4.** $3\frac{9}{11}$ **5.** $\frac{227}{16}$ **6.** $1\frac{13}{43}$ **7.** $\frac{262}{11}$ **8.** $1\frac{29}{31}$ **9.** $\frac{1,247}{34}$ **10.** $10\frac{3}{8}$ **11.** $\frac{2,325}{44}$ **12.** $18\frac{4}{5}$ **13.** $\frac{3,187}{67}$ **14.** $2\frac{55}{64}$ **15.** $\frac{10,896}{47}$ **16.** $462\frac{4}{5}$

## Reteaching 4-6

**1.** $\frac{16}{7}$ **2.** $\frac{23}{4}$ **3.** $\frac{53}{8}$ **4.** $\frac{34}{10}$ **5.** $\frac{28}{3}$ **6.** $\frac{24}{5}$ **7.** $\frac{27}{8}$ **8.** $\frac{17}{7}$ **9.** $\frac{49}{6}$ **10–15.** Check students' work. **16.** $1\frac{1}{8}$ **17.** $3\frac{1}{2}$ **18.** $2\frac{2}{3}$ **19.** $1\frac{3}{4}$ **20.** $6\frac{2}{3}$ **21.** $3\frac{2}{5}$ **22.** $1\frac{4}{5}$ **23.** $3\frac{5}{8}$ **24.** $2\frac{2}{3}$

## Enrichment 4-6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titus | | | | | | | | | | | | | | X | |
| Ferns | | | | | | | X | | | | | | | X | |
| Violets | | | | | | X | | | | | | X | | | |
| Herman | | | | X | | | | X | | | | X | | | |
| Whiskers | | | X | | | X | | | X | | | X | | | X |

| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titus | | | | | | | | | | | | | X | | |
| Ferns | | | | | | X | | | | | | | X | | |
| Violets | | | X | | | | | | X | | | | | | X |
| Herman | X | | | | X | | | | X | | | | X | | |
| Whiskers | | | X | | | X | | | X | | | X | | | X |

**1.** 14th and 28th **2.** once **3.** no **4.** 28 days **5.** 12th and 24th

## Puzzle 4-6

| | | |
|---|---|---|
| ~~3~~ | $\frac{11}{2}$ | ~~12~~ |
| $\frac{2}{2}$ | $\frac{5}{2}$ | $\frac{1}{2}$ |
| $\frac{2}{3}$ | $\frac{2}{1}$ | ~~4~~ |

| | | |
|---|---|---|
| $\frac{68}{7}$ | $\frac{21}{7}$ | $\frac{222}{21}$ |
| ~~14~~ | $\frac{78}{14}$ | ~~206~~ |
| $\frac{370}{70}$ | $\frac{14}{7}$ | $\frac{74}{4}$ |

| | | |
|---|---|---|
| ~~3~~ | $\frac{25}{8}$ | $\frac{11}{3}$ |
| $\frac{50}{3}$ | ~~8~~ | ~~8~~ |
| $\frac{12}{3}$ | ~~8~~ | $\frac{31}{4}$ |

| | | |
|---|---|---|
| ~~8~~ | $\frac{22}{8}$ | $\frac{11}{4}$ |
| $\frac{63}{12}$ | ~~8~~ | $\frac{100}{25}$ |
| $\frac{50}{4}$ | $\frac{10}{4}$ | ~~8~~ |

| | | |
|---|---|---|
| $\frac{10}{8}$ | ~~8~~ | $\frac{18}{8}$ |
| $\frac{45}{8}$ | $\frac{102}{16}$ | $\frac{21}{8}$ |
| ~~4~~ | $\frac{59}{3}$ | ~~8~~ |

| | | |
|---|---|---|
| $\frac{20}{10}$ | $\frac{10}{5}$ | ~~5~~ |
| ~~8~~ | $\frac{68}{25}$ | $\frac{51}{15}$ |
| ~~5~~ | $\frac{16}{5}$ | $\frac{32}{5}$ |

## Practice (regular) 4-7

**1.** 10 **2.** 6 **3.** 24 **4.** 40 **5.** 30 **6.** 60 **7.** 45 **8.** 30 **9.** 18 **10.** 15 **11.** 20 **12.** 63 **13.** 24 **14.** 24 **15.** 36 **16.** 60 **17.** 120 **18.** 20 **19.** 126 **20.** 105 **21.** 72 **22.** 30 **23.** 120 **24.** 72 **25.** 168 **26.** 336 **27.** 56 **28.** 120 **29.** 240 **30.** 90 **31.** 48 **32.** 80 **33.** 240 **34.** 3 packages of hot dogs, 2 packages of buns

## Guided Problem Solving 4-7

**1.** fifteenth, fortieth **2.** Find which customer will be the first to get both a free CD and a free DVD. **3.** the 15th, 30th, 45th, 60th, 75th, 90th, 105th, 120th, 135th, 150th, etc. **4.** the 40th, 80th, 120th, 160th, 200th, etc. **5.** the 120th customer **6.** The answer should be the LCM of 15 and 40. **7.** 30 days

## Practice (adapted) 4-7

**1.** 10 **2.** 6 **3.** 24 **4.** 40 **5.** 30 **6.** 60 **7.** 45 **8.** 30 **9.** 18 **10.** 15 **11.** 20 **12.** 63 **13.** 126 **14.** 105 **15.** 72 **16.** 30 **17.** 120 **18.** 72 **19.** 168 **20.** 336 **21.** 56 **22.** 3 packages of hot dogs, 2 packages of buns

## Activity Lab 4-7

**1–2.**

| Numbers | LCM | GCF | Product of original numbers | Product of LCM and GCF |
|---|---|---|---|---|
| 12, 15 | | | | |
| 8, 24 | | | | |
| 7, 12 | | | | |
| 27, 36 | | | | |

**3.** The values are equivalent; is equal to **4a.** 486 **4b.** 9 **4c.** 54 **5.** 120 **6.** 72 **7.** 100 **8.** 84

Name _____ Class _____ Date _____

# Reteaching 5-2

## Fractions With Like Denominators

Add: $\frac{1}{6} + \frac{3}{6}$

① Combine numerators over the denominator. $\frac{1}{6} + \frac{3}{6} = \frac{1+3}{6}$

② Add numerators. $= \frac{4}{6}$

③ Simplify, if possible. $= \frac{2}{3}$

$\frac{1}{6} + \frac{3}{6} = \frac{2}{3}$

Subtract: $\frac{7}{10} - \frac{2}{10}$

① Combine numerators over the denominator. $\frac{7}{10} - \frac{2}{10} = \frac{7-2}{10}$

② Subtract numerators. $= \frac{5}{10}$

③ Simplify, if possible. $= \frac{1}{2}$

$\frac{7}{10} - \frac{2}{10} = \frac{1}{2}$

**Find each sum.**

1. $\frac{1}{5} + \frac{3}{5}$ _____
2. $\frac{4}{6} + \frac{1}{6}$ _____
3. $\frac{3}{12} + \frac{3}{12}$ _____
4. $\frac{6}{10} + \frac{5}{10}$ _____
5. $\frac{3}{10} + \frac{2}{10}$ _____
6. $\frac{6}{12} + \frac{3}{12}$ _____
7. $\frac{5}{8} + \frac{1}{8}$ _____
8. $\frac{3}{8} + \frac{9}{8}$ _____
9. $\frac{3}{8} + \frac{6}{8}$ _____

**Find each difference.**

10. $\frac{6}{8} - \frac{3}{8}$ _____
11. $\frac{9}{10} - \frac{3}{10}$ _____
12. $\frac{3}{4} - \frac{1}{4}$ _____
13. $\frac{7}{12} - \frac{1}{12}$ _____
14. $\frac{8}{10} - \frac{6}{10}$ _____
15. $\frac{4}{6} - \frac{2}{6}$ _____
16. $\frac{5}{10} - \frac{1}{10}$ _____
17. $\frac{7}{12} - \frac{6}{12}$ _____
18. $\frac{9}{10} - \frac{4}{10}$ _____

**Find each sum or difference.**

19. $\frac{2}{7} + \frac{2}{7} - \frac{1}{7}$ _____
20. $\frac{10}{100} + \frac{20}{100} + \frac{90}{100}$ _____
21. $\frac{2}{5} - \frac{2}{5} + \frac{5}{5}$ _____
22. $\frac{10}{11} - \left(\frac{2}{11} + \frac{4}{11}\right)$ _____
23. $\frac{8}{10} - \frac{2}{10} - \frac{1}{10}$ _____
24. $\frac{62}{80} - \frac{10}{80} - \frac{5}{80}$ _____

25. For school photos, $\frac{1}{5}$ of the students choose to have a blue background, $\frac{2}{5}$ of the students choose to have a purple background, and $\frac{1}{5}$ of the students choose to have a gray background. What portion of the students choose to have another background color?

_____

Name _____ Class _____ Date _____

# Reteaching 5-3

## Fractions With Unlike Denominators

To add or subtract fractions with unlike denominators, you can use equivalent fractions.

*Example 1:* Find $\frac{5}{6} + \frac{1}{2}$.

① Find the least common denominator of 6 and 2.

The LCD is 6.

② Write equivalent fractions using the LCD.

$\frac{5}{6} = \frac{5}{6}$ $\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$

③ Add. Write the sum in simplest form.

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

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

*Example 2:* Find $\frac{4}{5} - \frac{1}{3}$.

① Find the least common denominator of 5 and 3.

The LCD is 15.

② Write equivalent fractions using the LCD.

$\frac{4}{5} = \frac{4 \times 3}{5 \times 3} = \frac{12}{15}$ $\frac{1}{3} = \frac{1 \times 5}{3 \times 5} = \frac{5}{15}$

③ Subtract. Write the difference in simplest form.

$$\frac{4}{5} - \frac{1}{3} = \frac{12}{15} - \frac{5}{15}$$
$$= \frac{12-5}{15}$$
$$= \frac{7}{15}$$

$\frac{4}{5} - \frac{1}{3} = \frac{7}{15}$

**Find each sum or difference.**

1. $\frac{1}{2} + \frac{3}{4}$ _____
2. $\frac{11}{16} - \frac{5}{16}$ _____
3. $\frac{1}{6} + \frac{1}{3}$ _____
4. $\frac{7}{8} - \frac{1}{2}$ _____
5. $\frac{9}{10} + \frac{1}{2}$ _____
6. $\frac{2}{3} + \frac{5}{9}$ _____
7. $\frac{1}{2} + \frac{7}{10}$ _____
8. $\frac{3}{4} - \frac{5}{12}$ _____
9. $\frac{5}{8} + \frac{1}{4}$ _____
10. $\frac{15}{16} - \frac{1}{4}$ _____
11. $\frac{7}{12} - \frac{1}{3}$ _____
12. $\frac{5}{6} + \frac{1}{3}$ _____
13. $\frac{7}{8} - \frac{1}{4}$ _____
14. $\frac{3}{5} + \frac{1}{6}$ _____
15. $\frac{1}{12} + \frac{1}{10}$ _____
16. $\frac{7}{8} - \frac{3}{10}$ _____
17. $\frac{2}{6} + \frac{3}{4}$ _____
18. $\frac{3}{8} - \frac{1}{3}$ _____
19. $\frac{5}{8} + \frac{2}{3}$ _____
20. $\frac{3}{5} - \frac{1}{2}$ _____
21. $\frac{1}{8} + \frac{1}{5}$ _____

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# Practice 5-3

## Fractions With Unlike Denominators

**Write each sum or difference in simplest form.**

1. $\frac{1}{4} + \frac{2}{3}$ _____

2. $\frac{2}{5} - \frac{1}{10}$ _____

3. $\frac{1}{6} + \frac{1}{4}$ _____

4. $\frac{5}{8} - \frac{1}{4}$ _____

5. $\frac{7}{8} - \frac{1}{2}$ _____

6. $\frac{3}{10} + \frac{4}{5}$ _____

7. $\frac{5}{6} - \frac{2}{5}$ _____

8. $\frac{5}{12} - \frac{1}{4}$ _____

9. $\frac{7}{16} + \frac{1}{8}$ _____

10. $\frac{11}{16} + \frac{5}{8}$ _____

11. $\frac{2}{7} + \frac{1}{2}$ _____

12. $\frac{4}{5} + \frac{3}{4}$ _____

13. Jeanie has a $\frac{3}{4}$-yard piece of ribbon. She needs one $\frac{3}{8}$-yard piece and one $\frac{1}{2}$-yard piece. Can she cut the piece of ribbon into the two smaller pieces? Explain.

_____

**Simplify by using mental math.**

14. $\frac{7}{10} + \frac{2}{5} - \frac{1}{10}$ _____

15. $\frac{5}{100} + \frac{20}{100} + \frac{30}{100}$ _____

16. $\frac{2}{8} - \frac{2}{4} + \frac{5}{8}$ _____

17. $\frac{10}{12} - \left(\frac{1}{12} + \frac{4}{6}\right)$ _____

18. $\frac{6}{10} - \frac{2}{10} + \frac{1}{2}$ _____

19. $\frac{8}{16} - \frac{1}{4} + \frac{8}{16}$ _____

20. For the class photo, $\frac{1}{5}$ of the students wore jeans, $\frac{2}{10}$ of the students wore shorts, and $\frac{4}{10}$ of the students wore a skirt. What fraction of the students wore something else?

_____

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# Practice 5-4

## Adding Mixed Numbers

**Complete to rename each mixed number.**

1. $3\frac{9}{8} = 4\frac{?}{8}$ _____
2. $5\frac{7}{4} = 6\frac{?}{4}$ _____
3. $2\frac{17}{12} = 3\frac{?}{12}$ _____

**Write each sum in simplest form.**

4. $4\frac{3}{10} + 5\frac{2}{5}$ _____
5. $3\frac{7}{8} + 2\frac{1}{2}$ _____
6. $5\frac{2}{3} + 3\frac{1}{4}$ _____
7. $6\frac{3}{4} + 2\frac{1}{2}$ _____
8. $1\frac{1}{12} + 3\frac{1}{6}$ _____
9. $9\frac{2}{5} + 10\frac{3}{10}$ _____
10. $7\frac{1}{3} + 5\frac{11}{12}$ _____
11. $11\frac{7}{10} + 4$ _____
12. $2\frac{2}{3} + 4\frac{3}{4}$ _____
13. $7\frac{3}{4} + 2\frac{7}{8}$ _____
14. $4\frac{1}{2} + 3\frac{5}{6}$ _____
15. $7\frac{2}{3} + 1\frac{5}{6}$ _____
16. $2\frac{1}{4} + 4\frac{3}{5}$ _____
17. $5\frac{3}{8} + 7\frac{1}{4}$ _____
18. $14\frac{5}{16} + 8\frac{3}{8}$ _____
19. $\frac{11}{12} + 4\frac{5}{12}$ _____
20. $27\frac{2}{5} + 3\frac{4}{5}$ _____
21. $7\frac{1}{6} + 9\frac{7}{12}$ _____

22. Estimate the length of rope needed to go around a triangle with sides $6\frac{1}{2}$ feet, $7\frac{3}{4}$ feet, and $10\frac{1}{4}$ feet.

_____

23. Sam grew three pumpkins for the pumpkin growing contest. The pumpkins weighed $24\frac{1}{8}$ pounds, $18\frac{2}{4}$ pounds, and $32\frac{5}{16}$ pounds. Find the combined total weight of Sam's pumpkins.

_____

**Compare using <, =, or >. Use benchmarks to help.**

24. $50\frac{7}{10} + 49\frac{1}{5} \square 101$
25. $5\frac{3}{4} + 5\frac{1}{8} \square 11\frac{1}{2}$
26. $20\frac{1}{5} + 4\frac{9}{10} \square 25$
27. $22\frac{1}{9} + 8\frac{3}{4} \square 31\frac{11}{12}$
28. $16\frac{6}{12} + 18\frac{4}{9} \square 34.5$
29. $1\frac{1}{3} + 2\frac{1}{8} \square 3.5$

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# Reteaching 5-5

## Subtracting Mixed Numbers

Some mixed numbers can be subtracted mentally.

*Example 1:* Find $5\frac{2}{3} - 2\frac{1}{6}$.

① Subtract the whole numbers.

$$5 - 2 = 3$$

② Then, subtract the fractions.

$$\frac{2}{3} - \frac{1}{6} = \frac{4}{6} - \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$$

③ Combine the two parts.

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

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

Sometimes you must *rename* the first fraction before subtracting.

*Example 2:* Find $6\frac{1}{2} - 2\frac{3}{4}$.

① Write with a common denominator.

$$6\frac{1}{2} - 2\frac{3}{4} = 6\frac{2}{4} - 2\frac{3}{4}$$

② Rename $6\frac{2}{4}$. $= 5\frac{6}{4} - 2\frac{3}{4}$

③ Subtract the whole numbers. Then, subtract the fractions. Simplify, if necessary. $= 3\frac{3}{4}$

$$6\frac{1}{2} - 2\frac{3}{4} = 3\frac{3}{4}$$

**Find each difference.**

1. $7\frac{7}{10} - 2\frac{3}{10}$ _____
2. $3\frac{3}{4} - 1\frac{1}{2}$ _____
3. $6\frac{2}{3} - 2\frac{1}{6}$ _____
4. $9\frac{7}{8} - 7\frac{3}{4}$ _____
5. $8\frac{1}{2} - 3\frac{1}{4}$ _____
6. $14\frac{1}{3} - 8\frac{1}{4}$ _____
7. $12\frac{1}{3} - 9\frac{2}{3}$ _____
8. $6\frac{5}{8} - 2\frac{3}{4}$ _____
9. $7\frac{5}{7} - 4\frac{13}{14}$ _____
10. $10\frac{2}{3} - 7\frac{5}{6}$ _____
11. $5\frac{7}{16} - 1\frac{1}{2}$ _____
12. $8\frac{2}{5} - 3\frac{2}{3}$ _____
13. $6\frac{1}{8} - 3\frac{1}{16}$ _____
14. $9\frac{5}{12} - 5\frac{3}{4}$ _____
15. $12\frac{3}{4} - 6\frac{1}{8}$ _____
16. $7\frac{2}{5} - 2\frac{1}{4}$ _____
17. $15\frac{5}{12} - 8\frac{1}{3}$ _____
18. $4\frac{1}{10} - 2\frac{4}{5}$ _____

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# Chapters 5–8 Answers

## Chapter 5

### Practice (regular) 5-1

**1.** $\frac{5}{8}$; $\frac{1}{2}$ **2.** $\frac{9}{10}$; 1 **3.** 1 **4.** 2 **5.** $\frac{1}{2}$ **6.** $1\frac{1}{2}$ **7.** $\frac{1}{2}$ **8.** 1 **9.** 2 **10.** 7 **11.** 10 **12.** 4 **13.** 5 **14.** 6 **15.** Sample answer: $\frac{3}{8}, \frac{2}{5}, \frac{1}{3}$ **16.** Sample answer: $1\frac{1}{8}, \frac{9}{10}, \frac{11}{12}$ **17.** about \$39 **18.** The bag for \$2.99 is the better buy because the bag weighs about 4 lb, and the oranges cost about \$0.75 per lb. It would cost about \$3.60 to buy 4 lb at \$0.89 per lb.

### Guided Problem Solving 5-1

**1.** Estimate the total width of the coins. **2.** to estimate the widths of the coins **3.** $\frac{11}{16}$ in. **4.** $\frac{1}{2}$ in. **5.** $\frac{11}{16}$ in., $\frac{13}{16}$ in., $\frac{3}{4}$ in., and $\frac{15}{16}$ in. **6.** 1 **7.** 1 **8.** 1 **9.** $3\frac{1}{2}$ in. **10.** More, because most of the estimates were rounded up. **11.** 13 in.

### Practice (adapted) 5-1

**1.** $\frac{5}{8}$; $\frac{1}{2}$ **2.** $\frac{9}{10}$; 1 **3.** 1 **4.** 2 **5.** $\frac{1}{2}$ **6.** $1\frac{1}{2}$ **7.** $\frac{1}{2}$ **8.** 1 **9.** 2 **10.** 7 **11.** 10 **12.** Sample answer: $\frac{3}{8}, \frac{2}{5}, \frac{1}{3}$ **13.** Sample answer: $1\frac{1}{8}, \frac{9}{10}, \frac{11}{12}$ **14.** The bag for \$2.99 is the better buy because the bag weighs about 4 lb, and the oranges cost about \$0.75 per lb. It would cost about \$3.60 to buy 4 lb at \$0.89 per lb.

### Activity Lab 5-1

Check students' work.

### Reteaching 5-1

**1.** 1 **2.** 2 **3.** 1 **4.** 0 **5.** 1 **6.** $\frac{1}{2}$ **7.** $\frac{1}{2}$ **8.** 2 **9.** 1 **10.** $\frac{1}{2}$ **11.** 0 **12.** $\frac{1}{2}$ **13.** $1\frac{1}{2}$ **14.** 0 **15.** $\frac{1}{2}$ **16.** 9 **17.** $\frac{1}{2}$ **18.** 9 **19.** 7 **20.** 9 **21.** 6 **22.** yes **23.** 6 mi

### Enrichment 5-1

**1.** B Flat and Low F **2.** about 2 tons **3.** F and E **4.** about $\frac{1}{2}$ ton **5.** about $\frac{1}{2}$ ton **6.** about 1 ton **7.** about $\frac{1}{2}$ ton less **8.** about 4 tons **9.** Overestimate; the actual weight of all eight bells is a bit less than 4 tons.

### Puzzle 5-1

**1.** $4\frac{1}{2}$ **2.** 2 **3.** 7 **4.** 1 **5.** 8 **6.** $3\frac{1}{2}$ **7.** 3 **8.** $1\frac{1}{2}$ **9.** $2\frac{1}{2}$ **10.** 9 **11.** $6\frac{1}{2}$ **12.** 5 **13.** $9\frac{1}{2}$

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### Practice (regular) 5-2

**1.** $\frac{3}{4}$ **2.** $\frac{3}{10}$ **3.** $\frac{1}{4}$ **4.** $\frac{3}{4}$ **5.** $\frac{7}{8}$ **6.** $\frac{9}{10}$ **7.** $\frac{1}{2}$ **8.** $\frac{1}{2}$ **9.** $\frac{2}{3}$ **10.** $\frac{1}{2}$ c **11.** $\frac{1}{2}$ c **12.** $\frac{1}{8} \approx 0$ **13.** $\frac{7}{10} \approx 1$ **14.** 0 **15.** $\frac{11}{20} \approx \frac{1}{2}$ **16.** $\frac{7}{9} \approx 1$ **17.** $\frac{4}{5} \approx 1$ **18.** $\frac{1}{5}$ **19.** $\frac{5}{9}$ yd

### Guided Problem Solving 5-2

**1.** Determine how much more of your blood is plasma than blood cells. **2.** subtraction **3.** $\frac{11}{20}$ **4.** $\frac{9}{20}$ **5.** $\frac{11}{20} - \frac{9}{20}$ **6.** $\frac{2}{20}$ or $\frac{1}{10}$ **7.** Add $\frac{9}{20}$ to the answer and see whether the sum is $\frac{11}{20}$. **8.** $1\frac{1}{4}$ inches

### Practice (adapted) 5-2

**1.** $\frac{3}{4}$ **2.** $\frac{3}{10}$ **3.** $\frac{1}{4}$ **4.** $\frac{3}{4}$ **5.** $\frac{7}{8}$ **6.** $\frac{9}{10}$ **7.** $\frac{1}{2}$ cup **8.** $\frac{1}{2}$ cup **9.** $\frac{1}{8}$ **10.** $\frac{7}{10}$ **11.** $\frac{11}{20}$ **12.** $\frac{7}{9}$ **13.** $\frac{1}{5}$ **14.** $\frac{5}{9}$ yd

### Activity Lab 5-2

**1.** $\frac{42}{48}$ **2.** $\frac{21}{24}$; $\frac{7}{8}$ **3a.** 6 **3b.** yes **4.** $\frac{43}{46}$ **5.** $\frac{3}{13}$ **6.** $\frac{42}{48}$ **7.** $\frac{59}{72}$ **8.** $\frac{5}{7}$ **9.** $\frac{7}{8}$ **10.** $\frac{5}{6}$ **11.** $\frac{2}{3}$

### Reteaching 5-2

**1.** $\frac{4}{5}$ **2.** $\frac{5}{6}$ **3.** $\frac{1}{2}$ **4.** $1\frac{1}{10}$ **5.** $\frac{1}{2}$ **6.** $\frac{3}{4}$ **7.** $\frac{3}{4}$ **8.** $1\frac{1}{2}$ **9.** $1\frac{1}{8}$ **10.** $\frac{3}{8}$ **11.** $\frac{3}{5}$ **12.** $\frac{1}{2}$ **13.** $\frac{1}{2}$ **14.** $\frac{1}{5}$ **15.** $\frac{1}{3}$ **16.** $\frac{2}{5}$ **17.** $\frac{1}{12}$ **18.** $\frac{1}{2}$ **19.** $\frac{3}{7}$ **20.** $1\frac{1}{5}$ **21.** 1 **22.** $\frac{4}{11}$ **23.** $\frac{1}{2}$ **24.** $\frac{47}{80}$ **25.** $\frac{1}{5}$

### Enrichment 5-2

**1.** ground beef: *W*; ketchup: *W*; eggs: *W*; tomato juice: *W*; bran cereal: *D*; onion flakes: *D*; Worcestershire sauce: *W*; salt: *D*; pepper: *D*; mustard: *W*; ketchup: *W*; brown sugar: *D*

**2.** Dry: $\frac{1}{8}$ c, $\frac{1}{8}$ tsp, $\frac{1}{4}$ tsp; Wet: $\frac{1}{4}$ c, $\frac{1}{2}$ tsp **3.** $\left(\frac{1}{4} + \frac{1}{4}\right)$ c ketchup; $\frac{1}{4}$ c juice; $\left(\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}\right)$ c cereal; $\left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}\right)$ tsp onion flakes; $\frac{1}{2}$ tsp Worcestershire sauce; $\left(\frac{1}{4} + \frac{1}{4}\right)$ tsp salt; $\frac{1}{8}$ tsp pepper; $\left(\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}\right)$ tsp mustard; $\left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}\right)$ tsp brown sugar; $\frac{1}{4}$ c ketchup **4.** 1 lb beef; 1 c ketchup; 4 eggs; $\frac{1}{2}$ c juice; $1\frac{1}{2}$ c cereal; 3 tsp onion flakes; 1 tsp Worcestershire sauce; 1 tsp salt; $\frac{1}{4}$ tsp pepper; 4 tsp mustard; $\frac{1}{2}$ c ketchup; 4 tsp brown sugar

### Puzzle 5-2

3; 11; 4; 10; 8; 16; 12; 2; 5; 9; 14; 6

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# Chapters 5–8 Answers (continued)

## Practice (regular) 5-3

**1.** $\frac{11}{12}$ **2.** $\frac{3}{10}$ **3.** $\frac{5}{12}$ **4.** $\frac{3}{8}$ **5.** $\frac{3}{8}$ **6.** $1\frac{1}{10}$ **7.** $\frac{13}{30}$ **8.** $\frac{1}{6}$ **9.** $\frac{9}{16}$ **10.** $1\frac{5}{16}$ **11.** $\frac{11}{14}$ **12.** $1\frac{11}{20}$ **13.** No, she needs $\frac{3}{8} + \frac{1}{2} = \frac{7}{8}$ yard. She only has $\frac{3}{4}$ yard, or $\frac{6}{8}$ yard; $\frac{7}{8} > \frac{6}{8}$. **14.** 1 **15.** $\frac{11}{20}$ **16.** $\frac{3}{8}$ **17.** $\frac{1}{12}$ **18.** $\frac{9}{10}$ **19.** $\frac{3}{4}$ **20.** $\frac{1}{5}$

## Guided Problem Solving 5-3

**1.** In part (a), you estimate the total rainfall; in part (b), you find the actual sum. **2.** 0; 1 **3.** 1 inch **4.** a common denominator **5.** 40 **6.** $\frac{12}{40}$; $\frac{35}{40}$ **7.** $\frac{47}{40}$ or $1\frac{7}{40}$ inches **8.** Yes, because $1\frac{7}{40}$ is close to 1. **9.** Sample answer: 2 cups; $2\frac{1}{8}$ cups

## Practice (adapted) 5-3

**1.** $\frac{11}{12}$ **2.** $\frac{3}{10}$ **3.** $\frac{5}{12}$ **4.** $\frac{3}{8}$ **5.** $\frac{3}{8}$ **6.** $1\frac{1}{10}$ **7.** $\frac{13}{30}$ **8.** $\frac{1}{6}$ **9.** $\frac{9}{16}$ **10.** $1\frac{5}{16}$ **11.** No; she needs $\frac{3}{8} + \frac{1}{2} = \frac{7}{8}$ yard, but she only has $\frac{3}{4}$ yard, or $\frac{6}{8}$ yard. **12.** 1 **13.** $\frac{11}{20}$ **14.** $\frac{3}{8}$ **15.** $\frac{9}{10}$

## Activity Lab 5-3

**1.** $\frac{159}{216}$ **2.** $\frac{53}{72}$; no **3.** $\frac{363}{280}$; improper **4.** $\frac{392}{475}$ **5.** $\frac{2}{5}$ **6.** $1\frac{31}{48}$ **7.** $2\frac{23}{120}$ **8.** $\frac{9}{32}$ **9.** $2\frac{14}{75}$

## Reteaching 5-3

**1.** $1\frac{1}{4}$ **2.** $\frac{3}{8}$ **3.** $\frac{1}{2}$ **4.** $\frac{3}{8}$ **5.** $1\frac{2}{5}$ **6.** $1\frac{2}{9}$ **7.** $1\frac{1}{5}$ **8.** $\frac{1}{3}$ **9.** $\frac{7}{8}$ **10.** $\frac{11}{16}$ **11.** $\frac{1}{4}$ **12.** $1\frac{1}{6}$ **13.** $\frac{5}{8}$ **14.** $\frac{23}{30}$ **15.** $\frac{11}{60}$ **16.** $\frac{23}{40}$ **17.** $1\frac{1}{12}$ **18.** $\frac{1}{24}$ **19.** $1\frac{7}{24}$ **20.** $\frac{1}{10}$ **21.** $\frac{13}{40}$

## Enrichment 5-3

**1.** $\frac{22}{24} = \frac{11}{12}$ **2.** $\frac{2}{24} = \frac{1}{12}$ **3.** $\frac{89}{100}$ **4.** $\frac{7}{60}$

**5.** $\frac{13}{15}$

| | | |
|---|---|---|
| 10 | 3 | |
| 2 | 1 | 13 |
| 3 | 5 | 15 |

**6.** $\frac{22}{80} = \frac{11}{40}$

| | | |
|---|---|---|
| 72 | 50 | |
| 9 | 5 | 22 |
| 10 | 8 | 80 |

**7.** $\frac{62}{63}$

| | | |
|---|---|---|
| 35 | 27 | |
| 5 | 3 | 62 |
| 9 | 7 | 63 |

**8.** Sample answer: They use the same procedure to find the answer; the box procedure is easier to remember. **9.** Sample answer: $\frac{38}{4}$ or $4\frac{1}{4}$; the method works if you write the mixed numbers as improper fractions.

## Puzzle 5-3

**1–8.** Sample answers are given. **1.** $\frac{3}{6} + \frac{4}{8}$ **2.** $\frac{3}{4} + \frac{6}{8}$ **3.** $\frac{3}{4} - \frac{6}{8}$ or $\frac{3}{6} - \frac{4}{8}$ **4.** $\frac{4}{6} - \frac{3}{8}$ **5.** $\frac{1}{3} + \frac{5}{7}$ **6.** $\frac{1}{5} + \frac{3}{7}$ **7.** $\frac{3}{5} - \frac{1}{7}$ **8.** $\frac{5}{7} - \frac{1}{3}$

## Practice (regular) 5-4

**1.** 1 **2.** 3 **3.** 5 **4.** $9\frac{7}{10}$ **5.** $6\frac{3}{8}$ **6.** $8\frac{11}{12}$ **7.** $9\frac{1}{4}$ **8.** $4\frac{1}{4}$ **9.** $19\frac{7}{10}$ **10.** $13\frac{1}{4}$ **11.** $15\frac{7}{10}$ **12.** $7\frac{5}{12}$ **13.** $10\frac{5}{8}$ **14.** $8\frac{1}{3}$ **15.** $9\frac{1}{2}$ **16.** $6\frac{17}{20}$ **17.** $12\frac{5}{8}$ **18.** $22\frac{11}{16}$ **19.** $5\frac{1}{3}$ **20.** $31\frac{1}{5}$ **21.** $16\frac{3}{4}$ **22.** about 25 ft **23.** $74\frac{15}{16}$ lb **24.** < **25.** < **26.** > **27.** < **28.** > **29.** <

## Guided Problem Solving 5-4

**1.** $4\frac{11}{12}$ feet; $2\frac{3}{4}$ feet; how deep **2.** addition **3.** 12 **4.** $4\frac{11}{12}$; $2\frac{9}{12}$ **5.** $4\frac{11}{12} + 2\frac{9}{12}$ **6.** $7\frac{2}{3}$ feet **7.** Sample answer: Subtract $4\frac{11}{12}$ feet from $7\frac{2}{3}$ feet and see whether the answer is $2\frac{3}{4}$ feet. **8.** No, it will not quite rise to 30 feet.

## Practice (adapted) 5-4

**1.** 1 **2.** 3 **3.** 5 **4.** $9\frac{7}{10}$ **5.** $6\frac{3}{8}$ **6.** $8\frac{11}{12}$ **7.** $9\frac{1}{4}$ **8.** $4\frac{1}{4}$ **9.** $19\frac{7}{10}$ **10.** $13\frac{1}{4}$ **11.** $15\frac{7}{10}$ **12.** $7\frac{5}{12}$ **13.** $10\frac{5}{8}$ **14.** $8\frac{1}{3}$ **15.** $9\frac{1}{2}$ **16.** about 25 ft **17.** $74\frac{15}{16}$ lb **18.** < **19.** < **20.** >

## Activity Lab 5-4

**1.** $1\frac{2}{3}$; $\frac{5}{3}$ **2.** $1\frac{3}{5}$; $\frac{8}{5}$ **3.** $1\frac{5}{8}$; $\frac{13}{8}$ **4.** $1\frac{8}{13}$; $\frac{21}{13}$ **5.** $1\frac{13}{21}$; $\frac{34}{21}$

## Reteaching 5-4

**1.** $5\frac{5}{7}$ **2.** $4\frac{2}{3}$ **3.** $6\frac{1}{2}$ **4.** $12\frac{1}{2}$ **5.** $9\frac{7}{8}$ **6.** $5\frac{9}{10}$ **7.** $8\frac{2}{3}$ **8.** $10\frac{5}{14}$ **9.** $11\frac{7}{8}$ **10.** $6\frac{5}{8}$ **11.** $16\frac{1}{2}$ **12.** $11\frac{1}{15}$ **13.** $15\frac{11}{20}$ **14.** $9\frac{1}{2}$ **15.** $11\frac{1}{10}$ **16.** $9\frac{2}{5}$ **17.** $10\frac{1}{2}$ **18.** $12\frac{11}{16}$

## Enrichment 5-4

**1.**

| | | |
|---|---|---|
| $4\frac{2}{3}$ | $3\frac{1}{3}$ | 2 |
| $2\frac{1}{3}$ | 5 | $2\frac{2}{3}$ |
| 3 | $1\frac{2}{3}$ | $5\frac{1}{3}$ |

**2.**

| | | |
|---|---|---|
| 1 | $4\frac{2}{3}$ | $1\frac{2}{6}$ |
| $3\frac{1}{3}$ | 2 | $1\frac{8}{12}$ |
| $2\frac{2}{3}$ | $\frac{1}{3}$ | 4 |

**3.**

| | | |
|---|---|---|
| $\frac{1}{5}$ | $8\frac{1}{10}$ | $2\frac{7}{10}$ |
| $4\frac{3}{10}$ | $1\frac{2}{5}$ | $5\frac{3}{10}$ |
| $6\frac{1}{2}$ | $1\frac{1}{2}$ | 3 |

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# Chapters 5–8 Answers (continued)

## Puzzle 5-4

1–5.

| | | |
|---|---|---|
| $2\frac{6}{11}$ | $2\frac{7}{11}$ | $2\frac{2}{11}$ |
| $2\frac{1}{11}$ | $2\frac{5}{11}$ | $2\frac{9}{11}$ |
| $2\frac{8}{11}$ | $2\frac{3}{11}$ | $2\frac{4}{11}$ |

| | | |
|---|---|---|
| $1\frac{1}{8}$ | $1\frac{3}{16}$ | $1\frac{3}{8}$ |
| $1\frac{5}{16}$ | $1\frac{5}{16}$ | $1\frac{1}{16}$ |
| $1\frac{1}{4}$ | $1\frac{3}{16}$ | $1\frac{1}{4}$ |

| | | |
|---|---|---|
| $3\frac{1}{3}$ | $2\frac{17}{18}$ | $1\frac{1}{9}$ |
| $1\frac{1}{3}$ | $\frac{17}{18}$ | $4\frac{5}{9}$ |
| $2\frac{1}{6}$ | $3\frac{1}{2}$ | $1\frac{1}{6}$ |

| | | |
|---|---|---|
| $2\frac{1}{5}$ | $1\frac{9}{10}$ | $\frac{2}{5}$ |
| $\frac{7}{10}$ | $2\frac{1}{2}$ | $1\frac{3}{10}$ |
| $1\frac{3}{5}$ | $\frac{1}{10}$ | $2\frac{4}{5}$ |

| | | |
|---|---|---|
| $3\frac{1}{4}$ | $1\frac{3}{4}$ | $5\frac{1}{8}$ |
| $6\frac{1}{2}$ | $2\frac{3}{4}$ | $\frac{7}{8}$ |
| $\frac{3}{8}$ | $5\frac{5}{8}$ | $4\frac{1}{8}$ |

**6.** Check students' work.

## Practice (regular) 5-5

**1.** $6\frac{13}{16}$ **2.** $5\frac{23}{24}$ **3.** $5\frac{3}{5}$ **4.** $2\frac{13}{16}$ **5.** $4\frac{23}{30}$ **6.** $4\frac{1}{2}$ **7.** $1\frac{5}{8}$ **8.** $2\frac{1}{16}$ **9.** $5\frac{5}{6}$ **10.** $\frac{7}{10}$ **11.** $7\frac{1}{12}$ **12.** $3\frac{9}{16}$ **13.** $13\frac{1}{3}$ **14.** $4\frac{3}{20}$ **15.** $2\frac{11}{12}$ **16.** $3\frac{1}{4}$ **17.** $6\frac{1}{12}$ **18.** $14\frac{13}{16}$ **19.** about \$204 **20.** Sample answer: No; she will have only $1\frac{1}{4}$ yds left after the first project, and $1\frac{1}{4} < 1\frac{1}{3}$. **21.** Answers may vary. Check students' work.

## Guided Problem Solving 5-5

**1.** $15\frac{3}{4}$ inches; $18\frac{1}{2}$ inches; How much more **2.** Find the difference in the amounts of snowfall. **3.** $15\frac{3}{4}$ inches **4.** $18\frac{1}{2}$ inches **5.** 4 **6.** $15\frac{3}{4}$, $18\frac{2}{4}$ **7.** $2\frac{3}{4}$ inches **8.** Sample answer: Add $15\frac{3}{4}$ to $2\frac{3}{4}$; the answer should be $18\frac{1}{2}$. **9.** $\frac{1}{3}$ yard; $\frac{14}{6} - 2\left(\frac{5}{6}\right) = \frac{2}{3}$; $\frac{2}{3} \div 2 = \frac{1}{3}$ yard

## Practice (adapted) 5-5

**1.** $6\frac{13}{16}$ **2.** $5\frac{23}{24}$ **3.** $5\frac{3}{5}$ **4.** $2\frac{13}{16}$ **5.** $4\frac{23}{30}$ **6.** $4\frac{1}{2}$ **7.** $1\frac{5}{8}$ **8.** $2\frac{1}{16}$ **9.** $5\frac{5}{6}$ **10.** $\frac{7}{10}$ **11.** $7\frac{1}{12}$ **12.** $3\frac{9}{16}$ **13.** about \$204 **14.** Check students' work.

## Activity Lab 5-5

**1a.** 11 u 73/75 **1b.** $11\frac{73}{75}$ **2a.** 2 u 39/48 **2b.** $2\frac{39}{48}$ **2c.** 2 u 13/16 **2d.** $2\frac{13}{16}$ **2e.** no **3a.** 21.920879 **3b.** Sample answer: There is not enough room in the display to show the mixed numbers. **4.** $4\frac{41}{60}$ **5.** $19\frac{37}{60}$

## Reteaching 5-5

**1.** $5\frac{2}{5}$ **2.** $2\frac{1}{4}$ **3.** $4\frac{1}{2}$ **4.** $2\frac{1}{8}$ **5.** $5\frac{1}{4}$ **6.** $6\frac{1}{12}$ **7.** $2\frac{2}{3}$ **8.** $3\frac{7}{8}$ **9.** $2\frac{11}{14}$ **10.** $2\frac{5}{6}$ **11.** $3\frac{15}{16}$ **12.** $4\frac{11}{15}$ **13.** $3\frac{1}{16}$ **14.** $3\frac{2}{3}$ **15.** $6\frac{5}{8}$ **16.** $5\frac{3}{20}$ **17.** $7\frac{1}{12}$ **18.** $1\frac{3}{10}$

## Enrichment 5-5

**1.** $80\frac{3}{8}$ points **2.** $26\frac{1}{2}$ points **3.** 8 **4a.** $80\frac{3}{8}$ **4b.** $26\frac{4}{8}$ **5.** subtraction **6.** $80\frac{3}{8} - x = 26\frac{4}{8}$ **7.** $53\frac{7}{8}$ **8.** $26\frac{4}{8} + x = 80\frac{3}{8}$ **9.** $75\frac{3}{4} - 18\frac{1}{8} = x$; $x = 57\frac{5}{8}$ **10.** $\frac{17}{24}$ **11.** $3\frac{5}{8}$ **12.** $7\frac{5}{8}$ **13.** $5\frac{7}{8}$

## Puzzle 5-5

$17\frac{1}{5}$; $11\frac{3}{10}$; $7\frac{1}{2}$; $5\frac{1}{2}$; $3\frac{1}{8}$; 0; zero

## Practice (regular) 5-6

**1.** $\frac{3}{17}$ **2.** $\frac{3}{7}$ **3.** $10\frac{3}{5}$ **4.** $5\frac{1}{16}$ **5.** $\frac{2}{5}$ **6.** $\frac{1}{2}$ **7.** $\frac{3}{11}$ **8.** $\frac{3}{4}$ **9.** $\frac{1}{3}$ **10.** $3\frac{3}{16}$ **11.** $5\frac{1}{9}$ **12.** $5\frac{1}{3}$ **13.** Sample answer: $\frac{1}{3} + x = \frac{7}{12}$; $\frac{1}{4}$ **14.** Sample answer: $\frac{9}{10} - x = \frac{7}{15}$; $\frac{13}{30}$ **15.** $78\frac{13}{24}$ lb

## Guided Problem Solving 5-6

**1.** 10-yard; $5\frac{2}{3}$ yards; $3\frac{1}{2}$ yards **2.** Add the two lengths of edging and subtract the sum from 10 yards. **3.** $5\frac{2}{3}$ yards and $3\frac{1}{2}$ yards **4.** $9\frac{1}{6}$ yards **5.** 10 yards **6.** $\frac{5}{6}$ yard **7.** Sample answer: Add $5\frac{2}{3}$, $3\frac{1}{2}$, and $\frac{5}{6}$; the answer should be 10. **8.** $1\frac{5}{12}$ yards

## Practice (adapted) 5-6

**1.** $\frac{3}{17}$ **2.** $\frac{3}{7}$ **3.** $10\frac{3}{5}$ **4.** $5\frac{1}{16}$ **5.** $\frac{2}{5}$ **6.** $\frac{1}{2}$ **7.** $\frac{3}{11}$ **8.** $\frac{3}{4}$ **9.** $\frac{1}{3}$ **10.** $3\frac{3}{16}$ **11.** Sample answer: $\frac{1}{3} + x = \frac{7}{12}$; $\frac{1}{4}$ **12.** Sample answer: $\frac{9}{10} - x = \frac{7}{15}$; $\frac{13}{30}$

## Activity Lab 5-6

**1.** $\frac{2}{5} + x = \frac{7}{8}$; $\frac{19}{40}$ km **2.** $x - \frac{2}{3} = \frac{5}{6}$; $1\frac{1}{2}$ cups **3.** $x + 10\frac{4}{5} = 26\frac{1}{5}$; $15\frac{2}{5}$ miles **4.** $1\frac{1}{4} + \frac{3}{5} + x = 5$; $3\frac{3}{20}$ pounds **5.** Check students' work.

## Reteaching 5-6

**1.** $\frac{3}{5}$; $\frac{3}{5}$; $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$; $\frac{4}{5} = \frac{4}{5}$ **2.** 9; $x - 3\frac{3}{9} = 4\frac{2}{9}$; $\frac{5}{9}$; 7; $7\frac{5}{9}$; $7\frac{5}{9} - 3\frac{3}{9} = 4\frac{2}{9}$; $4\frac{2}{9} = 4\frac{2}{9}$ **3.** $\frac{2}{4} = \frac{1}{2}$ **4.** $\frac{6}{8} = \frac{3}{4}$ **5.** $\frac{3}{10}$ **6.** $\frac{23}{12} = 1\frac{11}{12}$ **7.** $\frac{2}{12} = \frac{1}{6}$ **8.** $\frac{4}{6} = \frac{2}{3}$ **9.** $3\frac{3}{12} = 3\frac{1}{4}$ **10.** $7\frac{3}{12} = 7\frac{1}{4}$

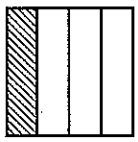
Name _____ Class _____ Date _____

# Reteaching 6-1

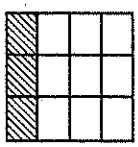
## Multiplying Fractions

You can model $\frac{2}{3}$ of $\frac{1}{4}$.

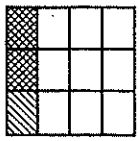
① Show $\frac{1}{4}$.



② Divide into thirds.



③ Shade $\frac{2}{3}$ of the $\frac{1}{4}$.

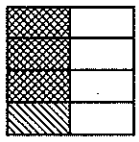


$\frac{2}{3}$ of $\frac{1}{4} = \frac{2}{12} = \frac{1}{6}$

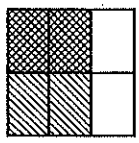
Or you can use multiplication.

$$\frac{2}{3} \text{ of } \frac{1}{4} = \frac{2}{3} \times \frac{1}{4}$$
$$= \frac{2 \times 1}{3 \times 4}$$
$$= \frac{2}{12}$$
$$= \frac{1}{6}$$

**Write the multiplication problem each model represents.**

1. 

_____

2. 

_____

**Find each product.**

3. $\frac{1}{9}$ of $\frac{2}{3}$ _____

4. $\frac{2}{7} \times \frac{1}{2}$ _____

5. $\frac{5}{8} \cdot 6$ _____

6. $\frac{3}{4} \cdot \frac{4}{7}$ _____

7. $\frac{7}{10}$ of $\frac{1}{3}$ _____

8. $\frac{5}{6} \times \frac{3}{4}$ _____

9. $\frac{3}{8}$ of $\frac{7}{10}$ _____

10. $\frac{3}{4} \times \frac{1}{9}$ _____

11. $\frac{2}{9}$ of 8 _____

12. $\frac{1}{3}$ of 2 _____

13. $\frac{5}{9}$ of 4 _____

14. $\frac{3}{4} \cdot \frac{2}{5}$ _____

15. Every day you eat $\frac{1}{4}$ cup of cereal. Your brother eats 5 times as much. How many cups of cereal does your brother eat? _____

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Name _____ Class _____ Date _____

# Practice 6-1

## Multiplying Fractions

**Draw a model to find each product.**

1. $\frac{1}{6} \times \frac{3}{4}$

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

**Find each product.**

3. $\frac{3}{5}$ of 10

4. $\frac{1}{4}$ of 12

5. $\frac{2}{3}$ of 6

6. $\frac{5}{6}$ of $\frac{3}{8}$

7. $\frac{3}{5}$ of $\frac{1}{2}$

8. $\frac{3}{4}$ of 12

9. $\frac{3}{16}$ of 8

10. $\frac{1}{2} \times \frac{5}{6}$

11. $\frac{3}{4} \times \frac{7}{8}$

12. $\frac{3}{5}$ of $\frac{3}{4}$

13. $\frac{1}{2} \cdot \frac{1}{3}$

14. $\frac{1}{8} \times \frac{3}{4}$

15. $\frac{2}{5} \times \frac{7}{11}$

16. $\frac{2}{3}$ of $\frac{1}{4}$

17. $\frac{2}{5} \cdot \frac{1}{2}$

18. $\frac{1}{4}$ of $\frac{4}{5}$

19. $\frac{5}{6} \cdot \frac{2}{5}$

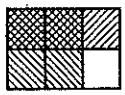
20. $\frac{2}{7}$ of $\frac{3}{5}$

21. $\frac{1}{3}$ of $\frac{9}{10}$

22. $\frac{1}{12} \times \frac{3}{4}$

23. $\frac{3}{10} \cdot \frac{3}{5}$

24. What product does the model represent?



**Solve.**

25. A kitten eats $\frac{1}{4}$ cup of cat food. Another cat in the same household eats 6 times as much. How much food does the cat eat?

26. You brought home $\frac{1}{2}$ of a can of paint. You then used $\frac{2}{3}$ of the paint to cover a table top. What fraction of a full can of paint did you use?

Name _____ Class _____ Date _____

# Reteaching 6-2

## Multiplying Mixed Numbers

*Example 1:* Multiply: $2\frac{1}{7} \times 2\frac{2}{5}$

① Change to improper fractions. $\frac{15}{7} \times \frac{12}{5}$

② Simplify. $\frac{{}^{3}\cancel{15}}{7} \times \frac{12}{\cancel{8}_{1}}$

③ Multiply. $\frac{36}{7} \leftarrow \mathbf{3 \times 12}$ $\frac{}{7} \leftarrow \mathbf{7 \times 1}$

④ Simplify. $5\frac{1}{7}$

$2\frac{1}{7} \times 2\frac{2}{5} = 5\frac{1}{7}$

*Example 2:* Multiply: $\frac{2}{3} \times 5\frac{1}{4}$

$\frac{2}{3} \times \frac{21}{4}$

$\frac{{}^{1}\cancel{2}}{\cancel{3}_{1}} \times \frac{\cancel{21}^{7}}{\cancel{4}_{2}}$

$\frac{7}{2} \leftarrow \mathbf{1 \times 7}$ $\frac{}{2} \leftarrow \mathbf{1 \times 2}$

$3\frac{1}{2}$

$\frac{2}{3} \times 5\frac{1}{4} = 3\frac{1}{2}$

**Find each product.**

1. $1\frac{1}{4} \times 2\frac{2}{3}$ _____
2. $2\frac{2}{5} \times 4\frac{1}{2}$ _____
3. $3\frac{1}{7} \times 2\frac{4}{5}$ _____
4. $\frac{1}{5} \times 2\frac{7}{9}$ _____
5. $2\frac{1}{8} \times 2\frac{2}{3}$ _____
6. $5\frac{1}{3} \times 1\frac{7}{8}$ _____
7. $\frac{1}{2} \times 3\frac{3}{5}$ _____
8. $2\frac{1}{7} \times 4\frac{2}{3}$ _____
9. $1\frac{5}{6} \times 2\frac{1}{4}$ _____
10. $5\frac{1}{4} \times 2\frac{2}{7}$ _____
11. $\frac{1}{4} \times 1\frac{3}{5}$ _____
12. $\frac{1}{7} \times 1\frac{3}{4}$ _____
13. $3\frac{1}{3} \times 3\frac{3}{10}$ _____
14. $1\frac{2}{3} \times 3\frac{1}{2}$ _____
15. $1\frac{2}{5} \times 4\frac{1}{3}$ _____
16. $\frac{1}{7} \times 1\frac{3}{5}$ _____
17. $3\frac{2}{5} \times 2\frac{1}{2}$ _____
18. $1\frac{2}{3} \times 7\frac{1}{2}$ _____
19. $1\frac{3}{10} \times 2\frac{6}{7}$ _____
20. $\frac{3}{16} \times 1\frac{1}{7}$ _____

**Solve.**

21. Estimate the area of a window pane that has dimensions $6\frac{1}{8}$ by $11\frac{1}{4}$ inches.

_____

22. A hamster is $2\frac{1}{2}$ inches long. A rabbit is $3\frac{1}{2}$ times as long as the hamster. How long is the rabbit?

_____

Name _____ Class _____ Date _____

# Reteaching 6-3

## Dividing Fractions

Find $8 \div \frac{4}{5}$.

① The *reciprocal* of $\frac{4}{5}$ is $\frac{5}{4}$.

$\frac{4}{5} \times \frac{5}{4}$

② Multiply 8 by the reciprocal.

$8 \div \frac{4}{5} = 8 \times \frac{5}{4} = \frac{2}{1} \times \frac{5}{4_1} = \frac{2 \times 5}{1 \times 1} = 10$

$8 \div \frac{4}{5} = 10$

Find $\frac{4}{9} \div \frac{8}{15}$.

① The *reciprocal* of $\frac{8}{15}$ is $\frac{15}{8}$.

$\frac{8}{15} \times \frac{15}{8}$

② Multiply $\frac{4}{9}$ by the reciprocal.

$\frac{4}{9} \div \frac{8}{15} = \frac{4}{9} \times \frac{15}{8} = \frac{1}{\frac{4}{3}} \times \frac{\frac{5}{15}}{\frac{8}{2}} = \frac{1 \times 5}{3 \times 2} = \frac{5}{6}$

$\frac{4}{9} \div \frac{8}{15} = \frac{5}{6}$

**Write the reciprocal of each number.**

1. $\frac{1}{4}$ _____
2. $\frac{5}{3}$ _____
3. $\frac{1}{20}$ _____
4. $\frac{8}{9}$ _____
5. 14 _____
6. 18 _____
7. $\frac{5}{9}$ _____
8. $\frac{3}{11}$ _____
9. $\frac{9}{7}$ _____
10. $\frac{11}{12}$ _____
11. $\frac{2}{7}$ _____
12. $\frac{3}{15}$ _____

**Find each quotient.**

13. $2 \div \frac{2}{3}$ _____
14. $7 \div \frac{7}{8}$ _____
15. $9 \div \frac{3}{4}$ _____
16. $6 \div \frac{2}{5}$ _____
17. $5 \div \frac{2}{3}$ _____
18. $14 \div \frac{5}{6}$ _____
19. $\frac{4}{5} \div \frac{4}{7}$ _____
20. $\frac{7}{8} \div \frac{7}{9}$ _____
21. $\frac{4}{7} \div 2$ _____
22. $\frac{7}{8} \div \frac{2}{3}$ _____
23. $\frac{1}{2} \div 4$ _____
24. $\frac{2}{5} \div \frac{3}{4}$ _____
25. $\frac{9}{10} \div 3$ _____
26. $\frac{3}{5} \div 5$ _____
27. $\frac{5}{8} \div 10$ _____

Name _____ Class _____ Date _____

# Practice 6-3

**Dividing Fractions**

**Write the reciprocal of each number.**

1. $\frac{7}{10}$ _____ 2. 4 _____ 3. $\frac{1}{3}$ _____ 4. $\frac{1}{12}$ _____

5. Draw a diagram to show how many $\frac{3}{4}$-ft pieces of string can be cut from a piece of string $4\frac{1}{2}$ ft long.

**Find each quotient.**

6. $\frac{3}{10} \div \frac{4}{5}$ _____ 7. $\frac{3}{8} \div 3$ _____ 8. $\frac{1}{3} \div \frac{2}{7}$ _____

9. $\frac{1}{4} \div \frac{1}{4}$ _____ 10. $\frac{7}{8} \div \frac{2}{7}$ _____ 11. $\frac{1}{4} \div \frac{1}{8}$ _____

12. $\frac{1}{2} \div \frac{2}{5}$ _____ 13. $\frac{8}{9} \div \frac{1}{2}$ _____ 14. $3 \div \frac{3}{8}$ _____

**Solve.**

15. How many $\frac{3}{4}$-cup servings are there in a 6-cup package of rice?

_____

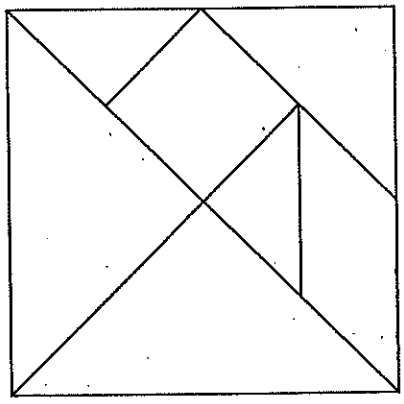
16. George cut 5 oranges into quarters. How many pieces of orange did he have?

_____

17. Maureen, Frank, Tashia, Zane, Eric, and Wesley are addressing envelopes for volunteer work at a local charity. They were given $\frac{3}{4}$ of an entire mailing to address to be evenly divided among six of them. What fraction of the entire mailing does each person address?

_____

18. Study the tangram pieces at the right. If the entire square is 1, find the fractional value of each piece. You can copy the tangram and cut the pieces to compare them.



Name _____ Class _____ Date _____

# Reteaching 6-4

## Dividing Mixed Numbers

*Example 1:* Estimate $36\frac{1}{3} \div 5\frac{7}{8}$.

$36\frac{1}{3} \div 5\frac{7}{8}$ Round mixed numbers to nearest whole number.

$36 \div 6 = 6$ Find the quotient of the rounded values.

*Example 2:* Find $5\frac{1}{3} \div 2\frac{2}{5}$.

① Write each mixed number as an improper fraction.

$$5\frac{1}{3} \div 2\frac{2}{5} = \frac{16}{3} \div \frac{12}{5}$$

② The *reciprocal* of $\frac{12}{5}$ is $\frac{5}{12}$.

$\frac{12}{5}$ $\frac{5}{12}$

③ Multiply $\frac{16}{3}$ by the reciprocal.

$$\frac{16}{3} \div \frac{12}{5} = \frac{\overset{4}{\cancel{16}}}{3} \times \frac{5}{\underset{3}{\cancel{12}}} = \frac{4 \times 5}{3 \times 3} = \frac{20}{9} = 2\frac{2}{9}$$

$$5\frac{1}{3} \div 2\frac{2}{5} = 2\frac{2}{9}$$

**Estimate each quotient.**

1. $14\frac{8}{9} \div 5\frac{1}{5}$ _____
2. $19\frac{2}{3} \div 3\frac{8}{9}$ _____
3. $50\frac{2}{3} \div 2\frac{6}{7}$ _____
4. $5\frac{1}{3} \div 2\frac{2}{3}$ _____
5. $6\frac{1}{4} \div 2\frac{1}{2}$ _____
6. $9 \div 3\frac{1}{3}$ _____
7. $12 \div 6\frac{1}{2}$ _____
8. $5 \div 1\frac{1}{5}$ _____
9. $2\frac{7}{10} \div \frac{4}{5}$ _____
10. $6\frac{1}{2} \div 2\frac{1}{6}$ _____
11. $5\frac{2}{3} \div 1\frac{3}{4}$ _____
12. $5\frac{7}{8} \div 2\frac{1}{2}$ _____

**Find each quotient.**

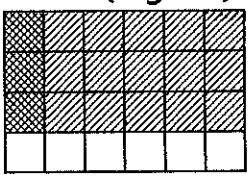
13. $2\frac{1}{2} \div \frac{1}{4}$ _____
14. $100\frac{1}{8} \div 6\frac{1}{4}$ _____
15. $3\frac{2}{3} \div 1\frac{1}{2}$ _____
16. $6\frac{1}{8} \div 2\frac{2}{4}$ _____
17. $75\frac{1}{2} \div 5\frac{1}{2}$ _____
18. $1\frac{1}{6} \div 2\frac{2}{3}$ _____
19. $10\frac{2}{3} \div 4\frac{1}{3}$ _____
20. $18\frac{2}{9} \div 1\frac{1}{2}$ _____
21. $1\frac{1}{10} \div 1\frac{5}{6}$ _____

Name _____ Class _____ Date _____

# Chapters 5–8 Answers (continued)

## Chapter 6

### Practice (regular) 6-1

1. 

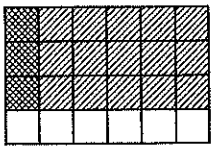
2. 

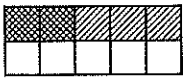
3. 6 4. 3 5. 4 6. $\frac{5}{16}$ 7. $\frac{3}{10}$ 8. 9 9. $1\frac{1}{2}$ 10. $\frac{5}{12}$ 11. $\frac{21}{32}$ 12. $\frac{9}{20}$ 13. $\frac{1}{6}$ 14. $\frac{3}{32}$ 15. $\frac{14}{55}$ 16. $\frac{1}{6}$ 17. $\frac{1}{5}$ 18. $\frac{1}{5}$ 19. $\frac{1}{3}$ 20. $\frac{6}{35}$ 21. $\frac{3}{10}$ 22. $\frac{1}{16}$ 23. $\frac{9}{50}$ 24. $\frac{2}{3} \times \frac{1}{2}$ 25. $1\frac{1}{2}$ cups 26. $\frac{1}{3}$

### Guided Problem Solving 6-1

1. Find the width of the base. 2. The words "$\frac{1}{10}$ of its height" tell you to multiply. 3. Write it as a fraction with a denominator of 1. 4. $\frac{1}{10} \times \frac{555}{1}$ 5. $\frac{1}{(5 \cdot 2)} \times \frac{(5 \cdot 111)}{1} = \frac{1}{2} \times \frac{111}{1}$ 6. $\frac{111}{2} = 55\frac{1}{2}$ 7. 55.5 feet 8. 60; yes 9. 4,120 seats

### Practice (adapted) 6-1

1.  $\frac{3}{24}$, or $\frac{1}{8}$

2.  $\frac{2}{10}$, or $\frac{1}{5}$

3. 6 4. 3 5. 4 6. $\frac{5}{16}$ 7. $\frac{3}{10}$ 8. 9 9. $1\frac{1}{2}$ 10. $\frac{5}{12}$ 11. $\frac{21}{32}$ 12. $\frac{9}{20}$ 13. $\frac{1}{6}$ 14. $\frac{3}{32}$ 15. $\frac{1}{6}$ 16. $\frac{1}{5}$ 17. $\frac{1}{5}$ 18. $\frac{2}{3} \times \frac{1}{2}$ 19. $1\frac{1}{2}$ cups 20. $\frac{1}{3}$

### Activity Lab 6-1

1. $\frac{2}{15}$ 2. $\frac{102}{65}$ 3. The numerator and denominator of the product are the products of the numerators and denominators of Fractions 1 and 2. 4. $\frac{133}{48}$; Sample explanation: Rewrite $3\frac{1}{6}$ as $\frac{19}{6}$. Use the spreadsheet to multiply numerators and denominators, then make a fraction from the products.
5a. $\frac{300}{6,734}$ 5b. $\frac{130}{231}$ 5c. $\frac{43,040}{372,294}$ 5d. $\frac{993,179,850}{264,834,058}$

### Reteaching 6-1

1. $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ 2. $\frac{1}{2} \times \frac{2}{3} = \frac{2}{6} = \frac{1}{3}$ 3. $\frac{2}{27}$ 4. $\frac{1}{7}$ 5. $3\frac{3}{4}$ 6. $\frac{3}{7}$ 7. $\frac{7}{30}$ 8. $\frac{5}{8}$ 9. $\frac{21}{80}$ 10. $\frac{1}{12}$ 11. $1\frac{7}{9}$ 12. $\frac{2}{3}$ 13. $2\frac{2}{9}$ 14. $\frac{3}{10}$ 15. $1\frac{1}{4}$ cups

### Enrichment 6-1

1. The recipe makes $1\frac{1}{2}$ quarts; 2 quarts are needed. 2. More, since 2 quarts is greater than $1\frac{1}{2}$ quarts. 3. $1\frac{1}{2} = \frac{3}{2}$ 4. When $\frac{4}{3}$ is multiplied by $\frac{3}{2}$ the product is 2. 5. $\frac{4}{3}$

6. Fruit Dessert Recipe

| Ingredient | 1 quarts | 2 quarts |
|---|---|---|
| sour cream | 1 cup | $1\frac{1}{3}$ cups |
| orange marmalade | $\frac{1}{2}$ cup | $\frac{2}{3}$ cup |
| walnuts | $\frac{1}{4}$ cup | $\frac{1}{3}$ cup |
| milk | 2 tbsp | $2\frac{2}{3}$ tbsp |
| can of fruit | 1 can | $1\frac{1}{3}$ can |

7. Divide 2 quarts by $1\frac{1}{2}$, then multiply the quotient by the amounts of the ingredients.

### Puzzle 6-1

1–6. Sample answers are given. 1. $\frac{1}{4} \cdot \frac{2}{3}$ 2. $\frac{3}{4} \cdot \frac{1}{2}$ 3. $\frac{2}{4} \cdot \frac{3}{5}$ 4. $\frac{2}{3} \cdot \frac{4}{5}$ 5. $\frac{3}{4} \cdot \frac{5}{6} = \frac{5}{8}$ 6. $\frac{4}{5} \cdot \frac{3}{6}$

### Practice (regular) 6-2

1. 6 2. 21 3. 15 4. 10 5. 42 6. 77 7. 48 8. 16 9. 96 10. $4\frac{23}{24}$ 11. $24\frac{15}{32}$ 12. $15\frac{29}{64}$ 13. $11\frac{2}{5}$ 14. $38\frac{101}{120}$ 15. $80\frac{1}{18}$ 16. $45\frac{15}{16}$ 17. $18\frac{3}{8}$ 18. $89\frac{11}{21}$ 19. $1\frac{7}{20}$ 20. $1\frac{9}{10}$ 21. 8 22. $20\frac{1}{4}$ 23. $1\frac{1}{5}$ 24. $3\frac{1}{5}$ 25. $3\frac{1}{3}$ 26. $\frac{2}{5}$ 27. $8\frac{3}{4}$ 28. $7\frac{1}{2}$ ft 29. $4\frac{1}{2}$ cups; $3\frac{1}{2}$ cups; 3 cups; $1\frac{1}{2}$ cups

### Guided Problem Solving 6-2

1. Find how many times taller the mother is than her son.
2. Rewrite each number as an improper fraction. 3. $m = 1\frac{3}{8}d$ 4. $d = 1\frac{1}{3}b$ 5. $m = (1\frac{3}{8})(1\frac{1}{3}b)$ 6. $m = 1\frac{5}{6}b$ 7. $1\frac{5}{6}$ 8. $1\frac{5}{6} \div 1\frac{3}{8} = 1\frac{1}{3}$; $1\frac{5}{6} \div 1\frac{1}{3} = 1\frac{3}{8}$ 9. $21\frac{2}{3}$ in.

### Practice (adapted) 6-2

1. 6 2. 21 3. 15 4. 10 5. 42 6. 77 7. $4\frac{23}{24}$ 8. $24\frac{15}{32}$ 9. $15\frac{29}{64}$ 10. $11\frac{2}{5}$ 11. $45\frac{15}{16}$ 12. $18\frac{3}{8}$ 13. $1\frac{7}{20}$ 14. $1\frac{9}{10}$ 15. 8 16. $20\frac{1}{4}$ 17. $1\frac{1}{5}$ 18. $3\frac{1}{5}$ 19. $3\frac{1}{3}$ 20. $\frac{2}{5}$ 21. $8\frac{3}{4}$ 22. $4\frac{1}{2}$ cups; $3\frac{1}{2}$ cups; 3 cups; $1\frac{1}{2}$ cups

### Activity Lab 6-2

1a. Check students' work 1b. 28 1c. $\frac{7}{2}$ 1d. $\frac{4}{4}$ 1e. $\frac{1}{8}$ 1f. $32\frac{5}{8}$ 1g. Multiply first, then add. 1h. $32\frac{5}{8}$ cm 2. $8\frac{1}{8}$ 3. $5\frac{2}{3}$ 4. $39\frac{1}{16}$ 5. $45\frac{5}{6}$

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# Chapters 5–8 Answers (continued)

## Reteaching 6-2

**1.** $3\frac{1}{3}$ **2.** $10\frac{4}{5}$ **3.** $8\frac{4}{5}$ **4.** $\frac{5}{9}$ **5.** $5\frac{2}{3}$ **6.** 10 **7.** $1\frac{4}{5}$ **8.** 10 **9.** $4\frac{1}{8}$ **10.** 12 **11.** $\frac{2}{5}$ **12.** $\frac{1}{4}$ **13.** 11 **14.** $5\frac{5}{6}$ **15.** $6\frac{1}{15}$ **16.** $\frac{8}{35}$ **17.** $8\frac{1}{2}$ **18.** $12\frac{1}{2}$ **19.** $3\frac{5}{7}$ **20.** $\frac{3}{14}$ **21.** 66 square inches **22.** $8\frac{3}{4}$ inches

## Enrichment 6-2

**1.** $16\frac{1}{2}$ ft by $17\frac{1}{6}$ ft **2.** $10\frac{7}{12}$ ft by 14 ft **3.** Multiply length by width. **4.** $\frac{33}{2} \cdot \frac{103}{6}$ **5.** $(14 \cdot 10) + \left(14 \cdot \frac{7}{12}\right)$ **6.** subtraction **7.** $283\frac{1}{4}$ ft$^2$; $148\frac{1}{6}$ ft$^2$ **8.** $135\frac{1}{12}$ ft$^2$ **9.** Sample answer: Yes; you would not need to calculate using fractions. **10.** Bedroom: $131\frac{1}{4}$ ft$^2$; bathroom: 57 ft$^2$; difference: $74\frac{1}{4}$ ft$^2$

## Puzzle 6-2

**1.**

| | | | | |
|---|---|---|---|---|
| $2\frac{1}{4}$ | • | $\frac{4}{5}$ | = | $\frac{9}{5}$ |
| • | | • | | • |
| $1\frac{1}{6}$ | • | $1\frac{1}{7}$ | = | $\frac{4}{3}$ |
| = | | = | | = |
| $\frac{21}{8}$ | • | $\frac{32}{35}$ | = | $\frac{12}{5}$ |

**2.**

| | | | | |
|---|---|---|---|---|
| $1\frac{1}{8}$ | • | $3\frac{1}{3}$ | = | $\frac{15}{4}$ |
| • | | • | | • |
| $2\frac{3}{4}$ | • | $\frac{1}{5}$ | = | $\frac{11}{20}$ |
| = | | = | | = |
| $\frac{99}{32}$ | • | $\frac{2}{3}$ | = | $\frac{33}{16}$ |

**3.**

| | | | | |
|---|---|---|---|---|
| $1\frac{1}{3}$ | • | $2\frac{3}{4}$ | = | $\frac{11}{3}$ |
| • | | • | | • |
| 6 | • | $\frac{11}{12}$ | = | $\frac{11}{2}$ |
| = | | = | | = |
| 8 | • | $\frac{121}{48}$ | = | $\frac{121}{6}$ |

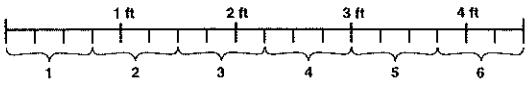
**4.**

| | | | | |
|---|---|---|---|---|
| $3\frac{1}{4}$ | • | $\frac{5}{7}$ | = | $\frac{65}{28}$ |
| • | | • | | • |
| $1\frac{1}{3}$ | • | $1\frac{2}{5}$ | = | $\frac{28}{15}$ |
| = | | = | | = |
| $\frac{13}{3}$ | • | 1 | = | $\frac{13}{3}$ |

## Practice (regular) 6-3

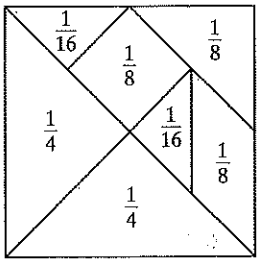
**1.** $\frac{10}{7}$ **2.** $\frac{1}{4}$ **3.** 3 **4.** 12

**5.** 6;




**6.** $\frac{3}{8}$ **7.** $\frac{1}{8}$ **8.** $1\frac{1}{6}$ **9.** 1 **10.** $3\frac{1}{16}$ **11.** 2 **12.** $1\frac{1}{4}$ **13.** $1\frac{7}{9}$ **14.** 8 **15.** 8 servings **16.** 20 pieces **17.** $\frac{1}{8}$

**18.**



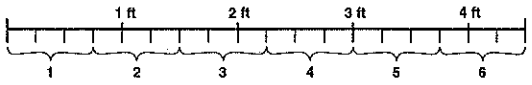

## Guided Problem Solving 6-3

**1.** Determine how many loaves of banana bread you can make with the oil. **2.** Multiply the first fraction by the reciprocal of the divisor. **3.** $\frac{2}{3}$ cup; the recipe needs $\frac{2}{3}$ cup of oil **4.** 3 cups **5.** 3 cups; that is the amount of oil available **6.** $3 \div \frac{2}{3}$ **7.** $3 \cdot \frac{3}{2}$ **8.** $\frac{9}{2}$ or $4\frac{1}{2}$ **9.** $4\frac{1}{2}$ loaves **10.** $4\frac{1}{2}$; yes **11.** 32 planters

## Practice (adapted) 6-3

**1.** $\frac{10}{7}$ **2.** $\frac{1}{4}$ **3.** 3

**4.** 6;




**5.** $\frac{3}{8}$ **6.** $\frac{1}{8}$ **7.** $1\frac{1}{6}$ **8.** 1 **9.** $3\frac{1}{16}$ **10.** 2 **11.** $1\frac{1}{4}$ **12.** $1\frac{7}{9}$ **13.** 8 **14.** 8 servings **15.** 20 pieces **16.** $\frac{1}{8}$

## Activity Lab 6-3

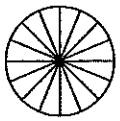
**1.** $13\frac{1}{3}$ **2.** $19\frac{4}{5}$ **3.** $34\frac{2}{15}$ **4.** $5\frac{1}{4}$ **5.** $6\frac{19}{28}$ **6.** $\frac{528}{665}$ **7.** $\frac{2}{33}$ **8.** $\frac{8}{135}$ **9.** $\frac{19}{248}$

## Reteaching 6-3

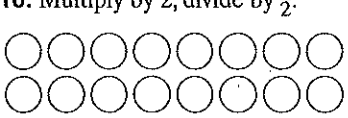
**1.** 4 **2.** $\frac{3}{5}$ **3.** 20 **4.** $\frac{9}{8}$ **5.** $\frac{1}{14}$ **6.** $\frac{1}{18}$ **7.** $\frac{9}{5}$ **8.** $\frac{11}{3}$ **9.** $\frac{7}{9}$ **10.** $\frac{12}{11}$ **11.** $\frac{7}{2}$ **12.** $\frac{15}{3}$ **13.** 3 **14.** 8 **15.** 12 **16.** 15 **17.** $7\frac{1}{2}$ **18.** $16\frac{4}{5}$ **19.** $1\frac{2}{5}$ **20.** $1\frac{1}{8}$ **21.** $\frac{2}{7}$ **22.** $1\frac{5}{16}$ **23.** $\frac{1}{8}$ **24.** $\frac{8}{15}$ **25.** $\frac{3}{10}$ **26.** $\frac{3}{25}$ **27.** $\frac{1}{16}$

## Enrichment 6-3

**1–10.** Sample answers are given. **1.** $1, \frac{1}{3}, \frac{1}{9}$; Divide by 3. **2.** $\frac{2}{5}, \frac{2}{25}, \frac{2}{125}$; Divide by 5. **3.** 4,096; 32,768; 262,144; Multiply by 8. **4.** $\frac{1}{10}, \frac{1}{100}, \frac{1}{1000}$; Divide by 10. **5.** 32, 128, 512; Multiply by 4. **6.** $\frac{8}{27}, \frac{16}{81}, \frac{32}{243}$; Multiply by $\frac{2}{3}$. **7.** Multiply by $\frac{1}{2}$. **8a.** Multiply by $\frac{1}{3}$. **8b.** Multiply by $\frac{1}{5}$. **8c.** Divide by $\frac{1}{8}$. **8d.** Multiply by $\frac{1}{10}$. **8e.** Divide by $\frac{1}{4}$. **8f.** Divide by $\frac{3}{2}$. **9.** Multiply by $\frac{1}{2}$; divide by 2.



**10.** Multiply by 2; divide by $\frac{1}{2}$.



## Puzzle 6-3

**1.** 2 **2.** $1\frac{2}{3}$ **3.** $1\frac{1}{2}$ **4.** $\frac{4}{5}$ **5.** 4 **6.** $1\frac{1}{2}$ **7.** 3 **8.** $\frac{1}{3}$ **9.** $3\frac{3}{4}$

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# Chapters 5–8 Answers (continued)

## Practice (regular) 6-4

**1.** about 1 **2.** about 2 **3.** about 3 **4.** about 0 **5.** about 6 **6.** about 10 **7.** about 2 **8.** about 22 **9.** about 11 **10.** $5\frac{2}{5}$ **11.** $13\frac{1}{3}$ **12.** $1\frac{1}{49}$ **13.** $\frac{2}{23}$ **14.** $9\frac{5}{8}$ **15.** $\frac{56}{95}$ **16.** $1\frac{1}{35}$ **17.** $\frac{2}{13}$ **18.** $1\frac{37}{54}$ **19.** $\frac{2}{13}$ **20.** $3\frac{33}{49}$ **21.** $\frac{4}{17}$ **22.** $\frac{9}{56}$ **23.** $8\frac{3}{4}$ **24.** $2\frac{6}{7}$ **25.** $\frac{9}{10}$ **26.** $2\frac{37}{40}$ **27.** $4\frac{4}{5}$ **28.** 7 pillows **29.** 15 pillows **30.** 16 columns

## Guided Problem Solving 6-4

**1.** Estimate the number of strips of insulation that are needed. **2.** $1\frac{1}{3}$ **3.** 1 **4.** 24 **5.** 24 strips **6.** Divide 24 by $1\frac{1}{3}$ to see if it is close to the estimate. **7.** 5 shirts

## Practice (adapted) 6-4

**1.** about 1 **2.** about 2 **3.** about 3 **4.** about 0 **5.** about 6 **6.** about 10 **7.** $5\frac{2}{5}$ **8.** $13\frac{1}{3}$ **9.** $1\frac{1}{49}$ **10.** $\frac{2}{23}$ **11.** $9\frac{5}{8}$ **12.** $\frac{56}{95}$ **13.** $1\frac{1}{35}$ **14.** $\frac{2}{13}$ **15.** $1\frac{37}{54}$ **16.** $\frac{2}{13}$ **17.** $\frac{9}{56}$ **18.** $\frac{9}{10}$ **19.** 7 pillows **20.** 15 pillows

## Activity Lab 6-4

**1.** Divide each quantity by 2. **2a.** $1\frac{1}{4}$ cups flour **2b.** $\frac{5}{8}$ cup salt **2c.** 1 tablespoon cream of tartar **2d.** $1\frac{1}{2}$ **3–4.** Check students' work.

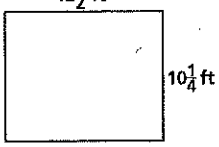
## Reteaching 6-4

**1.** 3 **2.** 5 **3.** 17 **4.** 2 **5.** 3 **6.** 3 **7.** 2 **8.** 5 **9.** 3 **10.** 3 **11.** 3 **12.** 2 **13.** 10 **14.** $16\frac{1}{50}$ **15.** $2\frac{4}{9}$ **16.** $2\frac{9}{20}$ **17.** $13\frac{8}{11}$ **18.** $\frac{7}{16}$ **19.** $2\frac{6}{13}$ **20.** $12\frac{4}{27}$ **21.** $\frac{3}{5}$

## Enrichment 6-4

**1.** $4\frac{3}{8}$ inches; $12\frac{1}{2}$ ft by $10\frac{1}{4}$ ft

**2.**




**3.** Sample answer: $2 \cdot \left(12\frac{1}{2} + 10\frac{1}{4}\right)$ **4.** division **5.** Sample answer: so that the units are the same **6.** $45\frac{1}{2}$ feet; 546 inches **7.** $124\frac{4}{5}$ times **8.** Yes; the distance and border would still be the same unit. **9.** 168 times

## Puzzle 6-4

MUFFINS

## Practice (regular) 6-5

**1.** 2 **2.** 42 **3.** 57 **4.** 36 **5.** 8 **6.** 18 **7.** $\frac{7}{8}$ **8.** $1\frac{2}{5}$ **9.** $\frac{4}{7}$ **10.** 8 **11.** $3\frac{3}{7}$ **12.** $1\frac{11}{25}$ **13.** $\frac{9}{16}$ **14.** $6\frac{1}{4}$ **15.** $\frac{7}{20}$ **16.** $4\frac{1}{2}$ **17.** $\frac{17}{24}$ **18.** $\frac{1}{3}$ **19.** $\frac{3}{4}x = 1$; $1\frac{1}{3}$ in. **20.** $\frac{3}{22}$

## Guided Problem Solving 6-5

**1.** Find the cost of the pants. **2.** Sample answer: Let $p$ = the cost of the pants. **3.** $\frac{5}{6}$; $p$; 12.50 **4.** $\frac{5}{6}p$ **5.** \$12.50 **6.** $\frac{5}{6}p = 12.50$ **7.** Multiply by $\frac{6}{5}$. **8.** $p = 15$ **9.** \$15 **10.** yes; $\frac{5}{6} \times 15 = 12.50$ **11.** $26\frac{2}{3}$ cans

## Practice (adapted) 6-5

**1.** 2 **2.** 42 **3.** 57 **4.** 36 **5.** 8 **6.** 18 **7.** $\frac{7}{8}$ **8.** $1\frac{2}{5}$ **9.** $\frac{4}{7}$ **10.** 8 **11.** $3\frac{3}{7}$ **12.** $1\frac{11}{25}$ **13.** $\frac{9}{16}$ **14.** $6\frac{1}{4}$ **15.** $\frac{7}{20}$ **16.** $\frac{3}{4}x = 1$; $1\frac{1}{3}$ in. **17.** $\frac{3}{22}$

## Activity Lab 6-5

**1.** $4\frac{1}{2}$; $4\frac{1}{2}$ **2.** $5\frac{1}{3}$; $5\frac{1}{3}$ **3.** $6\frac{1}{4}$; $6\frac{1}{4}$ **4.** $7\frac{1}{5}$; $7\frac{1}{5}$ **5.** $8\frac{1}{6}$; $8\frac{1}{6}$ **6.** $9\frac{1}{7}$; $9\frac{1}{7}$ **7.** $10\frac{1}{8}$; $10\frac{1}{8}$ **8.** $11\frac{1}{9}$; $11\frac{1}{9}$ **9.** $12\frac{1}{10}$; $12\frac{1}{10}$ **10.** The sums and products are equal. **11.** Whole number part increases by 1. Denominator of fraction part also increases by 1. Numerators are all 1. **12.** Numerator of the second number is the same as the first number. Denominator is 1 less than numerator. **13.** Sample answer: $12 + \frac{12}{11} = 13\frac{1}{11}$; $12 \times \frac{12}{11} = 13\frac{1}{11}$

## Reteaching 6-5

**1.** $\frac{4}{5}$ **2.** $\frac{3}{5}$ **3.** 12 **4.** 3 **5.** $\frac{2}{5}$ **6.** $\frac{1}{5}$ **7.** $\frac{2}{9}$ **8.** $\frac{7}{12}$ **9.** $110\frac{1}{4}$ pounds **10.** $40\frac{1}{2}$

## Enrichment 6-5

**1.** $\frac{1}{3}$ palm **2.** $\frac{1}{9}$ span **3a.** division **3b.** division **4.** Sample answer: Both use the same operation and have fractional amounts. **5.** $p \div \frac{1}{3} = 12$ **6.** 4 palms **7.** $s \div \frac{1}{9} = 18$ **8.** 2 spans **9.** Sample answer: Substitute the answer into the equation, then solve. **10.** Sample answer: $16 \div \frac{1}{3} = p$; $p = 48$; 48 in.

## Puzzle 6-5

THOMAS JEFFERSON

## Practice (regular) 6-6

**1.** Feet; a stop sign is much taller than a bottle cap. **2.** Inches; a leaf is shorter than a male's foot. **3.** Feet; a door is much narrower than a football field. **4.** Miles; the ocean is deeper than 14 football fields in most places. **5.** Ounces; a notebook is lighter than a loaf of bread. **6.** Pounds; a couch is lighter than two pianos. **7.** Tons; a garbage truck is heavier than two pianos. **8.** Pounds; a box of books is lighter than two pianos. **9.** Gallons;

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# Practice 1-7

## Adding and Subtracting Decimals

**First estimate. Then find each sum or difference.**

1. 0.6 + 5.8 _____
2. 2.1 + 3.4 _____
3. 3.4 − 0.972 _____
4. 3.1 − 2.076 _____
5. 8.13 − 2.716 _____
6. 5.91 + 2.38 _____
7. 3.086 + 6.152 _____
8. 4.7 − 1.9 _____
9. 9.3 − 3.9 _____
10. 5.2 − 1.86 _____
11. 15.98 + 26.37 _____
12. 9.27 + 15.006 _____
13. 5.9 − 2.803 _____
14. 15.7 − 8.923 _____
15. 4.19 − 2.016 _____
16. 14.75 − 6.9264 _____

**Use front-end estimation to estimate each sum.**

17. 12 + 0.25 + 4.75 _____
18. 18.5 + 0.25 + 0.25 _____
19. 17 + 23 + 10.6 _____
20. 11.3 + 5.7 _____
21. 5 + 6.2 + 4.05 _____
22. 50.6 + 10.4 + 20 _____
23. 2.1 + 0.6 + 0.3 _____
24. 14.3 + 16 _____
25. 4.9 + 0.6 + 4 _____

**Use the table at the right for Exercises 26–28.**

26. Find the sum of the decimals given in the chart. What is the meaning of this sum?

_____

_____

27. What part of the hourly work force is aged 25–44?

_____

28. Which three age groups combined represent one-fourth of the hourly work force?

_____

_____

**Ages of Workers Earning Hourly Pay**

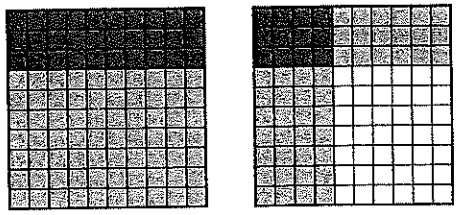
| Age of Workers | Part of Work Force |
|---|---|
| 16–19 | 0.08 |
| 20–24 | 0.15 |
| 25–34 | 0.29 |
| 35–44 | 0.24 |
| 45–54 | 0.14 |
| 55–64 | 0.08 |
| 65 & over | 0.02 |

Name _____ Class _____ Date _____

# Reteaching 1-8

## Multiplying Decimals

Multiply $0.3 \times 1.4$. This drawing can help you find $0.3 \times 1.4$.



**Each small square is 1 hundredth or 0.01. Each column or row is 10 hundredths or 1 tenth or 0.1.**

① Shade 3 rows across to represent 0.3.

② Shade 14 columns down to represent 1.4.

③ The area where the shading overlaps is 42 hundredths or 0.42.

$0.3 \times 1.4 = 0.42$

Compare the result from the model to the result of multiplying the factors.

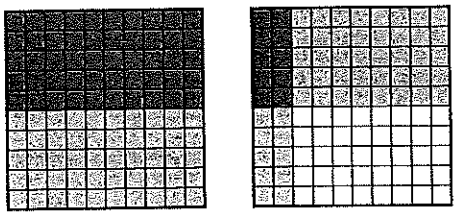
$$\begin{array}{rl} 0.3 & \leftarrow \text{1 decimal place} \\ \times\ 1.4 & \leftarrow +\text{1 decimal place} \\ 12 & \\ +\ 030 & \\ \hline 0.42 & \leftarrow \text{2 decimal places} \end{array}$$

When multiplying decimals, first multiply the factors as though they are whole numbers. Then add the number of decimal places in each factor to find the number of decimal places in the product.

---

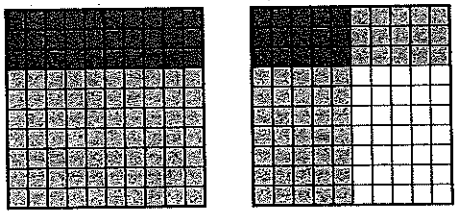
**Write a multiplication statement to describe each model.**

1.



_____

2.



_____

**For each product, place the decimal point in the correct place.**

3. $\begin{array}{r} 0.9 \\ \times 2.8 \\ \hline 252 \end{array}$ _____

4. $\begin{array}{r} 3.1 \\ \times 77 \\ \hline 2387 \end{array}$ _____

5. $\begin{array}{r} 6.22 \\ \times\ 8 \\ \hline 4976 \end{array}$ _____

**Find each product.**

6. $\begin{array}{r} 1.6 \\ \times 3.7 \end{array}$ _____

7. $\begin{array}{r} 8.12 \\ \times 59 \end{array}$ _____

8. $\begin{array}{r} 12.3 \\ \times 6.1 \end{array}$ _____

9. $\begin{array}{r} 23.4 \\ \times 5.2 \end{array}$ _____

10. $\begin{array}{r} 4.8 \\ \times 42 \end{array}$ _____

11. $\begin{array}{r} 9.2 \\ \times 12.4 \end{array}$ _____

Name _____ Class _____ Date _____

# Practice 1-8

## Multiplying Decimals

**Place the decimal point in each product.**

1. $4.3 \times 2.9 = 1247$ _____
2. $0.279 \times 53 = 14787$ _____
3. $4.09 \times 3.96 = 161964$ _____
4. $5.90 \times 6.3 = 3717$ _____
5. $0.74 \times 83 = 6142$ _____
6. $2.06 \times 15.9 = 32754$ _____

**Find each product.**

7. $43.59 \times 0.1$ _____
8. $246 \times 0.01$ _____
9. $\begin{array}{r} 5.342 \\ \times\ 13 \\ \hline \end{array}$ _____
10. $\begin{array}{r} 0.19 \\ \times\ 0.05 \\ \hline \end{array}$ _____
11. $\begin{array}{r} 240 \\ \times\ 0.02 \\ \hline \end{array}$ _____
12. $\begin{array}{r} 43.79 \\ \times\ 42 \\ \hline \end{array}$ _____

Write a multiplication statement you could use for each situation.

13. A pen costs \$.59. How much would a dozen pens cost?

_____

14. A mint costs \$.02. How much would a roll of 10 mints cost?

_____

15. An orange costs \$.09. How much would 2 dozen oranges cost?

_____

**Find each product. Tell whether you would use mental math, paper and pencil, or a calculator.**

16. $19(0.35)$ _____
17. $30 \times 0.1$ _____
18. $22.62 \times 1.08$ _____

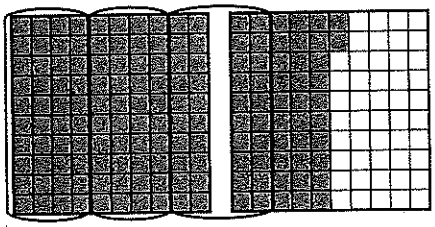
Name _____ Class _____ Date _____

# Reteaching 1-9

## Dividing Decimals

Find the quotient $1.52 \div 0.4$.

You can use a model to estimate the quotient.



← Draw a model for 1.52.

← Since each square is 0.01, 40 squares represent 0.4. Circle groups of 0.4.

There are close to four groups of 0.4. The quotient is about 4.

① Multiply the dividend and divisor by 10 so that the divisor is a whole number.

$0.4\overline{)1.52}$

② Divide as with whole numbers.

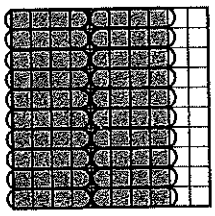
$$\begin{array}{r} 3\,8 \\ 4\overline{)15.2} \\ -12 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

③ Place the decimal point in the quotient above its place in the dividend. Insert zeros as placeholders if necessary.

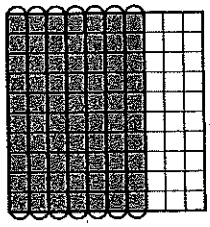
$$\begin{array}{r} 3.8 \\ 4\overline{)15.2} \\ -12 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

3.8 is close to 4.

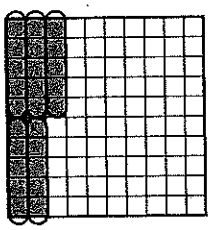
**Use the model to find each quotient.**

1. 

$0.8 \div$ _____ $= 20$

2. 

$0.70 \div 0.1 =$ _____

3. 

_____ $\div 0.05 =$ _____

**Estimate, then find each quotient.**

4. $3\overline{)1.35}$

5. $4\overline{)2.68}$

6. $8.4 \div 6$

7. $8\overline{)27}$

8. $12.96 \div 5$

9. $3 \div 0.12$

10. $1.5\overline{)84}$

11. $78 \div 15.6$

12. $0.9\overline{)1.35}$

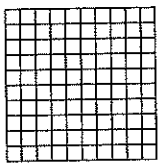
Name _____ Class _____ Date _____

# Practice 1-9

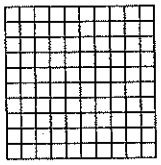
## Dividing Decimals

**Draw a model to find each quotient.**

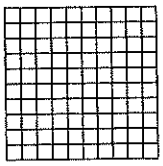
1. $0.4 \div 0.08$ _____



2. $0.8 \div 0.4$ _____



3. $0.9 \div 0.15$ _____



**Find each quotient.**

4. $1.8 \div 6$ _____

5. $16\overline{)3.2}$ _____

6. $17\overline{)5.1}$ _____

7. $9\overline{)21.6}$ _____

8. $15\overline{)123}$ _____

9. $108 \div 5$ _____

10. $50\overline{)17.5}$ _____

11. $14\overline{)889}$ _____

12. $5\overline{)316}$ _____

**Solve.**

13. A package of 25 mechanical pencils costs $5.75. How much does each pencil cost?

_____

14. A sales clerk is placing books side by side on a shelf. She has 12 copies of the same book. If the books cover 27.6 in. of the shelf, how thick is each book?

_____

15. The salt content in the Caspian Sea is 0.13 kg for every liter of water. How many kg of salt are in 70 liters?

_____

**Find each quotient.**

16. $0.4 \div 0.02$ _____

17. $3.9 \div 0.05$ _____

18. $0.2\overline{)26}$ _____

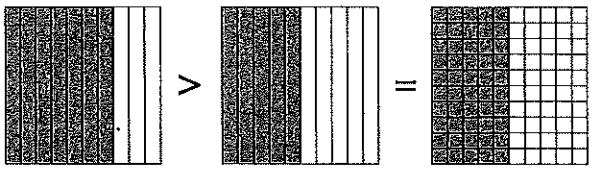
19. $0.68 \div 0.2$ _____

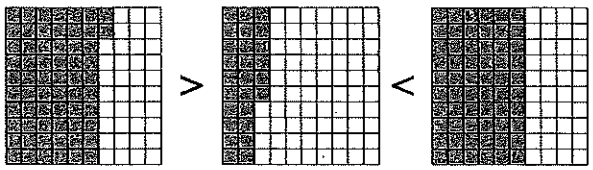
20. $0.02\overline{)0.06}$ _____

21. $0.09\overline{)0.108}$ _____

# Chapters 1–4 Answers (continued)

## Enrichment 1-6

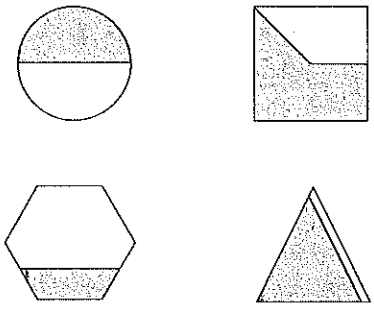
1. 

2. 

**3.** 0.26, 0.5 and 0.50, 0.60, 0.62, 0.7 **4a.** 10.54, 10.75, 10.82, 10.94, 10.97 **4b.** 1988 **4c.** No; the winner of the 1996 Olympics ran slower than the winner of the 1992 Olympics.

## Puzzle 1-6

**1.** 9,876,543.201 **2.** 1,023,456.789 **3.** 4,987,653.210
**4.** 8,012,345.679 **5.** 2,598,764.301
**6–9.**



## Practice (regular) 1-7

**1.** 6.4 **2.** 5.5 **3.** 2.428 **4.** 1.024 **5.** 5.414 **6.** 8.29 **7.** 9.238 **8.** 2.8 **9.** 5.4 **10.** 3.34 **11.** 42.35 **12.** 24.276 **13.** 3.097 **14.** 6.777 **15.** 2.174 **16.** 7.8236 **17.** 17 **18.** 19 **19.** 50 **20.** 17 **21.** 15 **22.** 81 **23.** 3 **24.** 30 **25.** 10 **26.** 1; the sum represents all workers earning hourly pay. **27.** 0.29 + 0.24 = 0.53 **28.** 16–19, 20–24, and 65 & over; or 20–24, 55–64, and 65 & over

## Guided Problem Solving 1-7

**1.** Find the population of Maine. **2.** Subtract the population of each state from the total. **3.** 12.67 million **4.** 13.92 million **5.** 13.92 − 12.67 **6.** 13.92 − 12.67 = 1.25 **7.** 1.25 million **8.** Add 1.25 million to the total of the other states' population. The total should be 13.92 million. **9.** your friend; 85.65 − 83.50 = 2.15

## Practice (adapted) 1-7

**1.** 6.4 **2.** 5.5 **3.** 2.428 **4.** 1.024 **5.** 5.414 **6.** 8.29 **7.** 9.238 **8.** 2.8 **9.** 5.4 **10.** 17 **11.** 19 **12.** 17 **13.** 81 **14.** 3 **15.** 30.3 **16.** 1; it includes all workers who are paid on an hourly basis. **17.** 0.24

## Activity Lab 1-7

**1a.** 0.1 **1b.** 10 **1c.** 0.3 **1d.** 30 **1e.** 0.37 **1f.** 37 **2a.** 1 row and 5 single tiles; 2 rows and 9 single tiles **2b.** 3 rows and 14 single tiles **2c.** 1 row **2d.** 4 rows and 4 single tiles; 0.44 **3a–c.** Check students' work. **4a.** 3 rows and 6 single tiles **4b.** 7 tiles **4c.** 2 rows and 9 single tiles; 0.29 **5a–d.** Check students' work.

## Reteaching 1-7

**1.** 1 + 7 = 8; 7.6 **2.** 3 + 9 = 12; 12.5 **3.** 5 + 8 = 13; 13.07 **4.** 23.8 **5.** 7 **6.** 22.104 **7.** 9 − 4 = 5; 4.3 **8.** 7 − 3 = 4; 4.15 **9.** 5 − 3 = 2; 2.27 **10.** 6 − 3 = 3; 3.361 **11.** 14 − 10 = 4; 4.34 **12.** 13 − 5 = 8; 8.449

## Enrichment 1-7

**1.** Sample answers: vegetable burger, carrot cake, bottled water; vegetable burger, carrot cake, orange juice; vegetable burger, apple pie, bottled water; mushroom burger, carrot cake, bottled water **2.** any combination of a special, drink, and dessert **3.** Sample answer: If they share equally, each girl will have $7 to spend after deducting the tip and can choose from the options in Question 1. **4.** About $64 since a special costs about $5, a dessert costs about $2, and a drink costs about $1, which comes to a total of $8 per meal. 8 × 8 = $64 for 8 students.

## Puzzle 1-7

A = 4.5 B = 7.653 C = 7.615 D = 5.833 E = 5. 22.578
F = 6.76 H = 11.42 I = 12.78 L = 8.01 M = 32.6 N = 3.18
O = 12.79 P = 0.379 R = 6.62 S = 3.64 T = 5.75 U = 1.17
V = 29.7 W = 9.16 Y = 1.22
BECAUSE THEY HAVE THEIR OWN SCALES

## Practice (regular) 1-8

**1.** 12.47 **2.** 14.787 **3.** 16.1964 **4.** 37.17 **5.** 61.42 **6.** 32.754 **7.** 4.359 **8.** 2.46 **9.** 69.446 **10.** 0.0095 **11.** 4.8 **12.** 1,839.18 **13.** 12 × $.59 = $7.08 **14.** 10 × $.02 = $.20 **15.** $.09 × 24 = $2.16 **16.** paper and pencil; 6.65 **17.** mental math; 3 **18.** calculator; 24.4296

## Guided Problem Solving 1-8

**1.** the amount of calcium in one serving and the amount of calcium in 3.25 servings of cheddar cheese **2.** Determine the amount of calcium in 3.25 servings. **3.** Multiply, because you know the amount of calcium in one serving and want to know how much is in 3.25 servings. **4.** 0.2 gram **5.** 3.25 servings **6.** 0.2 × 3.25 **7.** 0.65 gram **8.** More; 3.25 servings is more than 1 serving. **9.** 2.125 grams

Name _____ Class _____ Date _____

# Chapters 1–4 Answers (continued)

## Practice (adapted) 1-8

**1.** 12.47 **2.** 14.787 **3.** 37.17 **4.** 61.42 **5.** 4.359 **6.** 2.46 **7.** 72.6 **8.** 0.0095 **9.** 0.576 **10.** 4.8 **11.** $7.08 **12.** $.20 **13.** paper and pencil; 6.65 **14.** mental math; 3

## Activity Lab 1-8

**1–2.** Check students' work. **3.** Sample answer: Multiply each product by the third number to get the product for the second table. **4.** Sample answer: The second products are smaller because the first products are multiplied by a decimal less than 1.

## Reteaching 1-8

**1.** $0.5 \times 1.2 = 0.60$ **2.** $0.3 \times 1.5 = 0.45$ **3.** 2.52 **4.** 238.7 **5.** 49.76 **6.** 5.92 **7.** 479.08 **8.** 75.03 **9.** 121.68 **10.** 201.6 **11.** 114.08

## Enrichment 1-8

**1.** $320.00

**2.**

| Store A | Yards per costume | Cost per yard | Cost per costume | Number of costumes | Total cost |
|---|---|---|---|---|---|
| Red | 3.5 | $4.75 | $16.625 | 8 | $133.00 |
| Brown | 3.25 | $4.25 | $13.8125 | 12 | $165.75 |
| Both | | | | | $298.75 |

| Store B | Yards per costume | Cost per yard | Cost per costume | Number of costumes | Total cost |
|---|---|---|---|---|---|
| Red | 3.5 | $4.50 | $15.75 | 8 | $126.00 |
| Brown | 3.25 | $4.50 | $14.625 | 12 | $175.50 |
| Both | | | | | $301.50 |

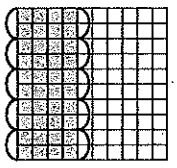
**3.** Sample answer: Store B because the difference in cost is small and the store is close to the school. The coupon is not useful unless more fabric will be needed.

## Puzzle 1-8

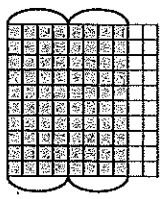
**1.** 13.12 **2.** 36.9 **3.** 16.8 **4.** 540 **5.** 0.84 **6.** Check students' answers. **7.** 0.16 **8.** 86.58 **9.** 18.64 **10.** 85.28 **11–12.** Check students' answers.

## Practice (regular) 1-9

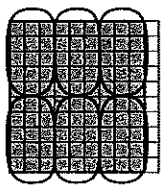
**1.** 5;



**2.** 2;



**3.** 9;



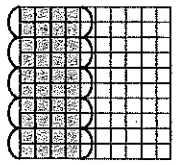
**4.** 0.3 **5.** 0.2 **6.** 0.3 **7.** 2.4 **8.** 8.2 **9.** 21.6 **10.** 0.35 **11.** 63.5 **12.** 63.2 **13.** $.23 **14.** 2.3 in. **15.** 9.10 kg **16.** 20 **17.** 78 **18.** 130 **19.** 3.4 **20.** 3 **21.** 1.2

## Guided Problem Solving 1-9

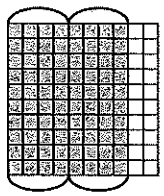
**1.** 0.9 centimeter, 0.01 centimeter, 25 students **2.** Find the number of pieces of paper in the stack. **3.** Determine if there is enough paper for each of 25 students to get three pieces of paper. **4.** 0.01 centimeter **5.** 0.9 centimeter **6.** divide **7.** $0.9 \div 0.01$ **8.** 90 **9.** 75 **10.** yes **11.** Sample answer: because each piece of paper is 0.01 cm thick **12.** 54 baseball cards

## Practice (adapted) 1-9

**1.** 5;



**2.** 2;



**3.** 0.3 **4.** 0.2 **5.** 0.3 **6.** 8.2 **7.** 21.6 **8.** 0.35 **9.** $.23 **10.** 9.10 kg **11.** 20 **12.** 78 **13.** 130 **14.** 2.7 **15.** 3.4 **16.** 3

## Activity Lab 1-9

**1.** 4 **2.** 3 **3.** 0.06 **4.** 1.4 **5.** 0.5 **6.** 12.42 **7.** 2.1 **8.** 1 **9.** 3 **10.** 3 **11.** $4.32

## Reteaching 1-9

**1.** 0.04 **2.** 7 **3.** 0.25; 5 **4.** 0.45 **5.** 0.67 **6.** 1.4 **7.** 3.375 **8.** 2.592 **9.** 25 **10.** 56 **11.** 5 **12.** 1.5

## Enrichment 1-9

**1.** Sample answer: Single servings are convenient to take in lunches; gallons are better for a large group. **2.** single: $.32; quart: $.28; two quarts: $.27; gallon: $.22; a gallon is the least expensive. **3.** Sample answer: One gallon and two quarts is the least expensive choice, although there would be 2 servings left over. **4–6.** Check students' answers.

## Puzzle 1-9

**1.** 5.2 **2.** 8.8 **3.** 5.4 **4.** 5.6 **5.** 7.7 **6.** 4.9 **7.** 5.6 **8.** 9.3 **9.** 7.2 **10.** 1.9 **11.** 4.3 **12.** 5.6 **13.** 6.5 **14.** 7.6 **15.** 8.4 **16.** 4.5 **17.** 4.3 **18.** 7.1

COLUMBIA UNIVERSITY

## Chapter 1A Graphic Organizer

**1.** 12 **2.** in the back of the book **3.** 9 **4.** Writing Gridded Responses **5.** Check students' diagrams.

Name _____ Class _____ Date _____

# Reteaching 4-1

## Divisibility and Mental Math

A number is **divisible** by a second number if the second number divides into the first with no remainder. Here are some rules.

| Last Digit of a Number | The Number Is Divisible by | Examples |
|---|---|---|
| any | 1 | any number |
| 0, 2, 4, 6, 8 | 2 | 10; 24; 32; 54; 106; 138 |
| 0, 5 | 5 | 10; 25; 70; 915; 1,250 |
| 0 | 10 | 10; 20; 90; 500; 4,300 |

| The Sum of the Digits | The Number Is Divisible by | Examples | |
|---|---|---|---|
| is divisible by 3 | 3 | $843 \rightarrow 8 + 4 + 3 = 15$ and $15 \div 3 = 5$ | $3\overline{)843}$ 281 R0 |
| is divisible by 9 | 9 | $2{,}898 \rightarrow 2 + 8 + 9 + 8 = 27$ and $27 \div 9 = 3$ | $9\overline{)2{,}898}$ 322 R0 |

**Circle the numbers in each row that are divisible by the number at the left.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1. | 2 | 8 | 15 | 26 | 42 | 97 | 105 | 218 |
| 2. | 5 | 14 | 10 | 25 | 18 | 975 | 1,005 | 2,340 |
| 3. | 10 | 100 | 75 | 23 | 60 | 99 | 250 | 655 |
| 4. | 3 | 51 | 75 | 12 | 82 | 93 | 153 | 274 |
| 5. | 9 | 27 | 32 | 36 | 108 | 126 | 245 | 387 |

**Use mental math to determine if the first number is divisible by the second.**

6. 185; 5 _____
7. 76,870; 10 _____
8. 456; 3 _____
9. 35,994; 2 _____
10. 12,866; 9 _____
11. 151,002; 9 _____
12. 6,888; 2 _____
13. 31,067; 5 _____
14. 901,204; 3 _____
15. 2,232; 3 _____
16. 45,812; 9 _____
17. 3,090; 10 _____
18. 312; 9 _____
19. 1,933; 3 _____
20. 28,889; 2 _____

**Test each number for being divisible by 2, 5, or 10. Some numbers may be divisible by more than one number.**

21. 800 _____
22. 65 _____
23. 1, 010 _____

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Name _____ Class _____ Date _____

# Practice 4-1

## Divisibility and Mental Math

**Is the first number divisible by the second? Use mental math.**

1. 475 by 5 _____
2. 5,296 by 3 _____
3. 843 by 2 _____
4. 456,790 by 5 _____
5. 3,460 by 2 _____
6. 4,197 by 3 _____

**Test each number for divisibility by 2, 3, 5, 9, or 10.**

7. 126 _____
8. 257 _____
9. 430 _____
10. 535 _____
11. 745 _____
12. 896 _____
13. 729 _____
14. 945 _____
15. 4,580 _____
16. 6,331 _____
17. 7,952 _____
18. 8,000 _____
19. 19,450 _____
20. 21,789 _____
21. 43,785 _____
22. 28,751 _____

**Find the digit that makes each number divisible by 9.**

23. 54,78☐
24. 42,☐97
25. 83,2☐4

**Name the numbers that are divisible by the numbers given.**

26. numbers between 10 and 20, divisible by 2, 3, and 9

_____

27. numbers between 590 and 610, divisible by 2, 3, 5, and 10

_____

28. There are 159 students to be grouped into relay teams. Each team is to have the same number of students. Can each team have 3, 5, or 6 students?

_____


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Name _____ Class _____ Date _____

# Reteaching 4-3

## Prime Numbers and Prime Factorization

A *prime number* has exactly two factors, the number itself and 1.

$5 \times 1 = 5$
5 is a prime number.

A *composite number* has more than two factors.

$1 \times 6 = 6$
$2 \times 3 = 6$

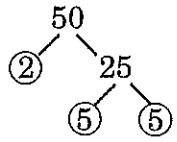
1, 2, 3, and 6 are factors of 6.
6 is a composite number.

The number 1 is neither prime nor composite.

Every composite number can be written as a product of prime numbers.

$6 = 2 \times 3$
$8 = 2 \times 2 \times 2$
$12 = 2 \times 2 \times 3$

Factors that are prime numbers are called *prime factors*. You can use a *factor tree* to find prime factors. This one shows the prime factors of 50.

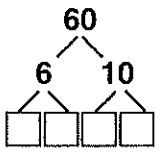



$50 = 2 \times 5 \times 5$ is the *prime factorization* of 50.

**Tell whether each number is prime or composite. Explain.**

1. 21 _____
2. 43 _____
3. 53 _____
4. 74 _____
5. 54 _____
6. 101 _____
7. 67 _____
8. 138 _____
9. 83 _____
10. 95 _____
11. 41 _____
12. 57 _____

**Complete each factor tree.**

13.
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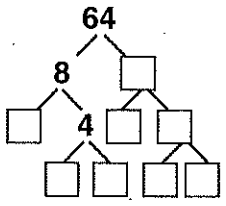


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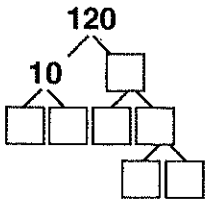



**Find the prime factorization of each number.**

16. 21 _____
17. 48 _____
18. 81 _____
19. 63 _____
20. 100 _____
21. 103 _____

Name _____ Class _____ Date _____

# Practice 4-3

## Prime Numbers and Prime Factorization

1. Make a list of all the prime numbers from 50 through 75 _____

**Tell whether each number is prime or composite.**

2. 53 _____
3. 86 _____
4. 95 _____
5. 17 _____
6. 24 _____
7. 27 _____
8. 31 _____
9. 51 _____
10. 103 _____
11. 47 _____
12. 93 _____
13. 56 _____

**Complete each factor tree.**

14. 28 → 7, _, _

15. 75 → _, 15 → _, _

16. 84 → _, 21 → _, _, _, _

**Find the prime factorization of each number.**

17. 58 _____
18. 72 _____
19. 40 _____
20. 30 _____
21. 144 _____
22. 310 _____

**Find the number with the given prime factorization.**

23. $2 \times 2 \times 5 \times 7 \times 11$ _____
24. $2 \times 3 \times 5 \times 7 \times 11$ _____
25. $2 \times 2 \times 13 \times 17$ _____
26. $7 \times 11 \times 13 \times 17$ _____

27. There are 32 students in a class. How many ways can the class be divided into groups with equal numbers of students? What are they?

_____

Name _____ Class _____ Date _____

# Reteaching 4-4

## Greatest Common Factor

You can find the *greatest common factor (GCF)* of 12 and 18 using a division ladder, factor trees, or by listing the factors. Two of these methods are shown.

① List the factors of 12 and 18.

12: 1, 2, 3, 4, 6, 12
18: 1, 2, 3, 6, 9, 18

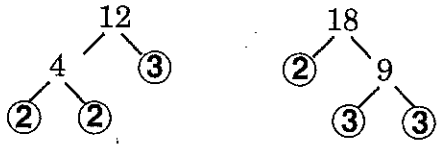
② Find the common factors.

12: ①,②,③, 4,⑥, 12
18: ①,②,③,⑥, 9, 18

The common factors are 1, 2, 3, and 6.

③ Name the greatest common factor: 6.

① Draw factor trees.




② Write each prime factorization. Identify common factors.

12: ② × 2 × ③
18: ② × ③ × 3

③ Multiply the common factors. $2 \times 3 = 6$. The GCF of 12 and 18 is 6.

**List the factors to find the GCF of each set of numbers.**

**1.** 10: _____
15: _____
GCF: _____

**2.** 14: _____
21: _____
GCF: _____

**3.** 9: _____
21: _____
GCF: _____

**4.** 12: _____
13: _____
GCF: _____

**5.** 15: _____
25: _____
GCF: _____

**6.** 15: _____
18: _____
GCF: _____

**7.** 36: _____
48: _____
GCF: _____

**8.** 24: _____
30: _____
GCF: _____

**Find the GCF of each set of numbers.**

**9.** 21, 60 _____

**10.** 15, 45 _____

**11.** 54, 60 _____

**12.** 20, 50 _____

**13.** 36, 40 _____

**14.** 48, 72 _____

Name _____ Class _____ Date _____

# Practice 4-4

## Greatest Common Factor

**List the factors to find the GCF of each set of numbers.**

1. 8, 12 _____
2. 18, 27 _____
3. 15, 23 _____
4. 17, 34 _____
5. 24, 12 _____
6. 18, 24 _____
7. 5, 25 _____
8. 20, 25 _____

**Use a division ladder to find the GCF of each set of numbers.**

9. 10, 15 _____
10. 25, 75 _____
11. 14, 21 _____
12. 18, 57 _____
13. 32, 24, 40 _____
14. 25, 60, 75 _____
15. 12, 35, 15 _____
16. 15, 35, 20 _____

**Use factor trees to find the GCF of each set of numbers.**

17. 28, 24 _____
18. 27, 36 _____
19. 15, 305 _____
20. 57, 27 _____
21. 24, 48 _____
22. 56, 35 _____
23. 75, 200 _____
24. 90, 160 _____
25. 72, 108 _____

**Solve.**

26. The GCF of two numbers is 850. Neither number is divisible by the other. What is the smallest that these two numbers could be?

_____

27. The GCF of two numbers is 479. One number is even and the other number is odd. Neither number is divisible by the other. What is the smallest that these two numbers could be?

_____

Name _____ Class _____ Date _____

# Reteaching 4-7

## Least Common Multiple

Find the *least common multiple (LCM)* of 8 and 12.

① Begin listing multiples of each number.

8: 8, 16, 24, 32, 40

12: 12, 24

② Continue the lists until you find the first multiple that is common to both lists. That is the LCM.

The least common multiple of 8 and 12 is 24.

---

**List multiples to find the LCM of each pair of numbers.**

1. 4: _____
   5: _____
   LCM: _____

2. 6: _____
   7: _____
   LCM: _____

3. 9: _____
   15: _____
   LCM: _____

4. 10: _____
   25: _____
   LCM: _____

5. 8: _____
   24: _____
   LCM: _____

6. 8: _____
   12: _____
   LCM: _____

7. 4: _____
   7: _____
   LCM: _____

8. 15: _____
   25: _____
   LCM: _____

**Use prime factorization to find the LCM of each set of numbers.**

9. 9, 21 _____

10. 6, 8 _____

11. 18, 24 _____

12. 40, 50 _____

Name _____ Class _____ Date _____

# Practice 4-7

## Least Common Multiple

**List multiples to find the LCM of each set of numbers.**

1. 5, 10 _____
2. 2, 3 _____
3. 6, 8 _____
4. 8, 10 _____
5. 5, 6 _____
6. 12, 15 _____
7. 9, 15 _____
8. 6, 15 _____
9. 6, 9 _____
10. 3, 5 _____
11. 4, 5 _____
12. 9, 21 _____
13. 4, 6, 8 _____
14. 6, 8, 12 _____
15. 4, 9, 12 _____
16. 6, 12, 15 _____
17. 8, 12, 15 _____
18. 2, 4, 5 _____

**Use prime factorizations to find the LCM of each set of numbers.**

19. 18, 21 _____
20. 15, 21 _____
21. 18, 24 _____
22. 15, 30 _____
23. 24, 30 _____
24. 24, 72 _____
25. 8, 42 _____
26. 16, 42 _____
27. 8, 56 _____
28. 8, 30 _____
29. 16, 30 _____
30. 18, 30 _____
31. 12, 24, 16 _____
32. 8, 16, 20 _____
33. 12, 16, 20 _____

34. At a store, hot dogs come in packages of eight and hot dog buns come in packages of twelve. What is the least number of packages of each type that you can buy and have no hot dogs or buns left over?

_____

# Chapters 1–4 Answers (continued)

| | | |
|---|---|---|
| 5. | 3 | Addresses as many of the "rules" as possible, given the route number; addresses the issue of north to south or east to west along with at least one other element; good explanation |
| | 2 | Correct information; poorly organized explanation OR strong explanation with some inaccuracies or omissions |
| | 1 | Inaccurate information with some explanation OR weak explanation |
| | 0 | No response |
| Excursion | 5 | Creative, interesting presentation of clearly described situation; clearly defined rules |
| | 4 | Clear presentation; clearly defined rules |
| | 3 | Incomplete presentation; clearly defined rules OR good presentation; vaguely defined rules |
| | 2 | Weak presentation; some rules |
| | 1 | Response related to numbering; no rules |
| | 0 | No response OR other response |

## Chapter 3 Cumulative Review

**1.** D **2.** J **3.** C **4.** J **5.** C **6.** H **7.** A **8.** G **9.** B **10.** J **11.** B **12.** J **13.** C **14.** J **15.** D **16.** H **17.** C **18.** H **19.** A **20.** $x + 4 = 6$ **21.** 4; 5; 13; check students' explanations.

# Chapter 4

## Practice (regular) 4-1

**1.** yes **2.** no **3.** no **4.** yes **5.** yes **6.** yes **7.** 2, 3, 9 **8.** none **9.** 2, 5, 10 **10.** 5 **11.** 5 **12.** 2 **13.** 3, 9 **14.** 3, 5, 9 **15.** 2, 5, 10 **16.** none **17.** 2 **18.** 2, 5, 10 **19.** 2, 5, 10 **20.** 3, 9 **21.** 3, 5, 9 **22.** none **23.** 3 **24.** 5 **25.** 1 **26.** 18 **27.** 600 **28.** 3 students

## Guided Problem Solving 4-1

**1.** Determine if the bill can be divided into 9 equal shares. **2.** the divisibility rule for 9 **3.** If the sum of the digits of a number is divisible by 9, then the number is divisible by 9. **4.** $56.61 **5.** 5, 6, 6, and 1 **6.** 18 **7.** yes **8.** yes **9.** Divide $56.61 by 9 to see if it divides evenly. **10.** 1 + 3 + 7 = 11; 11 is not divisible by 3; no

## Practice (adapted) 4-1

**1.** yes **2.** no **3.** no **4.** yes **5.** yes **6.** yes **7.** 2, 3, 9 **8.** none **9.** 2, 5, 10 **10.** 5 **11.** 5 **12.** 2 **13.** 3, 9 **14.** 3, 5, 9 **15.** 2, 5, 10 **16.** none **17.** 2 **18.** 2, 5, 10 **19.** 3 **20.** 5 **21.** 1 **22.** 18 **23.** 3 students

## Activity Lab 4-1

**1–2.** Check students' work. **3.** Yellow: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40; Red: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39; Blue: 5, 10, 15, 20, 25, 30, 35, 40; Purple: 9, 18, 27, 36; Green: 10, 20, 30, 40 **4a.** Sample answer: 2, 3, 5, 7, 11, 13, 17 **4b.** 18, 20, 30, 36, 40 **4c.** Check students' work.

## Reteaching 4-1

**1.** 8; 26; 42; 218 **2.** 10; 25; 975; 1,005; 2,340 **3.** 100; 60; 250 **4.** 51; 75; 12; 93; 153 **5.** 27; 36; 108; 126; 387 **6.** yes **7.** yes **8.** yes **9.** yes **10.** no **11.** yes **12.** yes **13.** no **14.** no **15.** yes **16.** no **17.** yes **18.** no **19.** no **20.** no **21.** 2, 5, 10 **22.** 5 **23.** 2, 5, 10

## Enrichment 4-1

**1a.** yes **1b.** yes **1c.** no **1d.** yes **1e.** no **1f.** yes **2.** 108, 212, 316, 1,020 **3.** Sample answer: change 108 to 208. The new number is still divisible by four since there is no remainder when divided by 4. **4.** The number formed by the last two digits is divisible by 4. **5.** If the number formed by the last two digits of a given number is divisible by 4, then the number is divisible by 4. **6a.** no **6b.** yes **6c.** yes **6d.** yes **6e.** yes **6f.** yes **7a.** yes **7b.** no; 29 is not divisible by 4

## Puzzle 4-1

CHC; KEY; LIM; CAR; CHARITY

## Practice (regular) 4-2

**1.** $3^4$; 3 is the base, 4 is the exponent **2.** $7^6$; 7 is the base, 6 is the exponent **3.** $9^3$; 9 is the base, 3 is the exponent **4.** $9 \times 10^4 + 8 \times 10^3 + 3 \times 10^2 + 6 \times 10^1 + 4 \times 1$ **5.** $2 \times 10^7 + 3 \times 10^5 + 5 \times 10^4 + 1 \times 10^3 + 4 \times 10^2 + 1 \times 1$ **6.** $8 \times 10^5 + 7 \times 10^4 + 5 \times 10^3 + 2 \times 10^1$ **7.** 81 **8.** 1,296 **9.** 125 **10.** 160 **11.** 104 **12.** 61 **13.** 144 **14.** 15 **15.** 206 **16.** 60 **17.** 600 **18.** 53 **19.** 35 **20.** 50 **21.** 120 **22.** 21 **23.** 512 **24.** 804 **25.** 145 **26.** 246 **27.** 86

## Guided Problem Solving 4-2

**1.** Determine how many cells there will be after 8 hours. **2.** It means the number is multiplied by itself the number of times shown in the exponent. **3.** $2^3$ cells **4.** $2^4$ cells **5.** $2^6$ cells **6.** $2^8$ cells **7.** because the number of cells doubled eight times **8.** $3^4$ organisms

## Practice (adapted) 4-2

**1.** $3^4$; 3 is the base, 4 is the exponent **2.** $7^6$; 7 is the base, 6 is the exponent **3.** $9^3$; 9 is the base, 3 is the exponent **4.** $9 \times 10^4 + 8 \times 10^3 + 3 \times 10^2 + 6 \times 10^1 + 4 \times 1$ **5.** $2 \times 10^7 + 3 \times 10^5 + 5 \times 10^4 + 1 \times 10^3 + 4 \times 10^2 + 1 \times 1$ **6.** $8 \times 10^5 + 7 \times 10^4 + 5 \times 10^3 + 2 \times 10^1$ **7.** 81 **8.** 1,296 **9.** 125 **10.** 160 **11.** 104 **12.** 61 **13.** 144 **14.** 15 **15.** 206

# Chapters 1–4 Answers (continued)

**16.** 60 **17.** 600 **18.** 53 **19.** 35 **20.** 50 **21.** 120 **22.** 21

## Activity Lab 4-2

**1.** 4; 8; 16; 9; 27; 81; 16; 64; 256 **2.** 216; 216 **3.** 256; 256 **4.** 5; 16,807 **5a.** I would choose the [x^y] key because it is faster. **5b.** 1,024 **5c.** 2, [x^y], 10, [=]

## Reteaching 4-2

**1.** 3; 6 **2.** 6; 2 **3.** 8; 4 **4.** $9^3$; 9; 3 **5.** $6^4$; 6; 4 **6.** $1^5$; 1; 5 **7.** 36 **8.** 243 **9.** 10,000 **10.** 41 **11.** 4 **12.** 52 **13.** 28 **14.** 22 **15.** 14 **16.** 4 **17.** 50 **18.** 14

## Enrichment 4-2

**1.** Sample answer: Exponent increases by 1; value doubles; ones digits: 2, 4, 8, 6, 2, 4, 8, 6... **2.** $2^{11}$; 2,048, $2^{12}$; 4,096 **3.** $3^1 = 3, 3^2 = 9, 3^3 = 27, 3^4 = 81, 3^5 = 243, 3^6 = 729, 3^7 = 2{,}187, 3^8 = 6{,}561, 3^9 = 19{,}683, 3^{10} = 59{,}049$. Sample answer: Exponent increases by 1; number in standard form triples; ones digits form pattern: 3, 9, 7, 1, 3, 9, 7, 1,... **4.** No; the last digits of the powers of 2 form the pattern: 2, 4, 8, 6, 2, 4, 8,... **5.** about 300,000 km/sec

## Puzzle 4-2

**1.** $2^2$ **2.** $5^2$ **3.** $3^1$ **4.** $7^3$ **5.** $3^4$ **6.** $8^2$

## Practice (regular) 4-3

**1.** 53, 59, 61, 67, 71, 73 **2.** prime **3.** composite **4.** composite **5.** prime **6.** composite **7.** composite **8.** prime **9.** composite **10.** prime **11.** prime **12.** composite **13.** composite **14–16.** Sample answers are given. **14.** 4; 2; 2 **15.** 5; 3; 5 **16.** 4; 2; 2; 3; 7 **17.** $2 \times 29$ **18.** $2 \times 2 \times 2 \times 3 \times 3$ **19.** $2 \times 2 \times 2 \times 5$ **20.** $2 \times 3 \times 5$ **21.** $2 \times 2 \times 2 \times 2 \times 3 \times 3$ **22.** $2 \times 5 \times 31$ **23.** 1,540 **24.** 2,310 **25.** 884 **26.** 17,017 **27.** four ways; 2 groups of 16; 4 groups of 8; 8 groups of 4, 16 groups of 2

## Guided Problem Solving 4-3

**1.** Determine how many rows of guards are possible, and how many guards will be in each row. **2.** the factors of 36 **3.** 9 **4.** 1, 2, 3, 4, 6, 9, 12, 18, 36 **5.** 1, 2, 3, 4, 6, 9, 12, 18, 36 **6.** 36, 18, 12, 9, 6, 4, 3, 2, 1 **7.** The row length times the number of people in each row should be 36. **8.** 1, 2, 3, 5, 6, 10, 15, 30; 30, 15, 10, 6, 5, 3, 2, 1

## Practice (adapted) 4-3

**1.** prime **2.** composite **3.** composite **4.** composite **5.** composite **6.** composite **7.** prime **8.** prime **9.** prime **10.** composite **11–13.** Sample answers are given. **11.** 4; 2; 2 **12.** 5; 3; 5 **13.** 4; 2; 2; 3; 7 **14.** $2 \times 29$ **15.** $2 \times 2 \times 2 \times 3 \times 3$ **16.** $2 \times 2 \times 2 \times 5$ **17.** $2 \times 3 \times 5$ **18.** 1,540 **19.** 2,310 **20.** 884 **21.** 17,017 **22.** four ways; 2 groups of 16; 4 groups of 8; 8 groups of 4, 16 groups of 2

## Activity Lab 4-3

**1.** Sample answers are given.

| Number | Sum of two odd primes | Sum of three primes |
|---|---|---|
| 6 | 3 + 3 | 2 + 2 + 2 |
| 8 | 3 + 5 | 2 + 3 + 3 |
| 14 | 3 + 11 | 2 + 5 + 7 |
| 30 | 7 + 23 | 2 + 5 + 23 |
| 38 | 7 + 31 | 2 + 5 + 31 |
| 40 | 3 + 37 | 2 + 7 + 31 |
| 50 | 13 + 37 | 2 + 7 + 41 |
| 88 | 5 + 83 | 2 + 3 + 83 |
| 100 | 3 + 97 | 2 + 19 + 79 |
| 116 | 3 + 113 | 2 + 5 + 109 |
| 132 | 5 + 127 | 2 + 3 + 127 |
| 150 | 11 + 139 | 2 + 11 + 137 |
| 152 | 3 + 149 | 2 + 13 + 137 |

**2–4.** Check students' work.

## Reteaching 4-3

**1.** composite **2.** prime **3.** prime **4.** composite **5.** composite **6.** prime **7.** prime **8.** composite **9.** prime **10.** composite **11.** prime **12.** composite

**13.** 60 → 6, 10 → 2, 3, 2, 5

**14.** 64 → 8, 8 → 2, 4, 2, 4 → 2, 2, 2, 2

**15.** 120 → 10, 12 → 2, 5, 3, 4 → 2, 2

**16.** $3 \times 7$ **17.** $2 \times 2 \times 2 \times 2 \times 3$ **18.** $3 \times 3 \times 3 \times 3$ **19.** $3 \times 3 \times 7$ **20.** $2 \times 2 \times 5 \times 5$ **21.** 103

## Enrichment 4-3

**1.** $2^3 \times 3^2 \times 7$ **2.** 2, 3, 3, 2, 7 **3–7.** Check students' work.

## Puzzle 4-3

**1.** $5 \cdot 11$ **2.** $2 \cdot 3 \cdot 5$ **3.** $3 \cdot 31$ **4.** $2 \cdot 3 \cdot 17$ **5.** $2 \cdot 5 \cdot 13$

EGYPTIANS

## Practice (regular) 4-4

**1.** 4 **2.** 9 **3.** 1 **4.** 17 **5.** 12 **6.** 6 **7.** 5 **8.** 5 **9.** 5 **10.** 25 **11.** 7 **12.** 3 **13.** 8 **14.** 5 **15.** 1 **16.** 5 **17.** 4 **18.** 9 **19.** 5 **20.** 3 **21.** 24 **22.** 7 **23.** 25 **24.** 10 **25.** 36 **26.** 1,700 and 2,550 **27.** 958 and 1,437

## Guided Problem Solving 4-4

**1.** Each person gets the same number of baseball cards. **2.** 20 cards **3.** No; the sum of the digits is not divisible by 3. **4.** 23 cards **5.** 27 cards **6.** 27 **7.** Brands B and C **8.** Brand B and C have 27 cards, which is divisible by 3. **9.** 5 rows of 9 drill

# Chapters 1–4 Answers (continued)

team students and 5 rows of 5 color guard students

## Practice (adapted) 4-4

**1.** 4 **2.** 9 **3.** 1 **4.** 12 **6.** 6 **7.** 5 **8.** 25 **9.** 7 **10.** 8 **11.** 5 **12.** 1 **13.** 4 **14.** 9 **15.** 5 **16.** 3 **17.** 24 **18.** 7 **19.** 1,700 and 2,550 **20.** 958 and 1,437

## Activity Lab 4-4

**1.** 12 centerpieces; 3 carnations, 2 roses, 4 tulips
**2.** 6 centerpieces; 6 carnations; 4 roses, 8 tulips, 5 daisies
**3.** 2 centerpieces; 18 carnations, 12 roses, 20 tulips, 15 daisies
**4.** 9 bouquets; 3 red, 4 blue, 6 green **5.** 9 bouquets; 3 red, 4 blue, 6 green, 12 yellow **6.** 9 bouquets; 3 red, 4 blue, 6 green, 10 yellow

## Reteaching 4-4

**1.** 1, 2, 5, 10; 1, 3, 5, 15; 5 **2.** 1, 2, 7, 14; 1, 3, 7, 21; 7 **3.** 1, 3, 9; 1, 3, 7, 21; 3 **4.** 1, 2, 3, 4, 6, 12; 1, 13; 1 **5.** 1, 3, 5, 15; 1, 5, 25; 5 **6.** 1, 3, 5, 15; 1, 2, 3, 6, 9, 18; 3 **7.** 1, 2, 3, 4, 6, 9, 12, 18, 36; 1, 2, 3, 4, 6, 8, 12, 16, 24, 48; 12 **8.** 1, 2, 3, 4, 6, 8, 12, 24; 1, 2, 3, 5, 6, 10, 15, 30; 6 **9.** 3 **10.** 15 **11.** 6 **12.** 10 **13.** 4 **14.** 24

## Enrichment 4-4

**1.** 12 and 18 **2.** 24 and 56 **3.** 8, 16, and 24 **4.** 9 and 54, 18 and 45, 27 and 36 **5.** 5, 15, and 25; 5, 10 and 30; 10, 15, and 20
**6.** Check students' answers.

## Puzzle 4-4

**1.** 3 **2.** 12 **3.** 30 **4.** 4 **5.** 14 **6.** 15 **7.** 21 **8.** 9

## Practice (regular) 4-5

**1.** $\frac{1}{3}; \frac{4}{12}$; yes **2.** $\frac{1}{2}; \frac{3}{5}$; no **3.** $\frac{3}{4}; \frac{6}{10}$; no **4.** 2 **5.** 5 **6.** 6 **7.** 3 **8.** 2 **9.** 10 **10.** 15 **11.** 25 **12–19.** Sample answers are given. **12.** $\frac{6}{20}; \frac{9}{30}$ **13.** $\frac{14}{16}; \frac{21}{24}$ **14.** $\frac{10}{12}; \frac{15}{18}$ **15.** $\frac{9}{12}; \frac{15}{20}$ **16.** $\frac{3}{4}; \frac{6}{8}$ **17.** $\frac{2}{3}; \frac{4}{6}$ **18.** $\frac{1}{3}; \frac{3}{9}$ **19.** $\frac{1}{4}; \frac{3}{12}$ **20.** no; $\frac{3}{7}$ **21.** no; $\frac{2}{5}$ **22.** yes **23.** no; $\frac{17}{18}$ **24.** no; $\frac{1}{3}$ **25.** no; $\frac{5}{8}$ **26.** no; $\frac{1}{2}$ **27.** yes **28.** no; $\frac{17}{22}$ **29.** $\frac{4}{5}$ **30.** $\frac{1}{4}$

## Guided Problem Solving 4-5

**1.** Explain why the engineers wrote the driving time differently. **2.** They are the same. **3.** Sample answers: seconds, minutes, hours, days, weeks, months, years **4.** minutes **5.** hours **6.** One engineer wrote the time in minutes and the other wrote it in hours. **7.** Sample answer: Minutes and hours are reasonable units when talking about driving time between two towns. **8.** 15 minutes

## Practice (adapted) 4-5

**1.** $\frac{1}{3}; \frac{4}{12}$; yes **2.** $\frac{1}{2}; \frac{3}{5}$; no **3.** $\frac{3}{4}; \frac{6}{10}$; no **4.** 2 **5.** 5 **6.** 6 **7.** 2 **8.** 10 **9.** 15 **10–15.** Sample answers are given. **10.** $\frac{6}{20}; \frac{9}{30}$ **11.** $\frac{14}{16}; \frac{21}{24}$ **12.** $\frac{10}{12}; \frac{15}{18}$ **13.** $\frac{3}{4}; \frac{6}{8}$ **14.** $\frac{2}{3}; \frac{4}{6}$ **15.** $\frac{1}{3}; \frac{3}{9}$ **16.** no; $\frac{3}{7}$ **17.** no; $\frac{2}{5}$ **18.** no; $\frac{17}{18}$ **19.** no; $\frac{1}{3}$ **20.** no; $\frac{1}{2}$ **21.** yes **22.** $\frac{4}{5}$

## Activity Lab 4-5

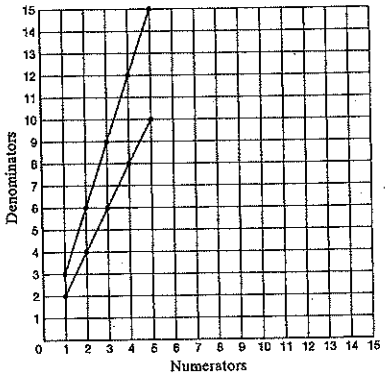
**1.** Check students' work. **2.** $\frac{1}{4}$ **3.** $\frac{1}{4}$ unit **4a.** $\frac{1}{2}$ **4b.** $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ **5.** $C = \frac{1}{16}$ unit; Area of piece $D = \frac{1}{32}$ unit **6a.** $E = 2C$ **6b.** $E = \frac{1}{8}$ unit **7a.** $\frac{5}{32}$ unit **7b.** $F = D + 2C = \frac{5}{32}$ unit **8.** Check that the sum of the areas of the pieces is 1.

## Reteaching 4-5

**1–6.** Sample answers are given. **1.** $\frac{10}{12}; \frac{15}{18}$ **2.** $\frac{6}{14}; \frac{9}{21}$ **3.** $\frac{14}{16}; \frac{28}{32}$ **4.** $\frac{6}{22}; \frac{9}{33}$ **5.** $\frac{6}{12}; \frac{1}{2}$ **6.** $\frac{2}{10}; \frac{5}{25}$ **7.** no; $\frac{4}{5}$ **8.** yes **9.** yes **10.** no; $\frac{7}{15}$ **11.** $\frac{1}{2}$ **12.** $\frac{1}{20}$ **13.** $\frac{7}{8}$ **14.** $\frac{1}{3}$ **15.** $\frac{13}{17}$ **16.** $\frac{3}{4}$ **17.** $\frac{1}{7}$ **18.** $\frac{2}{3}$ **19.** $\frac{2}{15}$ **20.** $\frac{7}{33}$

## Enrichment 4-5

**1–5.** Sample answers are given.
**1.** Sample: $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}$
**2.**




**3.** Points form a line segment, and each point is one space right and three spaces up from the prior point. **4.** Points will form a line segment, and each point is one space right and two spaces up from the prior point. **5.** Sample answer: $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$; Check students' answers. **6.** The line segment for $\frac{1}{3}$ is steeper than the line segment for $\frac{1}{2}$. The larger the denominator, the steeper the line segment will be.

## Puzzle 4-5

**1.** I **2.** J **3.** R **4.** U **5.** T **6.** P **7.** E
JUPITER

## Practice (regular) 4-6

**1.** $2\frac{3}{4}$ **2.** $3\frac{5}{6}$ **3.** $4\frac{5}{8}$ **4.** $6\frac{2}{5}$ **5.** $\frac{15}{8}$ **6.** $\frac{11}{4}$ **7.** $\frac{22}{3}$ **8.** $\frac{15}{4}$ **9.** $\frac{17}{4}$ **10.** $\frac{35}{6}$ **11.** $\frac{19}{8}$ **12.** $\frac{39}{8}$ **13.** $\frac{13}{5}$ **14.** $\frac{47}{12}$ **15.** $\frac{31}{12}$ **16.** $\frac{79}{15}$ **17.** $7\frac{1}{2}$ **18.** $2\frac{2}{3}$

# Chapters 1–4 Answers (continued)

**19.** $2\frac{1}{2}$ **20.** $1\frac{1}{10}$ **21.** $1\frac{1}{6}$ **22.** $1\frac{1}{8}$ **23.** $2\frac{1}{4}$ **24.** $1\frac{4}{9}$ **25.** $1\frac{2}{3}$ **26.** $3\frac{2}{5}$ **27.** $2\frac{5}{6}$ **28.** $2\frac{2}{5}$ **29.** $\frac{33}{6}$ **30.** $\frac{123}{12}$

## Guided Problem Solving 4-6

**1.** two slices; 50 guests; 12 slices **2.** Write the number of melons as a mixed number; then find out how many whole melons are needed. **3.** 100 slices **4.** 12 slices **5.** division **6.** $8\frac{1}{3}$ melons **7.** 9 melons **8.** Parts of melons are not usually sold in bulk. **9.** $6\frac{11}{16}$; 7 buses

## Practice (adapted) 4-6

**1.** $2\frac{3}{4}$ **2.** $3\frac{5}{6}$ **3.** $4\frac{5}{8}$ **4.** $\frac{15}{8}$ **5.** $\frac{11}{4}$ **6.** $\frac{22}{3}$ **7.** $\frac{15}{4}$ **8.** $\frac{17}{4}$ **9.** $\frac{35}{6}$ **10.** $\frac{19}{8}$ **11.** $\frac{39}{8}$ **12.** $\frac{13}{5}$ **13.** $7\frac{1}{2}$ **14.** $2\frac{2}{3}$ **15.** $2\frac{1}{2}$ **16.** $1\frac{1}{10}$ **17.** $1\frac{1}{6}$ **18.** $1\frac{1}{8}$ **19.** $2\frac{1}{4}$ **20.** $1\frac{4}{9}$ **21.** $1\frac{2}{3}$ **22.** $\frac{33}{6}$

## Activity Lab 4-6

**1.** $\frac{27}{4}$ **2.** $5\frac{3}{7}$ **3.** $\frac{58}{7}$ **4.** $3\frac{9}{11}$ **5.** $\frac{227}{16}$ **6.** $1\frac{13}{43}$ **7.** $\frac{262}{11}$ **8.** $1\frac{29}{31}$ **9.** $\frac{1,247}{34}$ **10.** $10\frac{3}{8}$ **11.** $\frac{2,325}{44}$ **12.** $18\frac{4}{5}$ **13.** $\frac{3,187}{67}$ **14.** $2\frac{55}{64}$ **15.** $\frac{10,896}{47}$ **16.** $462\frac{4}{5}$

## Reteaching 4-6

**1.** $\frac{16}{7}$ **2.** $\frac{23}{4}$ **3.** $\frac{53}{8}$ **4.** $\frac{34}{10}$ **5.** $\frac{28}{3}$ **6.** $\frac{24}{5}$ **7.** $\frac{27}{8}$ **8.** $\frac{17}{7}$ **9.** $\frac{49}{6}$ **10–15.** Check students' work. **16.** $1\frac{1}{8}$ **17.** $3\frac{1}{2}$ **18.** $2\frac{2}{3}$ **19.** $1\frac{3}{4}$ **20.** $6\frac{2}{3}$ **21.** $3\frac{2}{5}$ **22.** $1\frac{4}{5}$ **23.** $3\frac{5}{8}$ **24.** $2\frac{2}{3}$

## Enrichment 4-6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titus | | | | | | | | | | | | | | X | |
| Ferns | | | | | | | X | | | | | | | X | |
| Violets | | | | | | X | | | | | | X | | | |
| Herman | | | | X | | | | X | | | | X | | | |
| Whiskers | | | X | | | X | | | X | | | X | | | X |

| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titus | | | | | | | | | | | | | X | | |
| Ferns | | | | | | X | | | | | | | X | | |
| Violets | | | X | | | | | | X | | | | | | X |
| Herman | X | | | | X | | | | X | | | | X | | |
| Whiskers | | | X | | | X | | | X | | | X | | | X |

**1.** $14^{th}$ and $28^{th}$ **2.** once **3.** no **4.** 28 days **5.** $12^{th}$ and $24^{th}$

## Puzzle 4-6

| | | |
|---|---|---|
| ~~X~~ | $\frac{11}{2}$ | ~~X~~ |
| $\frac{2}{2}$ | $\frac{5}{2}$ | $\frac{1}{2}$ |
| $\frac{2}{3}$ | $\frac{2}{1}$ | ~~X~~ |

| | | |
|---|---|---|
| $\frac{68}{7}$ | $\frac{21}{7}$ | $\frac{222}{21}$ |
| ~~X~~ | $\frac{78}{14}$ | ~~X~~ |
| $\frac{370}{70}$ | $\frac{14}{7}$ | $\frac{74}{4}$ |

| | | |
|---|---|---|
| ~~X~~ | $\frac{25}{8}$ | $\frac{11}{3}$ |
| $\frac{50}{3}$ | ~~X~~ | ~~X~~ |
| $\frac{12}{3}$ | ~~X~~ | $\frac{31}{4}$ |

| | | |
|---|---|---|
| ~~X~~ | $\frac{22}{8}$ | $\frac{11}{4}$ |
| $\frac{63}{12}$ | ~~X~~ | $\frac{100}{25}$ |
| $\frac{50}{4}$ | $\frac{10}{4}$ | ~~X~~ |

| | | |
|---|---|---|
| $\frac{10}{8}$ | ~~X~~ | $\frac{18}{8}$ |
| $\frac{45}{8}$ | $\frac{102}{16}$ | $\frac{21}{8}$ |
| ~~X~~ | $\frac{59}{3}$ | ~~X~~ |

| | | |
|---|---|---|
| $\frac{20}{10}$ | $\frac{10}{5}$ | ~~X~~ |
| ~~X~~ | $\frac{68}{25}$ | $\frac{51}{15}$ |
| ~~X~~ | $\frac{16}{5}$ | $\frac{32}{5}$ |

## Practice (regular) 4-7

**1.** 10 **2.** 6 **3.** 24 **4.** 40 **5.** 30 **6.** 60 **7.** 45 **8.** 30 **9.** 18 **10.** 15 **11.** 20 **12.** 63 **13.** 24 **14.** 24 **15.** 36 **16.** 60 **17.** 120 **18.** 20 **19.** 126 **20.** 105 **21.** 72 **22.** 30 **23.** 120 **24.** 72 **25.** 168 **26.** 336 **27.** 56 **28.** 120 **29.** 240 **30.** 90 **31.** 48 **32.** 80 **33.** 240 **34.** 3 packages of hot dogs, 2 packages of buns

## Guided Problem Solving 4-7

**1.** fifteenth, fortieth **2.** Find which customer will be the first to get both a free CD and a free DVD. **3.** the 15th, 30th, 45th, 60th, 75th, 90th, 105th, 120th, 135th, 150th, etc. **4.** the 40th, 80th, 120th, 160th, 200th, etc. **5.** the 120th customer **6.** The answer should be the LCM of 15 and 40. **7.** 30 days

## Practice (adapted) 4-7

**1.** 10 **2.** 6 **3.** 24 **4.** 40 **5.** 30 **6.** 60 **7.** 45 **8.** 30 **9.** 18 **10.** 15 **11.** 20 **12.** 63 **13.** 126 **14.** 105 **15.** 72 **16.** 30 **17.** 120 **18.** 72 **19.** 168 **20.** 336 **21.** 56 **22.** 3 packages of hot dogs, 2 packages of buns

## Activity Lab 4-7

**1–2.**

| Numbers | LCM | GCF | Product of original numbers | Product of LCM and GCF |
|---|---|---|---|---|
| 12, 15 | | | | |
| 8, 24 | | | | |
| 7, 12 | | | | |
| 27, 36 | | | | |

**3.** The values are equivalent; is equal to **4a.** 486 **4b.** 9 **4c.** 54 **5.** 120 **6.** 72 **7.** 100 **8.** 84

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# Chapters 1–4 Answers (continued)

## Reteaching 4-7

**1.** 4, 8, 12, 16, 20; 5, 10, 15, 20; 20 **2.** 6, 12, 18, 24, 30, 36, 42; 7, 14, 21, 28, 35, 42; 42 **3.** 9, 18, 27, 36, 45; 15, 30, 45; 45 **4.** 10, 20, 30, 40, 50; 25, 50; 50 **5.** 8, 16, 24; 24; 24 **6.** 8, 16, 24; 12, 24; 24 **7.** 4, 8, 12, 16, 20, 24, 28; 7, 14, 21, 28; 28 **8.** 15, 30, 45, 60, 75; 25, 50, 75; 75 **9.** 63 **10.** 24 **11.** 72 **12.** 200

## Enrichment 4-7

**1.** every 6 days **2.** January 7, January 13, January 19 **3.** every 12 days **4.** January 13 and January 25 **5.** every 10 days **6.** every 20 days **7.** every 60 days

## Puzzle 4-7

**1.** 88 **2.** 65 **3.** 21 **4.** 63 **5.** 30 **6.** 12 **7.** 15 **8.** 36 **9.** 20 **10.** 24 **11.** 44 **12.** 42 **13.** 45 **14.** 84

The maximum number of game pieces in a Chinese checkers board is 60.

## Practice (regular) 4-8

**1.** > **2.** = **3.** > **4.** > **5.** > **6.** = **7.** < **8.** < **9.** = **10.** > **11.** < **12.** = **13.** $\frac{5}{6}, \frac{9}{10}, \frac{14}{15}$ **14.** $1\frac{7}{12}, 1\frac{5}{6}, 1\frac{7}{8}$ **15.** $\frac{9}{10}, \frac{11}{12}, \frac{14}{15}$ **16.** $2\frac{1}{4}, 3\frac{5}{6}, 3\frac{7}{8}$ **17.** $\frac{7}{30}, \frac{2}{3}, \frac{11}{15}, \frac{4}{5}$ **18.** $1\frac{3}{4}, 2\frac{1}{10}, 2\frac{1}{6}, 3\frac{7}{8}$ **19.** $\frac{5}{12}, \frac{17}{30}, \frac{3}{5}$ **20.** $1\frac{11}{18}, 1\frac{5}{6}, 1\frac{11}{12}, 2\frac{1}{6}$ **21.** $\frac{17}{20}, 1\frac{18}{25}, 2\frac{31}{36}$ **22.** > **23.** > **24.** > **25.** < **26.** > **27.** > **28.** > **29.** > **30.** < **31.** $5\frac{1}{4}, 5\frac{5}{16}, 5\frac{3}{8}, 5\frac{5}{8}$

## Guided Problem Solving 4-8

**1.** $12\frac{9}{20}$ ounces, $12\frac{7}{16}$ ounces **2.** Determine which drink is the better buy. **3.** which is larger **4.** 80 **5.** $\frac{36}{80}, \frac{35}{80}$ **6.** $\frac{36}{80}$ **7.** the $12\frac{9}{20}$-ounce drink **8.** Change both mixed numbers to decimals and compare them. **9.** Ana drove more miles because $\frac{1}{4} > \frac{1}{8}$.

## Practice (adapted) 4-8

**1.** > **2.** = **3.** > **4.** > **5.** > **6.** = **7.** $\frac{5}{6}, \frac{9}{10}, \frac{14}{15}$ **8.** $1\frac{7}{12}, 1\frac{5}{6}, 1\frac{7}{8}$ **9.** $\frac{9}{10}, \frac{11}{12}, \frac{14}{15}$ **10.** $2\frac{1}{4}, 3\frac{5}{6}, 3\frac{7}{8}$ **11.** $\frac{7}{30}, \frac{2}{3}, \frac{11}{15}, \frac{4}{5}$ **12.** $1\frac{3}{4}, 2\frac{1}{10}, 2\frac{1}{6}, 3\frac{7}{8}$ **13.** > **14.** > **15.** > **16.** < **17.** > **18.** > **19.** > **20.** > **21.** < **22.** $5\frac{1}{4}, 5\frac{5}{16}, 5\frac{3}{8}, 5\frac{5}{8}$

## Activity Lab 4-8

**1.** −9 **2.** −0.057 **3.** 0.0952 **4a.** 0 **4b.** They are equivalent fractions. **5.** > **6.** < **7.** < **8.** = **9.** > **10.** > **11.** > **12.** < **13.** = **14.** <

## Reteaching 4-8

**1.** < **2.** < **3.** > **4.** = **5.** < **6.** = **7.** > **8.** < **9.** < **10.** $\frac{1}{2}, \frac{5}{8}, \frac{3}{4}$ **11.** $\frac{5}{8}, \frac{2}{3}, \frac{5}{6}$ **12.** $\frac{5}{12}, \frac{1}{2}, \frac{2}{3}$ **13.** $\frac{7}{12}, \frac{3}{5}, \frac{2}{3}$ **14.** $\frac{3}{8}, \frac{1}{2}, \frac{3}{5}$ **15.** $\frac{3}{4}, \frac{13}{16}, \frac{7}{8}$ **16.** Eugene; $1\frac{1}{9} = 1\frac{4}{36}$; $1\frac{5}{12} = 1\frac{15}{36}$; $1\frac{15}{36} > 1\frac{4}{36}$

## Enrichment 4-8

**1.** Sample answer: $\frac{1}{3}$ of one pound of silver dollars. Even though there are fewer pounds, the value is greater. **2.** Sample answer: $\frac{1}{3}$ of two million dollars, $\frac{1}{3}$ of two million is about \$666,667; $\frac{1}{2}$ of one million is \$500,000. **3.** Sample answer: $\frac{1}{6}$ of 12 dozen; $\frac{1}{6}$ of 12 is 2 which is greater than $\frac{1}{2}$ of 3, or $1\frac{1}{2}$. **4.** Check students' work.

## Puzzle 4-8

**1.** Check students' work.

## Practice (regular) 4-9

**1.** 0.72, $\frac{18}{25}$ **2.** 0.9, $\frac{9}{10}$ **3.** 0.04; $\frac{1}{25}$ **4.** $\frac{3}{5}$ **5.** $1\frac{1}{4}$ **6.** $\frac{37}{50}$ **7.** $\frac{127}{200}$ **8.** $\frac{4}{5}$ **9.** $6\frac{4}{25}$ **10.** $\frac{129}{200}$ **11.** $\frac{391}{500}$ **12.** $\frac{493}{1{,}000}$ **13.** 1.25 **14.** 0.875 **15.** 0.5625 **16.** 0.125 **17.** 1.8 **18.** 0.09 **19.** 0.28 **20.** 0.06 **21.** 0.008 **22.** 2.75 **23.** $\frac{1}{3}, \frac{2}{5}$, 0.5, 1.4 **24.** $\frac{8}{20}, 2\frac{1}{5}$, 2.25, 2.8 **25.** $\frac{1}{3}$, 0.4, $\frac{4}{9}$, 2.5 **26.** $\frac{3}{5}$, 0.65, 0.75, $\frac{7}{8}$ **27.** true **28.** true **29.** false **30.** false **31.** true **32.** true

## Guided Problem Solving 4-9

**1.** Write $1\frac{1}{4}$ as a decimal. **2.** one divided by 4 **3.** 1.0 **4.** 0.25 **5.** 1.25 **6.** 1.25 **7.** Write 1.25 as a mixed number and see if it is $1\frac{1}{4}$. **8.** 3.75 pounds

## Practice (adapted) 4-9

**1.** 0.72, $\frac{18}{25}$ **2.** 0.9, $\frac{9}{10}$ **3.** 0.04; $\frac{1}{25}$ **4.** $\frac{3}{5}$ **5.** $1\frac{1}{4}$ **6.** $\frac{37}{50}$ **7.** $\frac{127}{200}$ **8.** $\frac{4}{5}$ **9.** $6\frac{4}{25}$ **10.** 1.25 **11.** 0.875 **12.** 0.5625 **13.** 0.125 **14.** 1.8 **15.** 0.09 **16.** 2.75 **17.** $\frac{1}{3}, \frac{2}{5}$, 0.5, 1.4 **18.** $\frac{8}{20}, 2\frac{1}{5}$, 2.25, 2.8 **19.** $\frac{1}{3}$, 0.4, $\frac{4}{9}$, 2.5 **20.** true **21.** true **22.** false

## Activity Lab 4-9

**1.** 0.466666... **2.** $\frac{21}{50}$ **3.** 0.8125 **4.** $\frac{97}{125}$ **5.** 42.3 **6.** 13.583333... **7.** 93.716666... **8.** 245.6666... **9.** $325\frac{13}{400}$

## Reteaching 4-9

**1.** $\frac{4}{5}$ **2.** $\frac{11}{20}$ **3.** $1\frac{1}{4}$ **4.** $3\frac{3}{8}$ **5.** $\frac{1}{8}$ **6.** $1\frac{8}{25}$ **7.** $\frac{21}{250}$ **8.** $\frac{3}{500}$ **9.** $\frac{13}{20}$ **10.** 0.65 **11.** $0.1\overline{6}$ **12.** 0.35 **13.** 0.76 **14.** $0.\overline{4}$ **15.** $0.\overline{63}$ **16.** $1.\overline{2}$ **17.** 2.25 **18.** 0.04 **19.** less than **20.** equal to **21.** less than **22.** greater than **23.** greater than **24.** less than

## Enrichment 4-9

**1.** 0.1111..., 0.09090909..., 0.2222..., 0.18181818..., 0.3333..., 0.27272727..., 0.4444..., 0.36363636..., 0.5555..., 0.45454545..., 0.6666..., 0.54545454..., 0.7777..., 0.63636363... **2.** Sample answer: The decimal is a repeating decimal. The repeating part of the decimal is the same as the numerator of the fraction.

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# Reteaching 7-1

## Ratios

A *ratio* is a comparison of two numbers by division. Each number in a ratio is called a *term*. You can write a ratio in three different ways. For example, the ratio 4 to 5 can be written:

4 to 5

4 : 5

$\frac{4}{5}$

*Equal ratios* name the same number. They have the same *simplest form.*

- To find equal ratios, multiply *or* divide both the numerator and denominator of a ratio by the same number.

Find a ratio equal to $\frac{4}{7}$.

$\frac{4}{7} = \frac{4 \times 2}{7 \times 2} = \frac{8}{14}$

$\frac{8}{14}$ is equal to $\frac{4}{7}$.

Find the simplest form for the ratio $\frac{16}{20}$.

$\frac{16}{20} = \frac{16 \div 4}{20 \div 4} = \frac{4}{5}$

$\frac{4}{5}$ is the simplest form for $\frac{16}{20}$.

**Write three different ratios equal to each ratio.**

1. $\frac{2}{5}$ _____
2. 1 : 3 _____
3. 3 to 4 _____
4. 5 : 8 _____
5. 2 to 7 _____
6. $\frac{1}{5}$ _____
7. 12 to 20 _____
8. 6 : 16 _____

**Write each ratio in simplest form.**

9. 32 : 16 _____
10. $\frac{14}{24}$ _____
11. $\frac{36}{50}$ _____
12. 60 : 25 _____
13. $\frac{25}{40}$ _____
14. 60 : 180 _____
15. $\frac{75}{120}$ _____
16. 80 : 20 _____

**Find the value that makes the ratios equal.**

17. 3 : 4, ? : 16 _____
18. 20 to 25, 40 to ? _____
19. 7 : 10, ? : 100 _____
20. 1 to 8, ? to 24 _____
21. 5 : 100, 25 : ? _____
22. $\frac{7}{56}, \frac{?}{280}$ _____

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# Reteaching 7-2

## Unit Rates

A *rate* is a ratio that compares quantities that are measured in different units. Suppose a sprinter runs 100 yards in 10 seconds.

$\frac{100 \text{ yd}}{10 \text{ s}}$ compares yards to seconds.

A *unit rate* compares a quantity to one unit of another quantity.

You can find the unit rate by dividing by the denominator.

$$\frac{100 \text{ yd} \div 10}{10 \text{ s} \div 10} = \frac{10 \text{ yd}}{1 \text{ s}}$$

10 yards per second is the sprinter's unit rate.

---

**Find the unit price for each situation.**

1. \$70 for 10 shirts _____
2. \$150 for 3 games _____
3. \$20 for 5 toys _____
4. \$120 for 6 shirts _____
5. \$45 for 5 boxes _____
6. \$132 for 3 books _____
7. \$100 for 5 rackets _____
8. \$56 for 7 hours _____
9. \$1.98 for 6 cans _____

**Write the unit rate as a ratio. Then find an equal ratio.**

10. The cost is \$4.25 for 1 item. Find the cost of 5 items.
11. There are 7 cheerleaders in a squad. Find the number of cheerleaders on 12 squads.
12. The cost if \$10.10 for 1 item. Find the cost of 10 items.
13. There are 2.54 centimeters per one inch. Find the number of centimeters in 5 inches.

**For Exercises 14–16, tell which unit rate is greater.**

14. Dillan scores 24 points in 2 games. Eric scores 40 points in 4 games.
15. A fern grows 4 inches in 2 months. A tree grows 6 inches in 4 months.
16. Tyler jogs 4 miles in 32 minutes. Joey jogs 2 miles in 18 minutes.

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# Practice 7-2

## Unit Rates

**Find the unit rate for each situation.**

1. 44 breaths in 2 minutes

2. 72 players on 9 teams

3. 60 miles in 2 hours

4. 15 pages in 30 minutes

5. 48 questions in 4 quizzes

6. $3 for 4 packages

**Write the unit rate as a ratio. Then find an equal ratio.**

7. There are 12 inches in a foot. Find the number of inches in 6 feet.

8. The cost is $8.50 for 1 shirt. Find the cost of 4 shirts.

9. There are 365 days in a year. Find the number of days in 3 years.

10. There are 6 cans per box. Find the number of cans in 11 boxes.

11. There are 5 students in a group. Find the number of students in 5 groups.

12. There are 70 pages in a notebook. Find the number of pages in 8 notebooks.

**Find each unit price.**

13. $5 for 10 pounds _____

14. 40 ounces for $12 _____

15. $6 for 10 pens _____

16. $60 for 5 books _____

17. $27 for 3 shirts _____

18. $35 for 25 tapes _____

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# Chapters 5–8 Answers (continued)

## Chapter 6 Alternative Assessment Scoring Rubric

| Exercise | Points | Explanation |
|---|---|---|
| 1. | 1 | 60 people |
| | 0 | No answer OR incorrect answer |
| 2. | 1 | $\frac{1}{8}$ |
| | 0 | No answer or incorrect answer |
| 3. | 1 | 1 cup |
| | 0 | No answer or incorrect answer |
| 4. | 1 | 4 containers. |
| | 0 | No answer or incorrect answer |
| 5. | 1 | $\frac{3}{4}$ cup |
| | 0 | No answer or incorrect answer |
| Excursion | 4 | The student demonstrates a clear understanding of multiplication and division with fractions. All calculations are accurate and complete. The student's letter is thorough, well organized, and easy to read. |
| | 3 | The student demonstrates a fundamental understanding of multiplication and division with fractions. The student does all necessary calculations but may make some minor errors. The student's letter is fairly well organized and easy to read but may contain minor computational errors. |
| | 2 | The student has some understanding of multiplication and division with fractions but requires assistance to apply this understanding to the given situation. One or more of the student's calculations contain major errors or omissions. The student requires some assistance to complete the letter. |
| | 1 | The student demonstrates little if any understanding of multiplication and division with fractions and cannot, even with assistance, apply this understanding to the given situation. The student attempts some calculations, but they are irrelevant or superfluous. The student requires a great deal of assistance to complete the letter. |
| | 0 | No response |

## Chapter 6 Cumulative Review

**1.** C **2.** F **3.** C **4.** G **5.** C **6.** J **7.** A **8.** J **9.** D **10.** H **11.** A **12.** H **13.** C **14.** J **15.** C **16.** J **17.** C **18.** H **19.** B **20.** 6 **21.** 120

# Chapter 7

## Practice (regular) 7-1

**1.** 3:2; $\frac{3}{2}$; 3 to 2 **2.** 5:7; $\frac{5}{7}$; 5 to 7 **3.** 3:7; $\frac{3}{7}$; 3 to 7 **4.** 7:3; $\frac{7}{3}$; 7 to 3 **5.** 5:2; $\frac{5}{2}$; 5 to 2 **6.** 2:3; $\frac{2}{3}$; 2 to 3 **7.** 2:7; $\frac{2}{7}$; 2 to 7 **8.** 3:5; $\frac{3}{5}$; 3 to 5 **9.** 7:5; $\frac{7}{5}$; 7 to 5 **10.** $\frac{6}{1}$ **11.** $\frac{2}{3}$ **12.** $\frac{3}{2}$ **13.** $\frac{1}{4}$ **14.** $\frac{4}{1}$ **15.** $\frac{1}{6}$ **16.** 5 **17.** 24 **18.** 17 **19.** 20 **20.** 23 **21.** 45 **22.** 8 **23.** 7 **24.** 3

## Guided Problem Solving 7-1

**1.** Write the ratio of cat's teeth to dog's teeth in simplest form. **2.** The numerator and denominator have no common factors other than one. **3.** cat's teeth **4.** 30 teeth **5.** $\frac{30}{42}$ **6.** 6 **7.** $\frac{5 \cdot 6}{7 \cdot 6}$ **8.** $\frac{5}{7}$ **9.** Cat's; yes, because the numerator is smaller than the denominator. **10.** $\frac{2}{3}$

## Practice (adapted) 7-1

**1.** 3 : 2; $\frac{3}{2}$; 3 to 2 **2.** 5 : 7; $\frac{5}{7}$; 5 to 7 **3.** 3 : 7; $\frac{3}{7}$; 3 to 7 **4.** 7 : 3; $\frac{7}{3}$; 7 to 3 **5.** 5 : 2; $\frac{5}{2}$; 5 to 2 **6.** 2 : 3; $\frac{2}{3}$; 2 to 3 **7.** $\frac{6}{1}$ **8.** $\frac{2}{3}$ **9.** $\frac{3}{2}$ **10.** $\frac{1}{4}$ **11.** 5 **12.** 24 **13.** 17 **14.** 20 **15.** 23 **16.** 45

## Activity Lab 7-1

**1–3, 5–6.**

| | January | February | March | April | May | June |
|---|---|---|---|---|---|---|
| Number of Quarters | 7 | 14 | 28 | 56 | 168 | 504 |
| Number of Pennies | 35 | 70 | 140 | 280 | 840 | 2,520 |
| Ratio of Quarters to Pennies | 1 : 5 | 1 : 5 | 1 : 5 | 1 : 5 | 1 : 5 | 1 : 5 |

**4.** The ratios are equivalent. **7.** Sample answer: All of the ratios are equivalent. Since the number of quarters and the number of pennies were always increased by the same factor, the ratios remained equivalent.

## Reteaching 7-1

**1–6.** Sample answers are given. **1.** $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$ **2.** $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}$ **3.** $\frac{6}{8}, \frac{9}{12}, \frac{15}{20}$ **4.** $\frac{10}{16}, \frac{15}{24}, \frac{20}{32}$ **5.** $\frac{4}{14}, \frac{6}{21}, \frac{8}{28}$ **6.** $\frac{2}{10}, \frac{3}{15}, \frac{4}{20}$ **7.** $\frac{24}{40}, \frac{36}{60}, \frac{48}{80}$ **8.** $\frac{12}{32}, \frac{18}{48}, \frac{24}{64}$ **9.** 2 : 1 **10.** $\frac{7}{12}$ **11.** $\frac{18}{25}$ **12.** 12 : 5 **13.** $\frac{5}{8}$ **14.** 1 : 3 **15.** $\frac{5}{8}$ **16.** 4 : 1 **17.** 12 **18.** 50 **19.** 70 **20.** 3 **21.** 500 **22.** 35

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# Chapters 5–8 Answers (continued)

## Enrichment 7-1

**1.** Sample answers are given: **1a.** right triangle **1b.** obtuse triangle **1c.** acute triangle **1d.** rectangle **1e.** rhombus **1f.** trapezoid It is easiest to find how many of each type of triangle, then use those quantities to find the number of rectangles and other quadrilaterals. **2a.** 4 **2b.** 6 **2c.** 5 **2d.** 15 **2e.** 12 **2f.** 3 **2g.** 5 **2h.** 20 **3.** Sample answers are given: **3a.** 8 **3b.** 12 **3c.** 10 **3d.** 30 **3e.** 24 **3f.** 6 **3g.** 10 **3h.** 40

## Puzzle 7-1

**1.** 10 : 99 **2.** 9 : 41 **3.** 28 : 48 **4.** 25 : 125 **5.** 2 : 20 **6.** 1 : 48 **7.** 9 : 24 **8.** 20 : 4 **9.** Check students' answers. **10.** 10 : 4 or 22 : 20

## Practice (regular) 7-2

**1.** 22 breaths per minute **2.** 8 players per team **3.** 30 miles per hour **4.** $\frac{1}{2}$ page per minute **5.** 12 questions per quiz **6.** \$.75 per package **7.** $\frac{12 \text{ in.}}{1 \text{ ft}} = \frac{72 \text{ in.}}{6 \text{ ft}}$ **8.** $\frac{\$8.50}{1 \text{ shirt}} = \frac{\$34}{4 \text{ shirts}}$ **9.** $\frac{365 \text{ days}}{1 \text{ year}} = \frac{1{,}095 \text{ days}}{3 \text{ years}}$ **10.** $\frac{6 \text{ cans}}{1 \text{ box}} = \frac{66 \text{ cans}}{11 \text{ boxes}}$ **11.** $\frac{5 \text{ students}}{1 \text{ group}} = \frac{25 \text{ students}}{5 \text{ groups}}$ **12.** $\frac{70 \text{ pages}}{1 \text{ notebook}} = \frac{560 \text{ pages}}{8 \text{ notebooks}}$ **13.** \$.50/pound **14.** \$.30/ounce **15.** \$.60/pen **16.** \$12/book **17.** \$9/shirt **18.** \$1.40/tape

## Guided Problem Solving 7-2

**1.** Find Crystal's unit rate. Find the record-holder's unit rate. **2.** the rate for one unit of a given quantity **3.** 255 jumps in 3 minutes **4.** 85 jumps per minute **5.** 882 jumps in 3 minutes **6.** 294 jumps per minute **7.** 209 times **8.** The unit rate times 3 should equal the original rate. **9.** 48 sandwiches per hour

## Practice (adapted) 7-2

**1.** 22 breaths per minute **2.** 8 players per team **3.** 30 miles per hour **4.** $\frac{1}{2}$ page per minute **5.** $\frac{12 \text{ in.}}{1 \text{ ft}} = \frac{72 \text{ in.}}{6 \text{ ft}}$ **6.** $\frac{\$8.50}{1 \text{ shirt}} = \frac{\$34}{4 \text{ shirts}}$ **7.** $\frac{365 \text{ days}}{1 \text{ year}} = \frac{1{,}095 \text{ days}}{3 \text{ years}}$ **8.** $\frac{6 \text{ cans}}{1 \text{ box}} = \frac{66 \text{ cans}}{11 \text{ boxes}}$ **9.** $\frac{5 \text{ students}}{1 \text{ group}} = \frac{25 \text{ students}}{5 \text{ groups}}$ **10.** \$.50/pound **11.** \$.30/ounce **12.** \$.60/pen **13.** \$12/book

## Activity Lab 7-2

**1a.** \$0.60 per orange **1b.** Sample answer: 12 oranges for \$6 since the unit rate is 50¢ for 1 orange; the other unit rate is 60¢ for 1 orange. **2.** Sample answer: Enter 199, press [/], enter 6, press [FCD]; enter 249, press [/], enter 8, press [FCD]. **3a.** \$2.67 for one box **3b.** \$2.75 for one box **3c.** Possible answer: 3 boxes of cereal for \$8.00 is the better buy since its unit rate is \$2.67 per box, while the unit rate for the other is \$2.75 per box.

## Reteaching 7-2

**1.** \$7/shirt **2.** \$50/game **3.** \$4/toy **4.** \$20/shirt **5.** \$9/box **6.** \$44/book **7.** \$20/racket **8.** \$8/hour **9.** \$0.33/can **10.** \$21.25 **11.** 84 cheerleaders **12.** \$101 **13.** 12.7 cm **14.** 24 points in 2 games **15.** 4 inches in 2 months **16.** 4 miles in 32 minutes

## Enrichment 7-2

**1a.** about \$4.10 per meal; about \$12.29 per day **1b.** about \$17.55 per day **2a.** about \$15.37 per day **2b.** about \$37.25 per day **2c.** Per day, the University of Colorado is least expensive. Sample answers: tuition, quality of housing, number of nights off campus, number of meals she may eat off campus. **3.** Find the cost per day of the meal plan and the cost of housing for Maryland. Add the two together. Then compare to the cost per day at Colorado. Colorado is still the least expensive.

## Puzzle 7-2

0.04; 0.08; 0.06; 0.009; 0.039; 0.09

## Practice (regular) 7-3

**1.** no **2.** no **3.** yes **4.** yes **5.** yes **6.** no **7.** no **8.** yes **9.** 12 **10.** 30 **11.** 14 **12.** 8 **13.** 28 **14.** 12 **15.** 4 **16.** 4 **17.** about 12,320 families **18.** 2,808 families **19.** Sample answer: 2,100,000 people

## Guided Problem Solving 7-3

**1.** 2 cups; 3 dozen cookies; 3 cups; 60 cookies **2.** Determine whether 3 cups is enough flour for 60 cookies. **3.** 36 **4.** $\frac{2}{36}$ **5.** $\frac{3}{c}$ **6.** $\frac{2}{36} = \frac{3}{c}$ **7.** $c = 54$ **8.** 54 cookies **9.** No, because 54 is less than 60. **10.** $\frac{2}{36} = \frac{f}{60}$; $f = 3\frac{1}{3}$; $3\frac{1}{3}$ cups; yes **11.** 32 servings

## Practice (adapted) 7-3

**1.** no **2.** no **3.** yes **4.** yes **5.** yes **6.** no **7.** 12 **8.** 30 **9.** 14 **10.** 8 **11.** 28 **12.** 12 **13.** about 12,320 families **14.** 2,808 families

## Activity Lab 7-3

**1a.** 36/36 **1b.** $\frac{18}{4}$ **2.** No; $\frac{3}{5} \div \frac{8}{25} \neq 1$. **3.** Yes. **4a.** 0 **4b.** Sample answer: Since the difference of the cross products is zero, the two ratios are proportional. **5a.** no **5b.** yes **6.** Check students' answers.

## Reteaching 7-3

**1.** yes **2.** no **3.** no **4.** yes **5.** yes **6.** no **7.** no **8.** no **9.** yes **10.** 5 **11.** 8 **12.** 3 **13.** 10 **14.** 5 **15.** 7 **16.** 18 **17.** 5 **18.** 81 **19.** 4 times **20.** 4 miles

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# Reteaching 4-9

## Fractions and Decimals

*Example 1:* Write 0.320 as a fraction in simplest form.

① Read. "320 thousandths"

② Write. $\frac{320}{1{,}000}$

③ Simplify. $\frac{320}{1{,}000} = \frac{320 \div 40}{1{,}000 \div 40} = \frac{8}{25}$

$0.320 = \frac{8}{25}$

*Example 2:* Write 6.95 as a mixed number in simplest form.

① Read. "6 and 95 hundredths"

② Write. $6\frac{95}{100}$

③ Simplify. $6\frac{95}{100} = 6\frac{19}{20}$

$6.95 = 6\frac{19}{20}$

*Example 3:* Write $\frac{1}{5}$ and $\frac{2}{3}$ as decimals.

Divide the numerator by the denominator. Insert zeros if needed.

$$\begin{array}{r} 0.2 \\ 5\overline{)1.0} \end{array}$$

$$\begin{array}{r} 0.666\ldots \leftarrow \text{The digits repeat} \\ 3\overline{)2.0000} \\ -18 \quad \text{because} \\ 20 \quad \text{the} \\ -18 \quad \text{remainder} \\ 2 \leftarrow \text{repeats.} \end{array}$$

$\frac{1}{5} = 0.2$ $\quad \frac{2}{3} = 0.666\ldots = 0.\overline{6}$

0.2 is a *terminating decimal* because there is no remainder.

0.666 . . . is a repeating decimal because the remainder repeats. Write it as $0.\overline{6}$.

**Write each decimal as a fraction or mixed number in simplest form.**

1. 0.8 _____
2. 0.55 _____
3. 1.25 _____
4. 3.375 _____
5. 0.125 _____
6. 1.32 _____
7. 0.084 _____
8. 0.006 _____
9. 0.65 _____

**Write each fraction or mixed number as a decimal.**

10. $\frac{13}{20}$ _____
11. $\frac{1}{6}$ _____
12. $\frac{7}{20}$ _____
13. $\frac{19}{25}$ _____
14. $\frac{4}{9}$ _____
15. $\frac{7}{11}$ _____
16. $1\frac{2}{9}$ _____
17. $2\frac{2}{8}$ _____
18. $\frac{1}{25}$ _____

**State whether each fraction is less than, equal to, or greater than 0.50. Show your work.**

19. $\frac{1}{3}$ _____
20. $\frac{20}{40}$ _____
21. $\frac{1}{6}$ _____
22. $\frac{7}{8}$ _____
23. $\frac{11}{13}$ _____
24. $\frac{8}{20}$ _____

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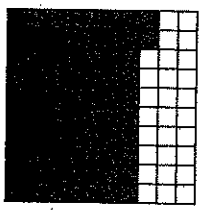
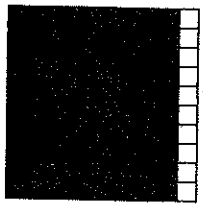
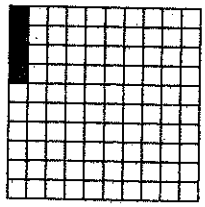
# Practice 4-9

**Fractions and Decimals**

**Write the decimal represented by each model as a fraction in simplest form.**

1. 

2. 

3. 

_____ _____ _____

**Write each decimal as a fraction or mixed number in simplest form.**

4. 0.6 _____
5. 1.25 _____
6. 0.74 _____
7. 0.635 _____
8. 0.8 _____
9. 6.16 _____
10. 0.645 _____
11. 0.782 _____
12. 0.493 _____

**Write each fraction or mixed number as a decimal.**

13. $\frac{5}{4}$ _____
14. $\frac{7}{8}$ _____
15. $\frac{9}{16}$ _____
16. $\frac{1}{8}$ _____
17. $1\frac{4}{5}$ _____
18. $\frac{9}{100}$ _____
19. $\frac{7}{25}$ _____
20. $\frac{3}{50}$ _____
21. $\frac{1}{125}$ _____

22. You buy $2\frac{3}{4}$ pounds of apples. What number should appear on the digital scale when the apples are weighed?

_____

**Rewrite each set of numbers in order from least to greatest.**

23. $\frac{2}{5}, 1.4, \frac{1}{3}, 0.5$ _____
24. $2\frac{1}{5}, 2.25, \frac{8}{20}, 2.8$ _____
25. $\frac{1}{3}, 0.4, \frac{4}{9}, 2.5$ _____
26. $\frac{7}{8}, 0.75, \frac{3}{5}, 0.65$ _____

**Determine whether each statement of equality is true or false.**

27. $\frac{2}{5} = 0.4$ _____
28. $0.4 = \frac{6}{15}$ _____
29. $0.5 = \frac{8}{15}$ _____
30. $10.20 = 10\frac{2}{100}$ _____
31. $4.3 = \frac{43}{10}$ _____
32. $2\frac{4}{5} = 2.8$ _____

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# Chapters 1–4 Answers (continued)

## Reteaching 4-7

**1.** 4, 8, 12, 16, 20; 5, 10, 15, 20; 20 **2.** 6, 12, 18, 24, 30, 36, 42; 7, 14, 21, 28, 35, 42; 42 **3.** 9, 18, 27, 36, 45; 15, 30, 45; 45 **4.** 10, 20, 30, 40, 50; 25, 50; 50 **5.** 8, 16, 24; 24; 24 **6.** 8, 16, 24; 12, 24; 24 **7.** 4, 8, 12, 16, 20, 24, 28; 7, 14, 21, 28; 28 **8.** 15, 30, 45, 60, 75; 25, 50, 75; 75 **9.** 63 **10.** 24 **11.** 72 **12.** 200

## Enrichment 4-7

**1.** every 6 days **2.** January 7, January 13, January 19 **3.** every 12 days **4.** January 13 and January 25 **5.** every 10 days **6.** every 20 days **7.** every 60 days

## Puzzle 4-7

**1.** 88 **2.** 65 **3.** 21 **4.** 63 **5.** 30 **6.** 12 **7.** 15 **8.** 36 **9.** 20 **10.** 24 **11.** 44 **12.** 42 **13.** 45 **14.** 84

The maximum number of game pieces in a Chinese checkers board is 60.

## Practice (regular) 4-8

**1.** > **2.** = **3.** > **4.** > **5.** > **6.** = **7.** < **8.** < **9.** = **10.** > **11.** < **12.** = **13.** $\frac{5}{6}, \frac{9}{10}, \frac{14}{15}$ **14.** $1\frac{7}{12}, 1\frac{5}{6}, 1\frac{7}{8}$ **15.** $\frac{9}{10}, \frac{11}{12}, \frac{14}{15}$ **16.** $2\frac{1}{4}, 3\frac{5}{6}, 3\frac{7}{8}$ **17.** $\frac{7}{30}, \frac{2}{3}, \frac{11}{15}, \frac{4}{5}$ **18.** $1\frac{3}{4}, 2\frac{1}{10}, 2\frac{1}{6}, 3\frac{7}{8}$ **19.** $\frac{5}{12}, \frac{17}{30}, \frac{3}{5}$ **20.** $1\frac{11}{18}, 1\frac{5}{6}, 1\frac{11}{12}, 2\frac{1}{6}$ **21.** $\frac{17}{20}, 1\frac{18}{25}, 2\frac{31}{36}$ **22.** > **23.** > **24.** > **25.** < **26.** > **27.** > **28.** > **29.** > **30.** < **31.** $5\frac{1}{4}, 5\frac{5}{16}, 5\frac{3}{8}, 5\frac{5}{8}$

## Guided Problem Solving 4-8

**1.** $12\frac{9}{20}$ ounces, $12\frac{7}{16}$ ounces **2.** Determine which drink is the better buy. **3.** which is larger **4.** 80 **5.** $\frac{36}{80}, \frac{35}{80}$ **6.** $\frac{36}{80}$ **7.** the $12\frac{9}{20}$-ounce drink **8.** Change both mixed numbers to decimals and compare them. **9.** Ana drove more miles because $\frac{1}{4} > \frac{1}{8}$.

## Practice (adapted) 4-8

**1.** > **2.** = **3.** > **4.** > **5.** > **6.** = **7.** $\frac{5}{6}, \frac{9}{10}, \frac{14}{15}$ **8.** $1\frac{7}{12}, 1\frac{5}{6}, 1\frac{7}{8}$ **9.** $\frac{9}{10}, \frac{11}{12}, \frac{14}{15}$ **10.** $2\frac{1}{4}, 3\frac{5}{6}, 3\frac{7}{8}$ **11.** $\frac{7}{30}, \frac{2}{3}, \frac{11}{15}, \frac{4}{5}$ **12.** $1\frac{3}{4}, 2\frac{1}{10}, 2\frac{1}{6}, 3\frac{7}{8}$ **13.** > **14.** > **15.** > **16.** < **17.** > **18.** > **19.** > **20.** > **21.** < **22.** $5\frac{1}{4}, 5\frac{5}{16}, 5\frac{3}{8}, 5\frac{5}{8}$

## Activity Lab 4-8

**1.** −9 **2.** −0.057 **3.** 0.0952 **4a.** 0 **4b.** They are equivalent fractions. **5.** > **6.** < **7.** < **8.** = **9.** > **10.** > **11.** > **12.** < **13.** = **14.** <

## Reteaching 4-8

**1.** < **2.** < **3.** > **4.** = **5.** < **6.** = **7.** > **8.** < **9.** < **10.** $\frac{1}{2}, \frac{5}{8}, \frac{3}{4}$ **11.** $\frac{5}{8}, \frac{2}{3}, \frac{5}{6}$ **12.** $\frac{5}{12}, \frac{1}{2}, \frac{2}{3}$ **13.** $\frac{7}{12}, \frac{3}{5}, \frac{2}{3}$ **14.** $\frac{3}{8}, \frac{1}{2}, \frac{3}{5}$ **15.** $\frac{3}{4}, \frac{13}{16}, \frac{7}{8}$ **16.** Eugene; $1\frac{1}{9} = 1\frac{4}{36}$; $1\frac{5}{12} = 1\frac{15}{36}$; $1\frac{15}{36} > 1\frac{4}{36}$

## Enrichment 4-8

**1.** Sample answer: $\frac{1}{3}$ of one pound of silver dollars. Even though there are fewer pounds, the value is greater. **2.** Sample answer: $\frac{1}{3}$ of two million dollars, $\frac{1}{3}$ of two million is about \$666,667; $\frac{1}{2}$ of one million is \$500,000. **3.** Sample answer: $\frac{1}{6}$ of 12 dozen; $\frac{1}{6}$ of 12 is 2 which is greater than $\frac{1}{2}$ of 3, or $1\frac{1}{2}$. **4.** Check students' work.

## Puzzle 4-8

**1.** Check students' work.

## Practice (regular) 4-9

**1.** 0.72, $\frac{18}{25}$ **2.** 0.9, $\frac{9}{10}$ **3.** 0.04; $\frac{1}{25}$ **4.** $\frac{3}{5}$ **5.** $1\frac{1}{4}$ **6.** $\frac{37}{50}$ **7.** $\frac{127}{200}$ **8.** $\frac{4}{5}$ **9.** $6\frac{4}{25}$ **10.** $\frac{129}{200}$ **11.** $\frac{391}{500}$ **12.** $\frac{493}{1{,}000}$ **13.** 1.25 **14.** 0.875 **15.** 0.5625 **16.** 0.125 **17.** 1.8 **18.** 0.09 **19.** 0.28 **20.** 0.06 **21.** 0.008 **22.** 2.75 **23.** $\frac{1}{3}, \frac{2}{5}$, 0.5, 1.4 **24.** $\frac{8}{20}, 2\frac{1}{5}$, 2.25, 2.8 **25.** $\frac{1}{3}$, 0.4, $\frac{4}{9}$, 2.5 **26.** $\frac{3}{5}$, 0.65, 0.75, $\frac{7}{8}$ **27.** true **28.** true **29.** false **30.** false **31.** true **32.** true

## Guided Problem Solving 4-9

**1.** Write $1\frac{1}{4}$ as a decimal. **2.** one divided by 4 **3.** 1.0 **4.** 0.25 **5.** 1.25 **6.** 1.25 **7.** Write 1.25 as a mixed number and see if it is $1\frac{1}{4}$. **8.** 3.75 pounds

## Practice (adapted) 4-9

**1.** 0.72, $\frac{18}{25}$ **2.** 0.9, $\frac{9}{10}$ **3.** 0.04; $\frac{1}{25}$ **4.** $\frac{3}{5}$ **5.** $1\frac{1}{4}$ **6.** $\frac{37}{50}$ **7.** $\frac{127}{200}$ **8.** $\frac{4}{5}$ **9.** $6\frac{4}{25}$ **10.** 1.25 **11.** 0.875 **12.** 0.5625 **13.** 0.125 **14.** 1.8 **15.** 0.09 **16.** 2.75 **17.** $\frac{1}{3}, \frac{2}{5}$, 0.5, 1.4 **18.** $\frac{8}{20}, 2\frac{1}{5}$, 2.25, 2.8 **19.** $\frac{1}{3}$, 0.4, $\frac{4}{9}$, 2.5 **20.** true **21.** true **22.** false

## Activity Lab 4-9

**1.** 0.466666... **2.** $\frac{21}{50}$ **3.** 0.8125 **4.** $\frac{97}{125}$ **5.** 42.3 **6.** 13.583333... **7.** 93.716666... **8.** 245.6666... **9.** $325\frac{13}{400}$

## Reteaching 4-9

**1.** $\frac{4}{5}$ **2.** $\frac{11}{20}$ **3.** $1\frac{1}{4}$ **4.** $3\frac{3}{8}$ **5.** $\frac{1}{8}$ **6.** $1\frac{8}{25}$ **7.** $\frac{21}{250}$ **8.** $\frac{3}{500}$ **9.** $\frac{13}{20}$ **10.** 0.65 **11.** $0.1\overline{6}$ **12.** 0.35 **13.** 0.76 **14.** $0.\overline{4}$ **15.** $0.\overline{63}$ **16.** $1.\overline{2}$ **17.** 2.25 **18.** 0.04 **19.** less than **20.** equal to **21.** less than **22.** greater than **23.** greater than **24.** less than

## Enrichment 4-9

**1.** 0.1111..., 0.09090909..., 0.2222..., 0.18181818..., 0.3333..., 0.27272727..., 0.4444..., 0.36363636..., 0.5555..., 0.45454545..., 0.6666..., 0.54545454..., 0.7777..., 0.63636363... **2.** Sample answer: The decimal is a repeating decimal. The repeating part of the decimal is the same as the numerator of the fraction.

Name _____ Class _____ Date _____

# Reteaching 7-6

## Percents, Fractions, and Decimals

- To *write a percent as a fraction* in simplest form, first write a fraction with a denominator of 100. Then simplify.

  $74\% = \frac{74}{100} = \frac{37}{50}$

- To *write a percent as a decimal,* first write a fraction with a denominator of 100. Then write the decimal.

  $74\% = \frac{74}{100} = 0.74$

- To *write a decimal as a percent,* move the decimal point two places to the right.

  $0.23 = 23\%$

Here are two ways to *write a fraction as a percent.*

- Write an equivalent fraction with a denominator of 100, then write the percent.

  $\frac{3}{20} = \frac{15}{100} = 15\%$

- Divide the numerator by the denominator.

$$\frac{3}{8} = 8\overline{)3.000} = 0.375 = 37.5\%$$

$$\begin{array}{r} -24 \\ \hline 60 \\ -56 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

↑ Move the decimal point two places to the right.

So, $\frac{3}{8} = 37.5\%$.

**Write each percent as a decimal and as a fraction in simplest form.**

1. 30% _____
2. 14% _____
3. 16% _____
4. 5% _____
5. 92% _____
6. 80% _____
7. 21% _____
8. 38% _____

**Write each fraction or decimal as a percent.**

9. $\frac{17}{25}$ _____
10. 0.85 _____
11. 0.16 _____
12. $\frac{5}{40}$ _____
13. $\frac{7}{200}$ _____
14. $\frac{1}{10}$ _____
15. 0.64 _____
16. 0.008 _____
17. $\frac{9}{20}$ _____
18. $\frac{6}{15}$ _____
19. 0.32 _____
20. 0.07 _____
21. $\frac{13}{100}$ _____
22. $\frac{45}{50}$ _____
23. 0.010 _____
24. 0.60 _____

Name _____ Class _____ Date _____

# Practice 7-6

**Percents, Fractions, and Decimals**

**Write each percent as a decimal and as a fraction in simplest form.**

1. 46% _____ 2. 17% _____ 3. 90% _____ 4. 5% _____

**Write each decimal as a percent and as a fraction in simplest form.**

5. 0.02 _____ 6. 0.45 _____ 7. 0.4 _____ 8. 0.92 _____

**Write each fraction as a decimal and as a percent.**

9. $\frac{3}{5}$ _____ 10. $\frac{7}{10}$ _____ 11. $\frac{13}{25}$ _____ 12. $\frac{17}{20}$ _____

**The table shows the fraction of students who participated in extracurricular activities from 1965 to 2000. Complete the table by writing each fraction as a percent.**

Students' Extracurricular Choices

| Year | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|---|---|
| Student participation (fraction) | $\frac{3}{4}$ | $\frac{8}{10}$ | $\frac{17}{20}$ | $\frac{39}{50}$ | $\frac{21}{25}$ | $\frac{19}{25}$ | $\frac{87}{100}$ | $\frac{9}{10}$ |
| Student participation (percent) | | | | | | | | |

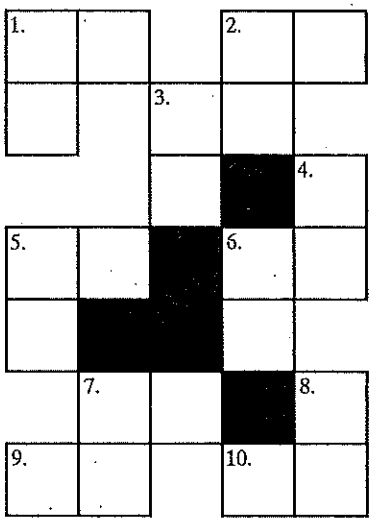
**Write each fraction or decimal as a percent. Write the percent (without the percent sign) in the puzzle.**

**Across**

1. $\frac{3}{5}$
2. $\frac{1}{5}$
3. 0.55
5. 0.23
6. $\frac{7}{20}$
7. 0.17
9. 0.4
10. $\frac{9}{25}$

**Down**

1. $\frac{13}{20}$
2. 0.25
3. $\frac{1}{2}$
4. $\frac{3}{20}$
5. 0.24
6. $\frac{3}{10}$
7. 0.1
8. $\frac{4}{25}$





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Name _____ Class _____ Date _____

# Practice 7-7

## Finding the Percent of a Number

**Find each answer.**

1. 15% of 20 _____
2. 40% of 80 _____
3. 20% of 45 _____
4. 90% of 120 _____
5. 65% of 700 _____
6. 25% of 84 _____
7. 60% of 50 _____
8. 45% of 90 _____
9. 12% of 94 _____
10. 37% of 80 _____
11. 25% of 16 _____
12. 63% of 800 _____

**Solve each problem.**

13. Teri used 60% of 20 gallons of paint. How much did she use?

_____

14. The Badgers won 75% of their 32 games this year. How many games did they win?

_____

15. A survey of the students at Lakeside School yielded the results shown below. There are 1,400 students enrolled at Lakeside School. Complete the table for the number of students in each activity.

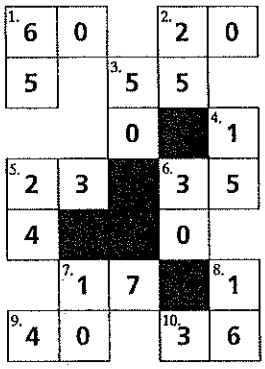
**How Lakeside Students Spend Their Time on Saturday**

| Activity | Percent of Students | Number of Students |
|---|---|---|
| Baby-sitting | 22% | $0.22 \times 1{,}400 = 308$ |
| Sports | 26% | |
| Job | 15% | |
| At home | 10% | |
| Tutoring | 10% | |
| Other | 17% | |

# Chapters 5–8 Answers (continued)

## Practice (regular) 7-6

**1.** 0.46; $\frac{23}{50}$ **2.** 0.17; $\frac{17}{100}$ **3.** 0.9; $\frac{9}{10}$ **4.** 0.05; $\frac{1}{20}$ **5.** 2%; $\frac{1}{50}$ **6.** 45%; $\frac{9}{20}$ **7.** 40%; $\frac{2}{5}$ **8.** 92%; $\frac{23}{25}$ **9.** 0.6; 60% **10.** 0.7; 70% **11.** 0.52; 52% **12.** 0.85; 85% Table: 75%; 80%; 85%; 78%; 84%; 76%; 87%; 90%

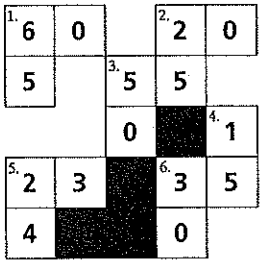



## Guided Problem Solving 7-6

**1.** 99% **2.** 100 **3.** 100 **4.** $\frac{99}{100}$ **5.** two places to the right of the decimal point **6.** 0.99 **7.** Divide 99 by 100 and see if the answer equals 0.99. **8.** $\frac{61}{100}$; 0.61

## Practice (adapted) 7-6

**1.** 0.46; $\frac{23}{50}$ **2.** 0.17; $\frac{17}{100}$ **3.** 0.9; $\frac{9}{10}$ **4.** 2%; $\frac{1}{50}$ **5.** 45%; $\frac{9}{20}$ **6.** 40%; $\frac{2}{5}$ **7.** 0.6; 60% **8.** 0.7; 70% **9.** 0.52; 52%
**Table:** 75%; 80%; 85%; 78%; 84%; 76%; 87%; 90%




## Activity Lab 7-6

**1.** 0.875 **2.** 0.01; 0.4; 1.25; 1 **3a.** 75 **3b.** to convert it to a percent **4.** 1.077, 107.7% **5.** 0.846; 84.6% **6.** 0.85; 85% **7.** 0.222, 22.2% **8.** 0.80, 80% **9.** 1.1; 110% **10.** 1.167; 116.7% **11.** 4.692; 469.2% **12.** 0.2727; 27.3% **13.** 2.25; 225% **14.** 0.875, 87.5% **15.** 1.2; 120% **16.** Check students' answers.

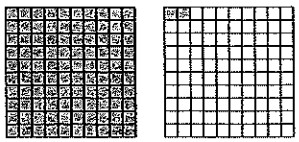
## Reteaching 7-6

**1.** 0.30, $\frac{3}{10}$ **2.** 0.14, $\frac{7}{50}$ **3.** 0.16, $\frac{4}{25}$ **4.** 0.05, $\frac{1}{20}$ **5.** 0.92, $\frac{23}{25}$ **6.** 0.80, $\frac{4}{5}$ **7.** 0.21, $\frac{21}{100}$ **8.** 0.38, $\frac{19}{50}$ **9.** 68% **10.** 85% **11.** 16% **12.** 12.5% **13.** 3.5% **14.** 10% **15.** 64% **16.** 0.8% **17.** 45% **18.** 40% **19.** 32% **20.** 7% **21.** 13% **22.** 90% **23.** 1% **24.** 60%

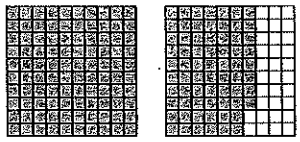
## Enrichment 7-6

**1.** 135% **2.** 150%

**3.**



**4.**



**5.** 223%;

## Puzzle 7-6

$\frac{22}{25}$; 24%; 57%; $\frac{17}{100}$; 25%; $\frac{3}{4}$; 85%; 12%

## Practice (regular) 7-7

**1.** 3 **2.** 32 **3.** 9 **4.** 108 **5.** 455 **6.** 21 **7.** 30 **8.** 40.5 **9.** 11.28 **10.** 29.6 **11.** 4 **12.** 504 **13.** 137.5 **14.** 75.6 **15.** 46.2 **16.** 12 gallons **17.** 24 games **18.** $162 **19.** 308; 364; 210; 140; 140; 238

| Activity | Percent of Students | Number of Students |
|---|---|---|
| Baby-sitting | 22% | 308 |
| Sports | 26% | 364 |
| Job | 15% | 210 |
| At home | 10% | 140 |
| Tutoring | 10% | 140 |
| Other | 17% | 238 |

## Guided Problem Solving 7-7

**1.** 46%; of 85 people; how many people **2.** Estimate the number of people out of 85 who would wear glasses or lenses. **3.** Write and solve a proportion. **4.** $\frac{46}{100}$ **5.** $\frac{x}{85}$ **6.** $\frac{46}{100} = \frac{x}{85}$ **7.** $x = 39.1$ **8.** 39 people **9.** Divide 39 by 85 and see if it is approximately 0.46; yes **10.** 970 students

## Practice (adapted) 7-7

**1.** 3 **2.** 32 **3.** 9 **4.** 108 **5.** 455 **6.** 21 **7.** 30 **8.** 40.5 **9.** 11.28 **10.** 29.6 **11.** 4 **12.** 504 **13.** 12 gallons **14.** 24 games **15.** 364; 210; 140; 140; 238

## Activity Lab 7-7

**1a.** $12.00 **1b.** $4.00 **2.** $5.10; $0.10 **3a.** $18.75 **3b.** $6.25 **4.** $24.00 **5.** $34.50 **6.** $60.00 **7.** $17.40 **8.** $39.00 **9.** $52.50 **10.** $18.00 **11.** $7.50

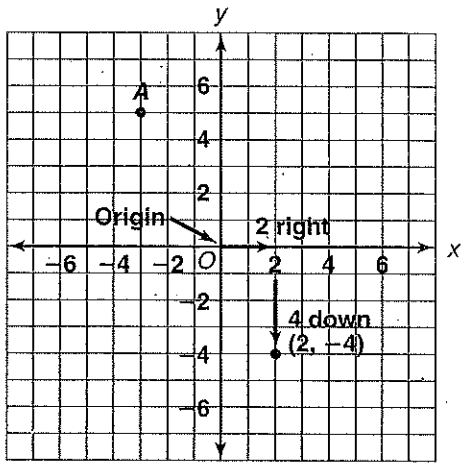
Name _____ Class _____ Date _____

# Reteaching 11-8

## Graphing in the Coordinate Plane

*Example:* Graph (2, −4).

- 2 is the *x-coordinate.* It tells how far to move left or right from the origin.
- −4 is the *y-coordinate.* It tells how far to move up or down from the origin.




Find the coordinates of point *A*.

① Start at the origin.

② How far left or right? *3 left*
The *x-coordinate* is −3.

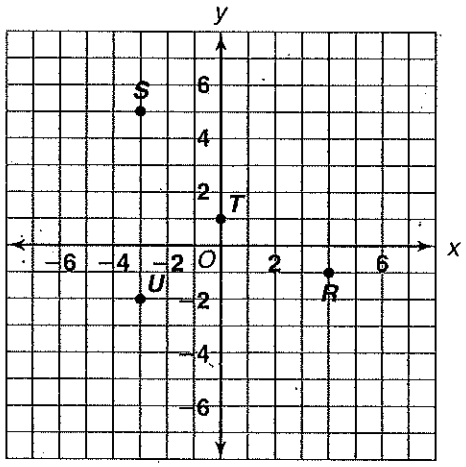
③ How far up or down? *5 up*
The *y-coordinate* is 5.

The coordinates of point *A* are (−3, 5).

---

**Graph each point in a coordinate plane.**

1. *B* (1, 6)
2. *C* (−4, −3)
3. *D* (0, 5)
4. *E* (−2, 2)
5. *F* (−1, −5)
6. *G* (6, −4)
7. *H* (5, 5)
8. *J* (4, 0)
9. *K* (−4, −4)
10. *L* (2, −3)
11. *M* (−2, 0)
12. *N* (5, −1)
13. *P* (0, −3)
14. *Q* (−4, 0)




**Find the coordinates of each point.**

15. *R* _____
16. *S* _____
17. *T* _____
18. *U* _____

**Look at the coordinate grid above.**

19. If you travel 7 units down from *S*, at which point will you be located?

_____

20. If you travel 4 units right from *T* and 2 units down, at which point will you be located?

_____



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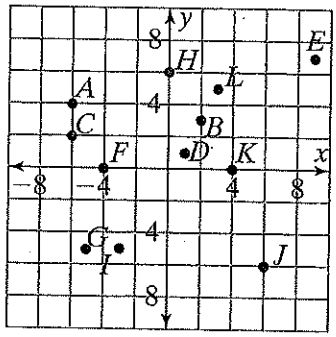
Name _____ Class _____ Date _____

# Practice 11-8

## Graphing in the Coordinate Plane

**Name the point with the given coordinates in the coordinate plane at the right.**

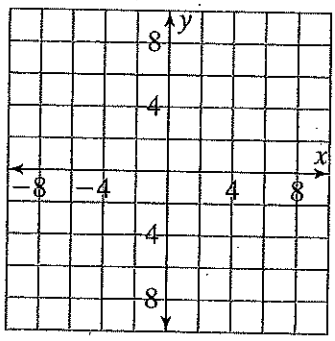



1. $(2, 3)$ _____
2. $(-4, 0)$ _____
3. $(-3, -5)$ _____
4. $(0, 6)$ _____

**Find the coordinates of each point at the right.**

5. $J$ _____
6. $E$ _____
7. $D$ _____
8. $A$ _____
9. $G$ _____
10. $C$ _____

**Graph each point on the coordinate plane at the right.**



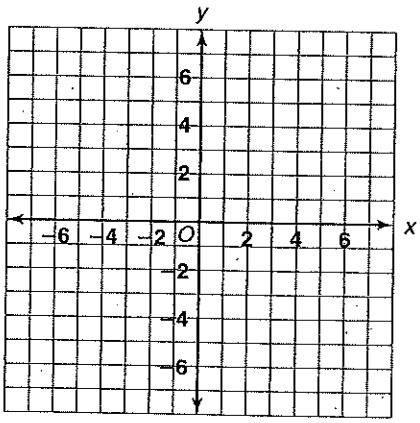

11. $A\ (8, -4)$
12. $B\ (-4, 8)$
13. $C\ (4, 8)$
14. $D\ (-8, -4)$
15. $E\ (8, 4)$
16. $F\ (-4, -8)$
17. A taxi begins at $(4, -3)$. It travels 3 blocks west and 5 blocks north to pick up a customer. What are the customer's coordinates?

_____

18. A moving truck fills up a shipment at an old address, at $(-2, 1)$. It travels 7 blocks south and 6 blocks east to the new address. What is the location of the new address?

_____

**Use the coordinate plane at the right.**




19. Graph four points on the coordinate plane so that when the points are connected in order, the shape is a rectangle. List the coordinates of the points.

_____

20. Graph four points on the coordinate plane so that when the points are connected in order, the shape is a parallelogram that is not a rectangle. List the coordinates of the points.

_____

# Chapters 9–12 Answers (continued)

## Practice (regular) 11-7

**1.** $r = -8$ **2.** $m = -8$ **3.** $p = -30$ **4.** $t = 4$ **5.** $c = 14$ **6.** $y = 7$
**7.** $h = -64$ **8.** $z = -24$ **9.** $y = 60$ **10.** $w = 9$ **11.** $u = -14$
**12.** $x = -56$ **13.** $26 + x = 39; x = 13$ **14.** $4h = 32; h = \$8.00$
**15.** $24 + s = 47; s = 23$ **16.** $36 - b = 17; b = 19$
**17.** $\frac{x}{5} = 9; x = \$45.00$

## Guided Problem Solving 11-7

**1.** the total amount of the bill **2.** divided **3.** the total amount of the bill **4.** 4 (the number of friends) **5.** $\frac{b}{4} = 20$ **6.** $b = 80$ **7.** $\frac{80}{4} = 20$; yes **8.** \$15

## Practice (adapted) 11-7

**1.** $r = -8$ **2.** $m = -8$ **3.** $t = 4$ **4.** $y = 7$ **5.** $h = -64$
**6.** $z = -24$ **7.** $w = 9$ **8.** $x = -56$ **9.** $26 + x = 39; x = 13$
**10.** $4h = 32; h = \$8.00$ **11.** $24 + s = 47; s = 23$

## Activity Lab 11-7

**1.** $x - 8 = -6; x = 2$ **2.** $-7p = 56; p = -8$ **3.** $r + 14 = 5; r = -9$ **4.** $t \div (-12) = -5; t = 60$ **5.** $y + (-16) = -5; y = 21$ **6.** $j - (-12) = 8; j = -4$ **7.** $84 \div f = -6; f = -14$ **8.** $m \cdot 12 = -84; m = -7$ **9.** −3 **10.** 47 **11.** −1 **12.** 53 **13.** 28 **14.** −3 **15.** −15 **16.** 7 **17.** Check students' answers.

## Reteaching 11-7

**1.** 30; 30 **2.** $r = -23$ **3.** $c = -39$ **4.** $k = -12$ **5.** $r = -16$ **6.** $s = 10$ **7.** $b = -15$

## Enrichment 11-7

**1.** I; $x = 5$ **2.** N; $y = -6$ **3.** V; $s = -9$ **4.** E; $f = -1$ **5.** R; $x = 10$ **6.** S; $k = 11$ **7.** O; $n = -7$ **8.** P; $x = -8$ **9.** A; $r = 1$ **10.** T; $s = 12$ **11.** O; $k = -7$ **12.** H; $p = -4$ **13.** L; $n = 8$
Puzzle Solution: INVERSE OPERATIONS HELP

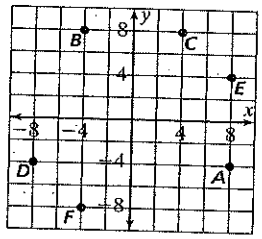
## Puzzle 11-7

**1.** −4 **2.** 5 **3.** −3 **4.** 6 **5.** −11 **6.** −20 **7.** −7 **8.** 4 **9.** −6 **10.** −35 **11.** 9 **12.** −32 **13.** −5 **14.** −8 **15.** 2 **16.** −28 **17.** −13 **18.** 7
The King Ranch in Texas is bigger than Rhode Island.

## Practice (regular) 11-8

**1.** *B* **2.** *F* **3.** *I* **4.** *H* **5.** $J(6, -6)$ **6.** $E(9, 7)$ **7.** $D(1, 1)$ **8.** $A(-6, 4)$ **9.** $G(-5, -5)$ **10.** $C(-6, 2)$

**11–16.**



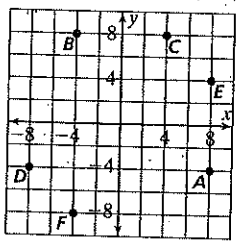

**17.** (1, 2) **18.** (4, −6) **19–20.** Sample answers are given.
**19.** $A(2, 5), B(6, 5), C(2, 3), D(6, 3)$
**20.** $E(-7, -4), F(-5, -2), G(-2, -2), H(-4, -4)$

## Guided Problem Solving 11-8

**1.** A symmetrical figure has the same shape on both sides of a line of symmetry. **2.** Plot the seven points on a coordinate plane. **3.** (1, 1) **4.** (1, −1) **5.** (−3, 0) **6.** (−3, 0) **7.** yes **8.** (−1, −1) and (2, −3)

## Practice (adapted) 11-8

**1.** *B* **2.** *F* **3.** *I* **4.** *H* **5.** $J(6, -6)$ **6.** $E(9, 7)$ **7.** $D(1, 1)$ **8.** $A(-6, 4)$ **9–12.**



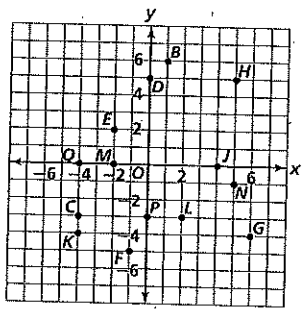

**13.** (1, 2) **14.** (4, −6) **15.** Sample answer: $A(2, 5), B(6, 5), C(2, 3), D(6, 3)$

## Activity Lab 11-8

**1.** a five-pointed star **2a.** 4 **2b.** 1 **2c.** 1 **2d.** 3 **2e.** 3 **2f.** 2 **3.** Yes. If $x$ and $y$ are both positive, the point is in Quadrant I; if $x$ and $y$ are both negative, the point is Quadrant III; if $x$ is positive and $y$ is negative, the point is in Quadrant IV; if $x$ is negative and $y$ is positive, the point is in Quadrant II. If $x = 0$, the point is on the $y$-axis. If $y = 0$, the point is on the $x$-axis. **4.** They lie on the same horizontal line. **5.** They lie on the same vertical line.

## Reteaching 11-8

**1–14.**




**15.** (4, −1) **16.** (−3, 5) **17.** (0, 1) **18.** (−3, −2) **19.** *U* **20.** *R*