

# Cumulative Review

## for Chapters 1 and 2

### Concepts and Skills

Write each number in standard form. (Lesson 1.1)

- |    |   |                |
|----|---|----------------|
| 1. | forty-eight thousand, six               | <u>48,006</u>  |
| 2. | one hundred thousand                    | <u>100,000</u> |
| 3. | sixty-nine thousand, two hundred eleven | <u>69,211</u>  |

Write each number in word form. (Lesson 1.1)

- |    |        |  |
|----|--------|--|
| 4. | 53,900 | <u>fifty-three thousand, nine hundred</u>        |
| 5. | 16,658 | <u>sixteen thousand, six hundred fifty-eight</u> |
| 6. | 20,306 | <u>twenty thousand, three hundred six</u>        |

Fill in the blank to write the number in expanded form. (Lesson 1.1)

7.  $13,901 = 10,000 + \underline{3,000} + 900 + 1$

Fill in the blanks. (Lesson 1.2)

8. 100 more than 26,542 is 26,642.
9. 78,923 is 100 less than 79,023.

Find each sum or difference. Then use front-end estimation to check that your answers are reasonable. (Lesson 1.3 and 2.1)

- |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|
| 25. | $\begin{array}{r} 1,376 \\ + 3,428 \\ \hline 4,804 \end{array}$ | 26. | $\begin{array}{r} 7,496 \\ - 829 \\ \hline 6,667 \end{array}$ | 27. | $\begin{array}{r} 432 \\ + 759 \\ \hline 1,191 \end{array}$ |
|     | Estimated sum: 4,000  |     | Estimated difference: 6,200                                   |     | Estimated sum: 1,100  |

Find each product. Then use rounding to check that your answers are reasonable. (Lesson 2.1 and 2.4)

- |     |  |     |  |     |  |
|-----|--|-----|--|-----|--|
| 28. | $\begin{array}{r} 383 \\ \times 2 \\ \hline 766 \end{array}$ | 29. | $\begin{array}{r} 241 \\ \times 4 \\ \hline 964 \end{array}$ | 30. | $\begin{array}{r} 752 \\ \times 5 \\ \hline 3,760 \end{array}$ |
|     | Estimated product: 800                                       |     | Estimated product: 800                                       |     | Estimated product: 3,500                                       |

Find each product. Then use front-end estimation to check that your answers are reasonable. (Lesson 2.1 and 2.4)

- |     |  |     |  |     |  |
|-----|--|-----|--|-----|--|
| 31. | $\begin{array}{r} 308 \\ \times 3 \\ \hline 924 \end{array}$ | 32. | $\begin{array}{r} 126 \\ \times 5 \\ \hline 630 \end{array}$ | 33. | $\begin{array}{r} 415 \\ \times 4 \\ \hline 1,660 \end{array}$ |
|     | Estimated product: 900                                       |     | Estimated product: 500                                       |     | Estimated product: 1,600                                       |

Find each quotient. Then use related multiplication facts to check that your answers are reasonable. (Lesson 2.1)

- |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|
| 34. | $\begin{array}{r} 23 \\ 4 \overline{)92} \end{array}$ | 35. | $\begin{array}{r} 29 \\ 3 \overline{)78} \end{array}$ | 36. | $\begin{array}{r} 17 \\ 4 \overline{)68} \end{array}$ |
|     | Estimated quotient: 20                                |     | Estimated quotient: 30                                |     | Estimated quotient: 20                                |

Circle the number that is greater. (Lesson 1.2)

10. 12,630 or 6,238      11. 45,200 or 45,496
12. 62,529 or 69,522      13. 90,236 or 87,415

Circle the number that is less. (Lesson 1.2)

14. 6,563 or 48,200      15. 67,186 or 67,254
16. 74,258 or 71,852      17. 96,125 or 69,521

Write the set of numbers in order from least to greatest. (Lesson 1.2)

18. 8,654   56,207   68,543   56,719
- 8,654   56,207   56,719   68,543

Continue or complete each number pattern. (Lesson 1.2)

19. 11,500   11,000   10,500   10,000   9,500
20. 63,800   64,100   64,400   64,700   65,000
21. 27,852   29,853   31,854   33,855   35,856

Find each sum or difference. Then use rounding to check that your answers are reasonable. (Lesson 1.3 and 2.1)

- |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|
| 22. | $\begin{array}{r} 522 \\ - 389 \\ \hline 133 \end{array}$ | 23. | $\begin{array}{r} 456 \\ + 790 \\ \hline 1,246 \end{array}$ | 24. | $\begin{array}{r} 4,562 \\ - 673 \\ \hline 3,889 \end{array}$ |
|     | Estimated difference: 100                                 |     | Estimated sum: 1,300  |     | Estimated difference: 3,900                                   |

Find the factors of each number. (Lesson 2.2)

35. 36 1, 2, 3, 4, 6, 9, 12, 18, and 36
36. 40 1, 2, 4, 5, 8, 10, 20, and 40
37. 96 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, and 96

Find the common factors of each pair of numbers. (Lesson 2.2)

38. 36 and 40  
1, 2, and 4
39. 40 and 96  
1, 2, 4, and 8

Find the greatest common factor of each pair of numbers. (Lesson 2.2)

40. 30 and 16  
2
41. 48 and 18  
6

Find the prime and composite numbers. (Lesson 2.2)

42. The prime numbers are 47 and 31.
43. The composite numbers are 92, 63, 57, and 135.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

List the first eight multiples of each number. (Lesson 2.3)

44. 4 4, 8, 12, 16, 20, 24, 28, and 32

45. 6 6, 12, 18, 24, 30, 36, 42, and 48

46. 9 9, 18, 27, 36, 45, 54, 63, and 72

Find the first two common multiples of each pair of numbers. (Lesson 2.3)

47. 4 and 6 12 and 24

48. 6 and 9 18 and 36

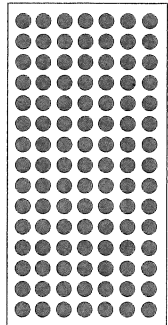
Find the least common multiple of each pair of numbers. (Lesson 2.3)

49. 8 and 12 24

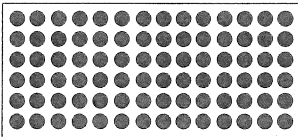
50. 27 and 36 108

Solve using an array model. (Lesson 2.4)

51.  $15 \times 7 = 105$



52.  $6 \times 14 = 84$



Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Problem Solving

Solve. Show your work.

55. Make a 5-digit number using these clues.  
 The digit in the thousands place is 5.  
 The value of the digit in the ten thousands place is 20,000.  
 The digit in the tens place is 8.  
 One of the digits is a 0 and it is next to the digit 8.  
 The digit in the ones place is 2 less than the digit in the tens place.  
 The number is 

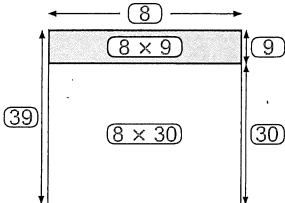
2	5	0	8	6
---	---	---	---	---

56. 3,219 milliliters of water and 185 milliliters of orange syrup are mixed to make orange juice. About how much orange juice will there be?

Answers vary.  
 Accept 3,400 mL; 3,100 mL.

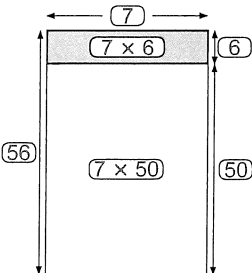
Solve using an area model. (Lesson 2.4)

53.  $39 \times 8 = 312$



$$\begin{array}{r} 39 \\ \times 8 \\ \hline 312 \end{array}$$

54.  $56 \times 7 = 392$



$$\begin{array}{r} 56 \\ \times 7 \\ \hline 392 \end{array}$$

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# Practice and Apply

## Workbook pages for Chapter 3, Lesson 3.1

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Chapter 3 Whole Number Multiplication and Division

#### Practice 1 Multiplying by a 1-Digit Number

Multiply 962 by 6 and find the missing numbers.

**Example**

Step 1  $2 \text{ ones} \times 6 = \underline{12} \text{ ones}$   
 $= \underline{1} \text{ ten } \underline{2} \text{ ones}$

	2
×	6
—	
	12

1. Step 2  $6 \text{ tens} \times 6 = \underline{36} \text{ tens}$   
 $= \underline{3} \text{ hundreds } \underline{6} \text{ tens}$

	60
×	6
—	
	360

2. Step 3  $9 \text{ hundreds} \times 6 = \underline{54} \text{ hundreds}$   
 $= \underline{5} \text{ thousands } \underline{4} \text{ hundreds}$

	900
×	6
—	
	5,400

3.

×	9	6	2
—			
	1	2	
	3	6	0
5	4	0	0
—			
5	7	7	2

← 2 ones × 6  
 ← 6 tens × 6  
 ← 9 hundreds × 6

#### Multiply 9,086 by 7 and find the missing numbers.

4. Step 1  $6 \text{ ones} \times 7 = \underline{42} \text{ ones}$   
 $= \underline{4} \text{ tens } \underline{2} \text{ ones}$

	6
×	7
—	
	42

5. Step 2  $8 \text{ tens} \times 7 = \underline{56} \text{ tens}$   
 $= \underline{5} \text{ hundreds } \underline{6} \text{ tens}$

	80
×	7
—	
	560

6. Step 3  $0 \text{ hundreds} \times 7 = \underline{0} \text{ hundreds}$

	000
×	7
—	
	0

7. Step 4  $9 \text{ thousands} \times 7 = \underline{63} \text{ thousands}$   
 $= \underline{6} \text{ ten thousands } \underline{3} \text{ thousands}$

	9,000
×	7
—	
	63,000

8.

×	9	0	8	6
—				
		4	2	
	5	6	0	
	0	0	0	
6	3	0	0	0
—				
6	3	6	0	2

← 6 ones × 7  
 ← 8 tens × 7  
 ← 0 hundreds × 7  
 ← 9 thousands × 7

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

#### Multiply.

Example

×	9	1	2
—			
	2	7	3
			6

9.

×	6	0	5
—			
	3	0	2
			5

10.

×	2	1	3	4
—				
	1	2	8	0
				4

11.

×	6	9	2	0
—				
	2	7	6	8
				0

12.

×	2	0	1	9
—				
	1	4	1	3
				3

13.

×	1	4	7	4
—				
	8	8	4	4
				6

14.

×	8	5	7	2
—				
	6	8	5	7
				6

15.

×	6	0	0	3
—				
	5	4	0	2
				7

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#### Find each product. Then solve the riddle.

Example

425	×	6	=	2,550	(v)
-----	---	---	---	-------	-----

16.  $964 \times 8 = \underline{7,712}$  (a)

17.  $682 \times 5 = \underline{3,410}$  (r)

18.  $1,685 \times 3 = \underline{5,055}$  (w)

19.  $1,936 \times 4 = \underline{7,744}$  (d)

20.  $3,270 \times 3 = \underline{9,810}$  (e)

How do you say good-bye to the ocean?  
 Match the letters to the answers below to find out.

You    w    a    v    e     
 5,055      7,712      2,550      9,810

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# Practice and Apply

## Workbook pages for Chapter 3, Lesson 3.2

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 2 Multiplying by a 2-Digit Number

Write the missing numbers. Then solve the riddle.

Example

$$15 \times 10 = \underline{150} \text{ (r)} \quad 63 \times 10 = \underline{630} \text{ (e)}$$

- $5 \times 60 = 5 \times \underline{6}$  tens  
 $= \underline{30}$  tens  
 $= \underline{300}$  (n)
- $16 \times 20 = 16 \times \underline{2}$  tens  
 $= \underline{32}$  tens  
 $= \underline{320}$  (i)
- $33 \times 40 = 33 \times \underline{4}$  tens  
 $= \underline{132}$  tens  
 $= \underline{1,320}$  (l)
- $29 \times 30 = 29 \times \underline{3}$  tens  
 $= \underline{87}$  tens  
 $= \underline{870}$  (u)
- $41 \times 60 = 41 \times \underline{6} \times 10$   
 $= \underline{246} \times 10$   
 $= \underline{2,460}$  (B)
- $96 \times 40 = 96 \times \underline{10} \times 4$   
 $= \underline{960} \times 4$   
 $= \underline{3,840}$  (j)
- $618 \times 50$   
 $= 618 \times \underline{5} \times 10$   
 $= \underline{3,090} \times 10$   
 $= \underline{30,900}$  (o)
- $752 \times 70$   
 $= 752 \times \underline{10} \times 7$   
 $= \underline{7,520} \times 7$   
 $= \underline{52,640}$  (d)

What is the French word that has the same meaning as 'hello'?  
Match the letters to the products below to find out.

B o n j o u r  
2,460 30,900 300 3,840 30,900 870 150

Lesson 3.2 Multiplying by a 2-Digit Number 53

Workbook A p. 53

Find each product.

- $42 \times 10 = \underline{420}$
- $786 \times 10 = \underline{7,860}$
- $16 \times 5 = \underline{80}$
- $137 \times 6 = \underline{822}$
- $16 \times 50 = \underline{800}$
- $137 \times 60 = \underline{8,220}$
- $23 \times 4 = \underline{92}$
- $405 \times 9 = \underline{3,645}$
- $23 \times 40 = \underline{920}$
- $405 \times 90 = \underline{36,450}$

Find each product.

- $70 \times 80$   
 $7 \times 8 = \underline{56}$   
 $7 \times 80 = \underline{560}$   
 $7 \times 800 = \underline{5,600}$   
So,  $70 \times 800 = \underline{56,000}$
- $300 \times 90$   
 $3 \times 9 = 27$   
 $3 \times 90 = 270$   
 $30 \times 90 = 2,700$   
So,  $300 \times 90 = \underline{27,000}$ .

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Multiply. Find the missing numbers.

Example

$$\begin{array}{r} \times \quad 6 \quad 7 \\ \quad 3 \quad 5 \\ \hline (3) \quad (3) \quad (5) \\ (2) \quad (0) \quad (1) \quad (0) \\ \hline (2) \quad (3) \quad (4) \quad (5) \end{array}$$

17.

$$\begin{array}{r} \times \quad 6 \quad 1 \\ \quad 8 \quad 6 \\ \hline (3) \quad (6) \quad (6) \\ (4) \quad (8) \quad (8) \quad (0) \\ \hline (5) \quad (2) \quad (4) \quad (6) \end{array}$$

18.

$$\begin{array}{r} \times \quad 8 \quad 7 \quad 2 \\ \quad 6 \quad 2 \\ \hline (1) \quad (7) \quad (4) \quad (4) \\ (5) \quad (2) \quad (3) \quad (2) \quad (0) \\ \hline (5) \quad (4) \quad (0) \quad (6) \quad (4) \end{array}$$

19.

$$\begin{array}{r} \times \quad 7 \quad 0 \quad 9 \\ \quad 4 \quad 9 \\ \hline (6) \quad (3) \quad (8) \quad (1) \\ (2) \quad (8) \quad (3) \quad (6) \quad (0) \\ \hline (3) \quad (4) \quad (7) \quad (4) \quad (1) \end{array}$$

Estimate each product. Round each number to its greatest place value.

Example

$$67 \times 35 \text{ is about } \underline{70} \times \underline{40} \\ \underline{70} \times \underline{40} = 2,800$$

- $61 \times 86$  is about  $\underline{60} \times \underline{90}$   
 $\underline{60} \times \underline{90} = 5,400$
- $872 \times 62$  is about  $\underline{900} \times \underline{60}$   
 $\underline{900} \times \underline{60} = 54,000$
- $709 \times 49$  is about  $\underline{700} \times \underline{50}$   
 $\underline{700} \times \underline{50} = 35,000$

Lesson 3.2 Multiplying by a 2-Digit Number 55

Workbook A p. 55

Multiply. Then estimate to check that your answers are reasonable.  
Round each number to its greatest place value.

Example

$$14 \times 18 = \underline{252} \quad \begin{array}{r} 14 \\ \times 18 \\ \hline 112 \\ 140 \\ \hline 252 \end{array} \quad \begin{array}{l} 14 \text{ is about } 10. \\ 18 \text{ is about } 20. \\ \text{Estimate:} \\ 10 \times 20 = 200 \end{array}$$

252 is close to 200. So, the answer is reasonable.

- $48 \times 21 = \underline{1,008}$
- $196 \times 34 = \underline{6,664}$

Estimate:  $50 \times 20 = 1,000$   
Yes, 1,008 is reasonable.

Estimate:  $200 \times 30 = 6,000$   
Yes, 6,664 is reasonable.

- $608 \times 73 = \underline{44,384}$
- $721 \times 54 = \underline{38,934}$

Estimate:  $600 \times 70 = 42,000$   
Yes, 44,384 is reasonable.

Estimate:  $700 \times 50 = 35,000$   
Yes, 38,934 is reasonable.

# Practice and Apply

## Workbook pages for Chapter 3, Lesson 3.3

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 3 Modeling Division with Regrouping

Lisa cannot remember the steps to divide. Help her complete the steps.

Example

1. 
$$\begin{array}{r} 1 \\ 3 \overline{)468} \\ \underline{300} \\ 168 \\ \underline{150} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

→ 
$$\begin{array}{r} \textcircled{1} \\ 3 \overline{)468} \\ \underline{300} \\ 168 \\ \underline{150} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

→ 
$$\begin{array}{r} \textcircled{1} \textcircled{5} \\ 3 \overline{)468} \\ \underline{300} \\ 168 \\ \underline{150} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

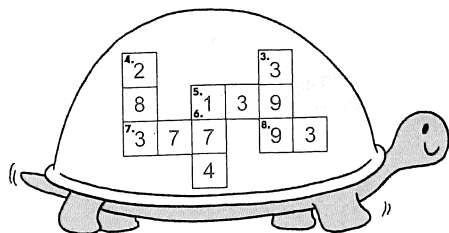
→ 
$$\begin{array}{r} \textcircled{1} \textcircled{5} \textcircled{6} \\ 3 \overline{)468} \\ \underline{300} \\ 168 \\ \underline{150} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

2. 
$$\begin{array}{r} \textcircled{2} \\ 4 \overline{)936} \\ \underline{800} \\ 136 \\ \underline{120} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

→ 
$$\begin{array}{r} \textcircled{2} \\ 4 \overline{)936} \\ \underline{800} \\ 136 \\ \underline{120} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

→ 
$$\begin{array}{r} \textcircled{2} \textcircled{3} \\ 4 \overline{)936} \\ \underline{800} \\ 136 \\ \underline{120} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

→ 
$$\begin{array}{r} \textcircled{2} \textcircled{3} \textcircled{4} \\ 4 \overline{)936} \\ \underline{800} \\ 136 \\ \underline{120} \\ 16 \\ \underline{16} \\ 0 \end{array}$$



### Divide. Then use the quotients to complete the number puzzle.

Down

3. 
$$\begin{array}{r} 399 \\ 2 \overline{)798} \\ \underline{600} \\ 198 \\ \underline{180} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

4. 
$$\begin{array}{r} 283 \\ 3 \overline{)849} \\ \underline{600} \\ 249 \\ \underline{240} \\ 9 \\ \underline{9} \\ 0 \end{array}$$

5. 
$$\begin{array}{r} 174 \\ 4 \overline{)696} \\ \underline{400} \\ 296 \\ \underline{280} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

Across

6. 
$$\begin{array}{r} 139 \\ 5 \overline{)695} \\ \underline{500} \\ 195 \\ \underline{150} \\ 45 \\ \underline{45} \\ 0 \end{array}$$

7. 
$$\begin{array}{r} 377 \\ 2 \overline{)754} \\ \underline{600} \\ 154 \\ \underline{140} \\ 14 \\ \underline{14} \\ 0 \end{array}$$

8. 
$$\begin{array}{r} 93 \\ 4 \overline{)372} \\ \underline{360} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Divide. Then solve the riddle.

9. 
$$\begin{array}{r} 173 \\ 2 \overline{)346} \\ \underline{200} \\ 146 \\ \underline{140} \\ 6 \\ \underline{6} \\ 0 \end{array}$$
 (S)

$$\begin{array}{r} 190 \\ 4 \overline{)760} \\ \underline{400} \\ 360 \\ \underline{360} \\ 0 \end{array}$$
 (T)

$$\begin{array}{r} 163 \\ 3 \overline{)489} \\ \underline{300} \\ 189 \\ \underline{180} \\ 9 \\ \underline{9} \\ 0 \end{array}$$
 (U)

$$\begin{array}{r} 171 \\ 5 \overline{)855} \\ \underline{500} \\ 355 \\ \underline{350} \\ 5 \\ \underline{5} \\ 0 \end{array}$$
 (E)

$$\begin{array}{r} 290 \\ 3 \overline{)870} \\ \underline{600} \\ 270 \\ \underline{270} \\ 0 \end{array}$$
 (M)

$$\begin{array}{r} 132 \\ 4 \overline{)528} \\ \underline{400} \\ 128 \\ \underline{120} \\ 8 \\ \underline{8} \\ 0 \end{array}$$
 (P)

$$\begin{array}{r} 141 \\ 5 \overline{)705} \\ \underline{500} \\ 205 \\ \underline{200} \\ 5 \\ \underline{5} \\ 0 \end{array}$$
 (K)

$$\begin{array}{r} 125 \\ 3 \overline{)375} \\ \underline{300} \\ 75 \\ \underline{75} \\ 0 \end{array}$$
 (R)

Which pet makes the loudest noise? Match the letters to the quotients below to find out.

T	r	u	m	p	e	t
190	125	163	290	132	171	190

### Divide.

10.  $516 \div 2 = \underline{258}$

$$\begin{array}{r} 258 \\ 2 \overline{)516} \\ \underline{200} \\ 316 \\ \underline{300} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

11.  $144 \div 3 = \underline{48}$

$$\begin{array}{r} 48 \\ 3 \overline{)144} \\ \underline{120} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

12.  $396 \div 4 = \underline{99}$

$$\begin{array}{r} 99 \\ 4 \overline{)396} \\ \underline{360} \\ 36 \\ \underline{36} \\ 0 \end{array}$$

13.  $885 \div 5 = \underline{177}$

$$\begin{array}{r} 177 \\ 5 \overline{)885} \\ \underline{500} \\ 385 \\ \underline{350} \\ 35 \\ \underline{35} \\ 0 \end{array}$$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Look at the steps for dividing a 3-digit number by a 1-digit number.

Example

This shows the steps in division.

Step 1	Step 2	Step 3	Step 4	Step 5
$\begin{array}{r} 1 \\ 5 \overline{) 695} \\ \underline{500} \\ 195 \end{array}$	$\begin{array}{r} 1 \\ 5 \overline{) 695} \\ \underline{500} \\ 195 \end{array}$	$\begin{array}{r} 13 \\ 5 \overline{) 695} \\ \underline{500} \\ 195 \\ \underline{150} \\ 45 \end{array}$	$\begin{array}{r} 13 \\ 5 \overline{) 695} \\ \underline{500} \\ 195 \\ \underline{150} \\ 45 \end{array}$	$\begin{array}{r} 139 \\ 5 \overline{) 695} \\ \underline{500} \\ 195 \\ \underline{150} \\ 45 \\ \underline{45} \\ 0 \end{array}$

Write a number for each instruction box to match the instruction with the correct step for division. The first one has been done for you.

Divide the hundreds by 5.

Step 1

Divide the ones by 5.

Step 5

Divide the tens by 5.

Step 3

Regroup the remaining hundreds. Add the tens and ones.

Step 2

Regroup the remaining tens. Add the ones.

Step 4

Lesson 3.3 Modeling Division with Regrouping

61

Workbook A p. 61

Complete the division.

14.

Step 1	Step 2	Step 3	Step 4	Step 5
$\begin{array}{r} 1 \\ 4 \overline{) 752} \\ \underline{400} \\ 352 \end{array}$	$\begin{array}{r} 1 \\ 4 \overline{) 752} \\ \underline{400} \\ 352 \end{array}$	$\begin{array}{r} 18 \\ 4 \overline{) 752} \\ \underline{400} \\ 352 \\ \underline{320} \\ 32 \end{array}$	$\begin{array}{r} 18 \\ 4 \overline{) 752} \\ \underline{400} \\ 352 \\ \underline{320} \\ 32 \end{array}$	$\begin{array}{r} 188 \\ 4 \overline{) 752} \\ \underline{400} \\ 352 \\ \underline{320} \\ 32 \\ \underline{32} \\ 0 \end{array}$

Then write the steps, using the exercise on page 53 as a guide.

- Step 1 Divide the hundreds by 4.  
\_\_\_\_\_
- Step 2 Regroup the remaining hundreds.  
Add the tens and ones.  
\_\_\_\_\_
- Step 3 Divide the tens by 4.  
\_\_\_\_\_
- Step 4 Regroup the remaining tens.  
Add the ones.  
\_\_\_\_\_
- Step 5 Divide the ones by 4.  
\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Practice 4 Dividing by a 1-Digit Number**

Fill in the blanks to find each quotient.

Example

$$4,900 \div 7 = \frac{49}{7} \text{ hundreds} \div 7$$

$$= \frac{7}{7} \text{ hundreds}$$

$$= \underline{700}$$

- $6,000 \div 3 = \frac{6}{3} \text{ thousands} \div 3$   
 $= \frac{2}{3} \text{ thousands}$   
 $= \underline{2,000}$
- $8,000 \div 2 = \frac{8}{2} \text{ thousands} \div 2$   
 $= \frac{4}{2} \text{ thousands}$   
 $= \underline{4,000}$
- $2,400 \div 6 = \frac{24}{6} \text{ hundreds} \div 6$   
 $= \frac{4}{6} \text{ hundreds}$   
 $= \underline{400}$

Estimate each quotient.

- $64 \div 3$  is about  $\frac{60}{3} \div 3 = \underline{20}$
- $448 \div 9$  is about  $\frac{450}{9} \div 9 = \underline{50}$
- $763 \div 4$  is about  $\frac{800}{4} \div 4 = \underline{200}$
- $127 \div 5$  is about  $\frac{100}{5} \div 5 = \underline{20}$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Divide. Then estimate to check that your answers are reasonable.

Example

$$\begin{array}{r} 699 \\ 9 \overline{) 6,291} \\ \underline{54} \phantom{00} \\ 89 \phantom{0} \\ \underline{81} \phantom{0} \\ 81 \\ \underline{81} \\ 0 \end{array}$$

Estimate:  
 $\underline{6,291}$  is about  $\underline{6,300}$ .  
 $\underline{6,300} \div 9 = 700$

$$11. \quad \begin{array}{r} 905 \\ 4 \overline{) 3,620} \\ \underline{12} \phantom{00} \\ 14 \phantom{00} \\ \underline{12} \phantom{00} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

Estimate:  
 $\underline{3,620}$  is about  $\underline{3,600}$ .  
 $\underline{3,600} \div 4 = 900$

$$12. \quad \begin{array}{r} 401 \\ 7 \overline{) 2,807} \\ \underline{14} \phantom{00} \\ 14 \phantom{00} \\ \underline{14} \phantom{00} \\ 07 \\ \underline{07} \\ 0 \end{array}$$

Estimate:  
 $\underline{2,807}$  is about  $\underline{2,800}$ .  
 $\underline{2,800} \div 7 = 400$

$$13. \quad \begin{array}{r} 307 \\ 6 \overline{) 1,842} \\ \underline{12} \phantom{00} \\ 64 \phantom{0} \\ \underline{60} \phantom{0} \\ 42 \\ \underline{42} \\ 0 \end{array}$$

Estimate:  
 $\underline{1,842}$  is about  $\underline{1,800}$ .  
 $\underline{1,800} \div 6 = 300$

Divide and find the missing numbers.

Example

$$\begin{array}{r} \boxed{2} \boxed{1} \boxed{3} \\ 3 \overline{) 6,390} \\ \underline{6} \phantom{00} \\ 3 \phantom{90} \\ \underline{3} \phantom{90} \\ 0 \phantom{90} \\ \underline{0} \phantom{90} \\ 90 \\ \underline{90} \\ 0 \end{array}$$

$$8. \quad \begin{array}{r} \boxed{1} \boxed{0} \boxed{3} \\ 9 \overline{) 9,270} \\ \underline{9} \phantom{00} \\ 2 \phantom{70} \\ \underline{2} \phantom{70} \\ 0 \phantom{70} \\ \underline{0} \phantom{70} \\ 70 \\ \underline{70} \\ 0 \end{array}$$

$$9. \quad \begin{array}{r} \boxed{3} \boxed{2} \boxed{4} \boxed{0} \\ 2 \overline{) 6,480} \\ \underline{6} \phantom{000} \\ 4 \phantom{800} \\ \underline{4} \phantom{800} \\ 8 \phantom{00} \\ \underline{8} \phantom{00} \\ 0 \phantom{00} \\ \underline{0} \phantom{00} \\ 0 \end{array}$$

$$10. \quad \begin{array}{r} \boxed{3} \boxed{1} \boxed{2} \\ 7 \overline{) 2,184} \\ \underline{2} \phantom{100} \\ 1 \phantom{800} \\ \underline{1} \phantom{800} \\ 8 \phantom{00} \\ \underline{8} \phantom{00} \\ 0 \phantom{00} \\ \underline{0} \phantom{00} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

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Find each quotient. Then estimate to check that your answers are reasonable.

Example

$$1,144 \div 9 = \frac{127}{9} \text{ R } 1$$

$$\begin{array}{r} 127 \text{ R } 1 \\ 9 \overline{) 1,144} \\ \underline{9} \phantom{00} \\ 24 \phantom{4} \\ \underline{18} \phantom{4} \\ 64 \\ \underline{63} \\ 1 \end{array}$$

Estimate:  $1,144 \div 9$  is about  $900 \div 9 = 100$ .  
 The answer 127 R 1 is reasonable.

$$14. \quad 6,514 \div 4 = \frac{1,628}{4} \text{ R } 2$$

$$\begin{array}{r} 1,628 \text{ R } 2 \\ 4 \overline{) 6,514} \\ \underline{12} \phantom{00} \\ 13 \phantom{10} \\ \underline{12} \phantom{10} \\ 11 \phantom{4} \\ \underline{8} \phantom{4} \\ 34 \\ \underline{32} \\ 2 \end{array}$$

$6,514 \div 4$  is about  $6,000 \div 4 = 1,500$ .  
 The answer 1,628 R 2 is reasonable.

$$15. \quad 1,340 \div 7 = \frac{191}{7} \text{ R } 3$$

$$\begin{array}{r} 191 \text{ R } 3 \\ 7 \overline{) 1,340} \\ \underline{7} \phantom{00} \\ 64 \phantom{0} \\ \underline{63} \phantom{0} \\ 10 \\ \underline{7} \\ 3 \end{array}$$

$1,340 \div 7$  is about  $1,400 \div 7 = 200$ .  
 The answer 191 R 3 is reasonable.

$$16. \quad 9,346 \div 8 = \frac{1,168}{8} \text{ R } 2$$

$$\begin{array}{r} 1,168 \text{ R } 2 \\ 8 \overline{) 9,346} \\ \underline{8} \phantom{00} \\ 13 \phantom{40} \\ \underline{12} \phantom{40} \\ 14 \phantom{60} \\ \underline{12} \phantom{60} \\ 26 \\ \underline{24} \\ 2 \end{array}$$

$9,346 \div 8$  is about  $8,000 \div 8 = 1,000$ .  
 The answer 1,168 R 2 is reasonable.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Practice 5 Real-World Problems: Multiplication and Division

Solve. Show your work.

### Example

A company has 4,059 people. Their names are listed in alphabetical order and then divided into groups of 5.

How many groups of 5 names are there and how many names are left?

$$4,059 \div 5 = 811 \text{ R } 4$$

There are 811 groups of 5 names,  
and 4 names are left.

If the number of men in the company is 600 times the number of names left, how many men are there in the company?

$$600 \times 4 = 2,400$$

There are 2,400 men in the company.

1. Factory A produces 326 sweaters in a day. Factory B produces 107 more sweaters a day than Factory A.

- a. How many sweaters does Factory B produce in a day?

$$326 + 107 = 433$$

Factory B produces 433 sweaters a day.

- b. How many sweaters do the two factories produce in 68 days?

$$433 + 326 = 759$$

$$759 \times 68 = 51,612$$

The factories produce 51,612 sweaters in 68 days.



2. In her shop, Lee had a piece of fabric measuring 150 meters. A customer asked her to sew 10 cushion covers, each requiring 3 meters of fabric. Another customer bought 21 meters of the same fabric. How much fabric does Lee have left?

$$10 \times 3 = 30$$

$$150 - 30 = 120$$

$$120 - 21 = 99$$

She has 99 meters of fabric left.

3. A bakery produces 3,000 loaves of bread. The bread is delivered to 75 stores. Of the 75 stores, 67 receive 2,000 loaves of bread altogether. The remaining stores receive an equal number of loaves of bread. How many loaves does each of the remaining stores receive?

$$75 - 67 = 8$$

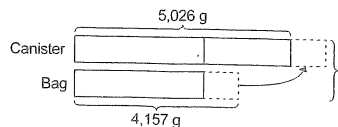
$$3,000 - 2,000 = 1,000$$

$$1,000 \div 8 = 125$$

Each of the remaining stores receives 125 loaves.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

4. Kamala had 5,026 grams of flour in a canister. She bought a 4,157-gram bag of flour. She poured some flour from the bag to the canister. As a result, the mass of the flour in the canister is now twice the mass of the flour left in the bag. How much flour is in the bag now?



$$5,026 + 4,157 = 9,183$$

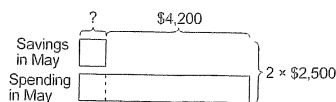
$$3 \text{ units} \rightarrow 9,183$$

$$1 \text{ unit} \rightarrow 9,183 \div 3 = 3,061$$

There are 3,061 grams of flour in the bag now.

5. Mr. Shea saved \$2,500 in April. His monthly salary is twice the amount he saved in April. In May, he saved a certain amount of money. He spent \$4,200 more than the amount he saved.

- a. How much is his monthly salary?  
b. How much did he save in May?



$$a. 2 \times \$2,500 = \$5,000$$

His monthly salary is \$5,000

$$b. \text{units} \rightarrow \$5,000 - \$4,200 = \$800$$

He saved \$800 in May.

### Example

Before lunch, Cindy packed 850 oranges, and Glen packed 470 fewer oranges than Cindy. Glen went home after lunch, but Cindy went back to work. That afternoon, Cindy packed 3 times as many oranges as Glen had packed in the morning.

- a. How many oranges did Glen pack?

Let  $s$  represent the number of oranges Glen packed.

$$850 - 470 = s$$

$$s = 380$$

Glen packed 380 oranges.

- b. How many oranges did Cindy pack altogether?

Let  $t$  represent the number of oranges Cindy packed.

$$t = 3 \times 380 + 850$$

$$= 1,140 + 850$$

$$= 1,990$$

Cindy packed 1,990 oranges.

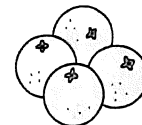
- c. Cindy packed the oranges in bags of 5. How many bags of oranges did Cindy pack?

Let  $u$  represent the number of bags Cindy packed.

$$1,990 \div 5 = u$$

$$u = 398$$

Cindy packed 398 bags.



Use different letters to represent the unknown numbers. Then solve.

6. Ms. Edstrom has a budget of \$1,500 to spend on a table and 6 chairs. The total price is \$249 under her budget amount. The table costs 3 times as much as a chair. What is the price of the table?

Let  $k$  be total spent,  $c$  be the price of a chair, and  $t$  be the price of the table.

$$k = 1,500 - 249 = 1,251$$

$$c = 1,251 \div 9 = 139$$

$$t = 139 \times 3 = 417$$

The price of the table is \$417.

7. Amy has \$510. Josephine has \$160 less than Amy and \$65 more than Ben. Ben used all his money to buy some books for \$9 each.

a. How much does Josephine have?

Let  $i$  be the amount of money Josephine has.  
 $i = 510 - 160$   
 $= 350$   
 Josephine has \$350.


b. How much money does Ben have?

Let  $b$  be the amount of money Ben has.  
 $b = 350 - 65$   
 $= 285$   
 Ben has \$285.

c. How many books did Ben buy?

Let  $d$  be the number of books Ben bought.  
 $d = 285 \div 9$   
 $= 31 \text{ R } 6$   
 Ben bought 31 books.

d. How much does he have left? \$6

 **Math Journal**

Look at each problem. Use estimation to explain why the answers are not reasonable.

Example

$5,268 \times 8 = 2,144$

Explain.

$5,268$  is about  $5,000$

$5,000 \times 8 = 40,000$ .

So the answer is too small.

1.  $725 \times 6 = 700$

Explain.

$725$  is about  $700$ .

$700 \times 6 = 4,200$ .

So the answer is too small.

2.  $497 \times 21 = 1,291$

Explain.

$497$  is about  $500$  and  $21$  is about  $20$ .

$500 \times 20 = 10,000$ .

So the answer is too small.

Lindsay and Menon have 1,240 stickers. Menon has 4 times as many stickers as Lindsay. Menon decides to have 6 stickers on each page of an album.

a. How many stickers does Menon have?

Let  $l$  be the number of stickers Lindsay has.  
 $l = 1,240 \div 5$   
 $= 248$

Let  $m$  be the number of stickers Menon has.  
 $m = 248 \times 4$   
 $= 992$

Menon has 992 stickers.

b. After Menon fills some pages in the album, how many stickers are left over?

$992 \div 6 = 165 \text{ R } 2$

2 stickers are left over.

c. How many stickers does he need to complete one more page?

$6 - 2 = 4$

He needs 4 more stickers.

Use estimation to explain why the answer is not reasonable.

3.  $6,021 \div 3 = 207$

Explain.

$6,000$  is close to  $6021$ .

$6,000 \div 3 = 2,000$ .

So the answer is too small.

Solve. Show your work.

4. Look at the number sentence.

$72 \div 6 = 12$

How would you use this to find the missing quotient?

$7,200 \div 6 = \square$

$7,200 = 72 \text{ hundreds}$

$72 \text{ hundreds} \div 6 = 12 \text{ hundreds}$

$= 1,200$



## Put On Your Thinking Cap!



### Challenging Practice

Charlie has 1,243 stamps. He gives away 12 stamps. His father gives him 415 stamps. He divides as many stamps as possible equally among 4 albums.

1. How many stamps did he place in each album?

$$1,243 - 12 = 1,231$$

$$1,231 + 415 = 1,646$$

$$1,646 \div 4 = 411 \text{ R}2$$

He placed 411 stamps in each album.



2. Based on your answer in **Exercise 1**, how many stamps are left over?  
2 stamps are left over.

Thinking skills: Identifying relationships; Sequencing



## Put On Your Thinking Cap!



### Problem Solving

1. The cost of 2 televisions and 3 DVD players is \$1,421.  
The cost of 1 DVD player is half the cost of 1 television.  
What is the cost of 1 television?

Solution:

DVD player					}	\$1,421
Television						

$$1,421 \div 7 = 203 \text{ (cost of 1 DVD player in \$)}$$

$$203 \times 2 = 406 \text{ (cost of 1 television in \$)}$$

1 television costs \$406.

Strategy: Use a model

# Chapter 6 Fractions and Mixed Numbers

## Practice 1 Adding Fractions

Find the equivalent fraction. Complete the model. Then add.

Example

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

1.  $\frac{6}{9} + \frac{2}{9} = \frac{6}{9} + \frac{2}{9} = \frac{8}{9}$

Add. Write each answer in simplest form.

2.  $\frac{3}{5} + \frac{3}{10} = \frac{6}{10} + \frac{3}{10} = \frac{9}{10}$

3.  $\frac{5}{12} + \frac{1}{3} = \frac{5}{12} + \frac{4}{12} = \frac{9}{12} = \frac{3}{4}$

4. Find the sum of  $\frac{1}{6}$  and  $\frac{1}{12}$ .  
 $\frac{1}{6} + \frac{1}{12} = \frac{2}{12} + \frac{1}{12} = \frac{3}{12} = \frac{1}{4}$

5. Add  $\frac{1}{4}$  to the answer in Exercise 4.  
 $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

6. What is the sum of  $\frac{1}{8}$ ,  $\frac{1}{4}$ , and  $\frac{3}{8}$ ?  
 $\frac{1}{8} + \frac{1}{4} + \frac{3}{8} = \frac{1}{8} + \frac{2}{8} + \frac{3}{8} = \frac{6}{8} = \frac{3}{4}$

7. Add  $\frac{1}{3}$ ,  $\frac{3}{12}$ , and  $\frac{5}{12}$ .  
 $\frac{1}{3} + \frac{3}{12} + \frac{5}{12} = \frac{4}{12} + \frac{3}{12} + \frac{5}{12} = \frac{12}{12} = 1$

# Practice and Apply

## Workbook pages for Chapter 6, Lesson 6.2

## Practice 2 Subtracting Fractions

Find the equivalent fraction. Complete the model. Then subtract.

Example

$$\frac{5}{8} - \frac{1}{2} = \frac{5}{8} - \frac{4}{8} = \frac{1}{8}$$

1.  $\frac{6}{9} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$

Subtract. Write each answer in simplest form.

2.  $\frac{8}{10} - \frac{1}{5} = \frac{8}{10} - \frac{2}{10} = \frac{6}{10} = \frac{3}{5}$

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

4. The difference between  $\frac{7}{8}$  and  $\frac{1}{4}$  is  $\frac{5}{8}$ .

$$\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$$

5. The difference between  $\frac{7}{12}$  and  $\frac{1}{3}$  is  $\frac{1}{4}$ .

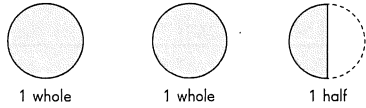
$$\frac{7}{12} - \frac{4}{12} = \frac{3}{12} = \frac{1}{4}$$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 3 Mixed Numbers

Write a mixed number for each model.

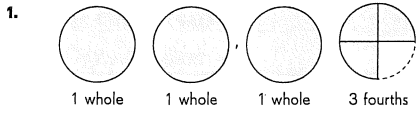
Example



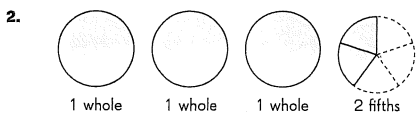
When you add a whole number and a fraction, you get a mixed number.



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



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

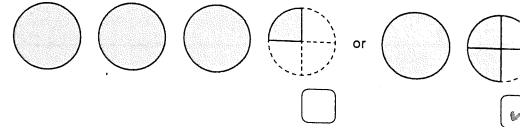


$$3 + \frac{2}{5} = 3\frac{2}{5}$$

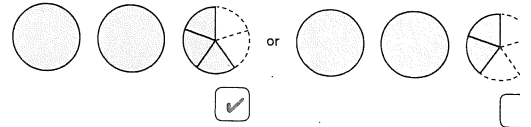
Name: \_\_\_\_\_ Date: \_\_\_\_\_

Check (✓) the correct model.

6. Which model shows  $1\frac{3}{4}$  shaded?



7. Which model shows  $2\frac{3}{5}$  shaded?



Write each answer as a mixed number.

8.  $4 + \frac{1}{4} = 4\frac{1}{4}$

9.  $3 + \frac{5}{9} = 3\frac{5}{9}$

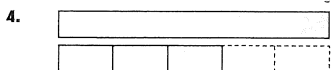
10.  $\frac{5}{8} + 2 = 2\frac{5}{8}$

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

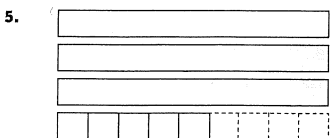
Write a mixed number for each model.



3 wholes and 1 half is  $3\frac{1}{2}$



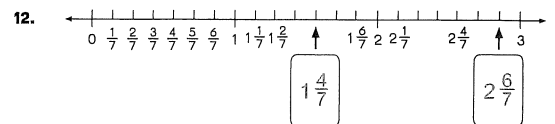
1 whole and 3 fifths is  $1\frac{3}{5}$



3 wholes and 5 ninths is  $3\frac{5}{9}$

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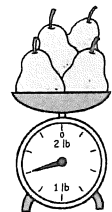
Write the correct mixed number in each box.



Write a mixed number for each item.

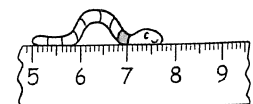
13. The pears have a weight of

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



14. The worm started crawling from 0 centimeters.

It has crawled  $7\frac{7}{10}$  centimeters.



Write each mixed number in simplest form.

Example

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

15.

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

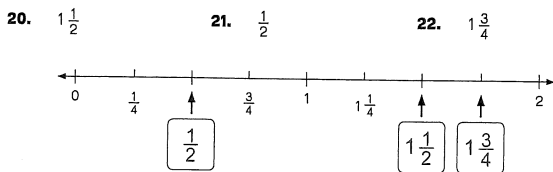
16.  $3\frac{4}{8} = 3\frac{1}{2}$

17.  $5\frac{6}{9} = 5\frac{2}{3}$

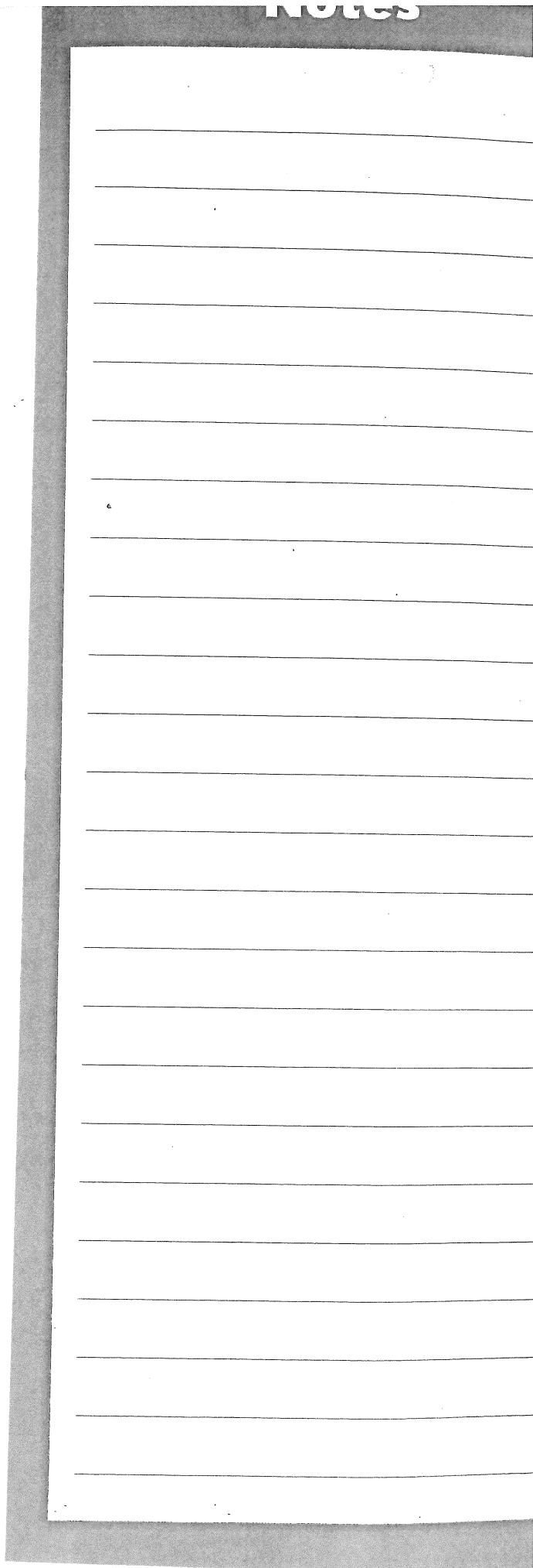
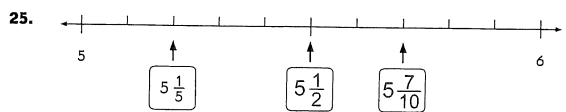
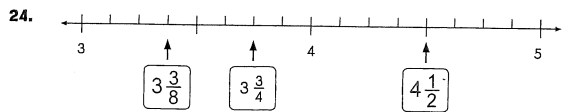
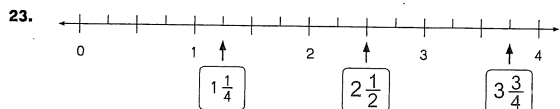
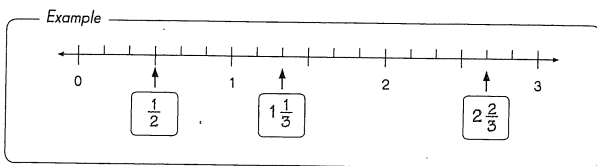
18.  $6\frac{4}{12} = 6\frac{1}{3}$

19.  $4\frac{3}{6} = 4\frac{1}{2}$

Write each fraction and mixed number in a box to show its correct location on the number line.



Fill in the boxes with fractions or mixed numbers. Express each answer in simplest form.



# Practice and Apply

## Workbook pages for Chapter 6, Lesson 6.4

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 4 Improper Fractions

Write each mixed number as an improper fraction.

Example



$1\frac{2}{3}$

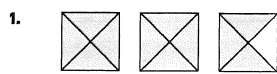
$1 = \frac{3}{3} \text{ thirds}$

$\frac{2}{3} = \frac{2}{3} \text{ thirds}$

$1\frac{2}{3} = \frac{5}{3} \text{ thirds}$

$= \frac{5}{3}$

An improper fraction is equal to or greater than 1.



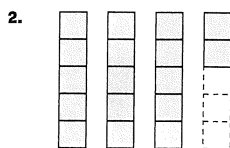
$2\frac{3}{4}$

$2 = \frac{8}{4} \text{ fourths}$

$\frac{3}{4} = \frac{3}{4} \text{ fourths}$

$2\frac{3}{4} = \frac{11}{4} \text{ fourths}$

$= \frac{11}{4}$



$3\frac{2}{5}$

$3 = \frac{15}{5} \text{ fifths}$

$\frac{2}{5} = \frac{2}{5} \text{ fifths}$

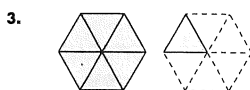
$3\frac{2}{5} = \frac{17}{5} \text{ fifths}$

$= \frac{17}{5}$

Lesson 6.4 Improper Fractions 157

Workbook A p. 157

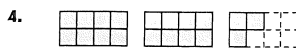
Write the improper fractions for the shaded parts.



There are 7 sixths in  $1\frac{1}{6}$ .

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

$= \frac{7}{6}$



$2\frac{3}{8} = \frac{19}{8}$



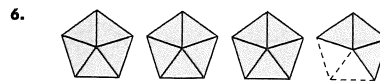
$2\frac{5}{6} = \frac{17}{6}$

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Workbook A p. 158

Name: \_\_\_\_\_ Date: \_\_\_\_\_

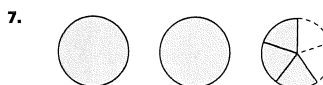
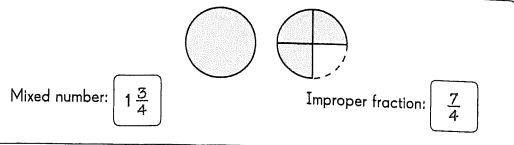
Write the improper fraction for the shaded parts.



$3\frac{3}{5} = \frac{18}{5}$

Write a mixed number and an improper fraction for each model.

Example



$2\frac{3}{5}$

$\frac{13}{5}$



$1\frac{3}{5}$

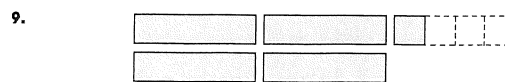
$\frac{8}{5}$

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Lesson 6.4 Improper Fractions 159

Workbook A p. 159

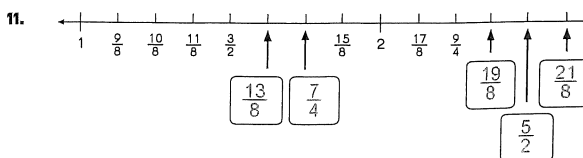
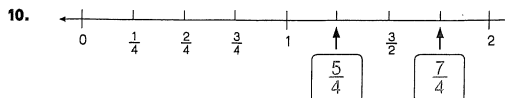
Write a mixed number and an improper fraction for each model.



$4\frac{1}{4}$

$\frac{17}{4}$

Write the missing improper fraction in each box. Express the answers in simplest form.

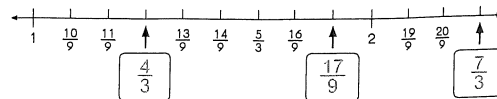


Write each improper fraction in a box to show its correct location on the number line.

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

13.  $\frac{7}{3}$

14.  $\frac{17}{9}$



Workbook A p. 160

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### Practice 5 Renaming Improper Fractions and Mixed Numbers

Express each improper fraction as a mixed number.

Example

$$\begin{aligned} \frac{8}{5} &= \frac{5}{5} + \frac{3}{5} \\ &= 1 + \frac{3}{5} \\ &= 1\frac{3}{5} \end{aligned}$$

1.  $\frac{12}{7} = \frac{7}{7} + \frac{5}{7}$   
 $= 1 + \frac{5}{7}$   
 $= 1\frac{5}{7}$

2.  $\frac{9}{4} = \frac{8}{4} + \frac{1}{4}$   
 $= 2 + \frac{1}{4}$   
 $= 2\frac{1}{4}$

3.  $\frac{13}{6} = \frac{12}{6} + \frac{1}{6}$   
 $= 2 + \frac{1}{6}$   
 $= 2\frac{1}{6}$

Express each improper fraction as a mixed number.

Example

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

$$\begin{array}{r} 2 \overline{)9} \\ \underline{8} \\ 1 \end{array}$$

Use the division rule.  
 $9 \div 2 = 4 \text{ R } 1$



4.  $\frac{17}{4} = 4\frac{1}{4}$

5.  $\frac{29}{6} = 4\frac{5}{6}$

Express each improper fraction as a whole number or a mixed number in simplest form. Show your work.

6.  $\frac{9}{6} = \frac{6}{6} + \frac{3}{6}$   
 $= 1 + \frac{3}{6}$   
 $= 1\frac{3}{6}$   
 $= 1\frac{1}{2}$

7.  $\frac{12}{4} = 3$

8.  $\frac{21}{3} = 7$

9.  $\frac{14}{4} = 3\frac{2}{4}$   
 $= 3\frac{1}{2}$

10.  $\frac{15}{6} = 2\frac{3}{6}$   
 $= 2\frac{1}{2}$

Express each mixed number as an improper fraction.

Example

$$\begin{aligned} 2\frac{3}{5} &= \frac{2}{1} + \frac{3}{5} \\ &= \frac{10}{5} + \frac{3}{5} \\ &= \frac{13}{5} \end{aligned}$$

11.  $3\frac{5}{9} = 3 + \frac{5}{9}$   
 $= \frac{27}{9} + \frac{5}{9}$   
 $= \frac{32}{9}$

12.  $2\frac{5}{8} = \frac{2}{1} + \frac{5}{8}$   
 $= \frac{16}{8} + \frac{5}{8}$   
 $= \frac{21}{8}$

13.  $4\frac{2}{7} = 4 + \frac{2}{7}$   
 $= \frac{28}{7} + \frac{2}{7}$   
 $= \frac{30}{7}$

Express each mixed number as an improper fraction.

Example

$$2\frac{1}{5} = \frac{11}{5}$$

Use the multiplication rule:  
 $2 \times 5 = 10$   
 $10 + 1 = 11$   
 There are 11 fifths in  $2\frac{1}{5}$ .



14.  $2\frac{3}{8} = \frac{19}{8}$

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

16.  $6\frac{2}{5} = \frac{32}{5}$

17.  $2\frac{4}{7} = \frac{18}{7}$

Express each mixed number as an improper fraction and each improper fraction as a mixed or whole number. Then solve the riddle.

18.  $\frac{9}{7} = 1\frac{2}{7}$  (b)

19.  $\frac{15}{6} = 2\frac{1}{2}$  (o)

20.  $\frac{14}{7} = 2$  (a)

21.  $2\frac{2}{7} = \frac{16}{7}$  (i)

22.  $3\frac{5}{8} = \frac{29}{8}$  (t)

23.  $5\frac{3}{5} = \frac{28}{5}$  (r)

Which two animals can look behind without turning their heads?  
 Write the letters which match the answers to find out.

P  $\frac{a}{2}$   $\frac{r}{5}$   $\frac{r}{5}$   $\frac{o}{2}$   $\frac{t}{8}$

and

$\frac{R}{5}$   $\frac{a}{2}$   $\frac{b}{7}$   $\frac{b}{7}$   $\frac{i}{7}$   $\frac{t}{8}$

### Practice 6 Renaming Whole Numbers when Adding and Subtracting Fractions

Fill in the missing numerators.

Example

$$3 = 2 \frac{\boxed{4}}{4} = 1 \frac{\boxed{8}}{4} = \frac{\boxed{12}}{4}$$

1.  $3 = 2 \frac{\boxed{6}}{6}$   
 $= 1 \frac{\boxed{12}}{6}$   
 $= \frac{\boxed{18}}{6}$

2.  $2\frac{7}{9} = 1 \frac{\boxed{16}}{9}$   
 $= \frac{\boxed{25}}{9}$

Add. Express each answer as a mixed number in simplest form.

3.  $\frac{4}{9} + \frac{2}{3} = \frac{4}{9} + \frac{6}{9}$   
 $= \frac{10}{9}$   
 $= 1\frac{1}{9}$

4.  $\frac{1}{6} + \frac{11}{12} = \frac{2}{12} + \frac{11}{12}$   
 $= \frac{13}{12}$   
 $= 1\frac{1}{12}$

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

6.  $\frac{4}{5} + \frac{7}{10} + \frac{9}{10}$   
 $= \frac{8}{10} + \frac{7}{10} + \frac{9}{10}$   
 $= \frac{24}{10}$   
 $= 2\frac{4}{10}$   
 $= 2\frac{2}{5}$

Subtract. Express each answer as a mixed number in simplest form.

Example

$$2 - \frac{1}{3}$$

Method 1

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

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

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

Method 2

$$2\frac{1}{3} - \frac{1}{3}$$

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

7.  $3 - \frac{5}{6} - \frac{1}{3}$   
 $= \frac{3}{1} - \frac{5}{6} - \frac{1}{3}$   
 $= \frac{18}{6} - \frac{5}{6} - \frac{2}{6}$   
 $= \frac{11}{6}$   
 $= 1\frac{5}{6}$

8.  $2 - \frac{1}{4} - \frac{1}{4}$   
 $= \frac{2}{1} - \frac{1}{4} - \frac{1}{4}$   
 $= \frac{8}{4} - \frac{1}{4} - \frac{1}{4}$   
 $= \frac{6}{4} = \frac{3}{2}$   
 $= 1\frac{1}{2}$

9.  $2 - \frac{2}{7} - \frac{3}{14}$   
 $= \frac{2}{1} - \frac{4}{14} - \frac{3}{14}$   
 $= \frac{28}{14} - \frac{4}{14} - \frac{3}{14}$   
 $= \frac{21}{14}$   
 $= 1\frac{1}{2}$

10.  $3 - \frac{7}{10} - \frac{3}{5}$   
 $= \frac{3}{1} - \frac{7}{10} - \frac{6}{10}$   
 $= \frac{30}{10} - \frac{7}{10} - \frac{6}{10}$   
 $= \frac{17}{10}$   
 $= 1\frac{7}{10}$

# Practice and Apply



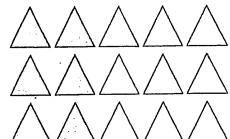
## Workbook pages for Chapter 6, Lesson 6.7

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 7 Fraction of a Set

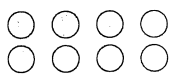
Check (✓) the box next to the group of shapes that show  $\frac{3}{5}$  shaded.

1.

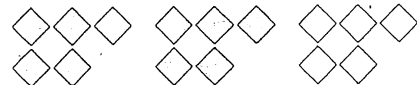
	<input type="checkbox"/>
	<input checked="" type="checkbox"/>
	<input type="checkbox"/>

What fraction of each set of shapes is shaded? Express your answer in simplest form.


Example

	<input type="text" value="3/4"/>
--	----------------------------------

2.

	<input type="text" value="2/3"/>
--	----------------------------------

3.

	<input type="text" value="2/5"/>
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Lesson 6.7 Fraction of a Set 167

Workbook A p. 167

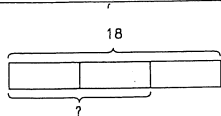
Use a model to help you answer each question.

Example

What is  $\frac{2}{3}$  of 18?

3 units → 18  
1 unit → 6  
2 units → 12

So,  $\frac{2}{3}$  of 18 = 12

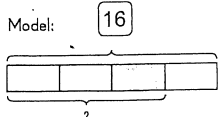


4. What is  $\frac{3}{4}$  of 16?

4 units → 16  
1 unit → 4  
3 units → 12

So,  $\frac{3}{4}$  of 16 = 12

Model:

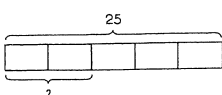


5. What is  $\frac{2}{5}$  of 25?

5 units → 25  
1 unit → 5  
2 units → 10

So,  $\frac{2}{5}$  of 25 = 10

Model:

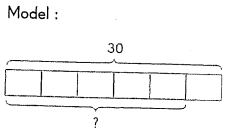


**Use a model to help you answer the question.**

6. What is  $\frac{5}{6}$  of 30?

6	units	→	30
1	unit	→	5
5	units	→	25

So,  $\frac{5}{6}$  of 30 = 25



**Solve.**

**Example**

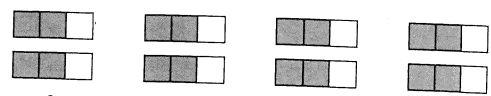
$\frac{2}{3} \times 15$   
 $\frac{2}{3}$  of 15 is 10

7.  $\frac{3}{4} \times 12$   
 $\frac{3}{4}$  of 12 is 9
8.  $\frac{2}{5} \times 20$   
 $\frac{2}{5}$  of 20 is 8
9.  $\frac{6}{7} \times 42$   
 $\frac{6}{7}$  of 42 is 36

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**Example**

Keigo buys 8 bottles of milk. Each bottle contains  $\frac{2}{3}$  pints milk. How much milk is there in the 8 bottles?



$$8 \times \frac{2}{3} = \frac{8 \times 2}{3}$$

$$= \frac{16}{3}$$

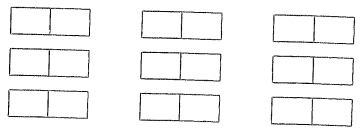
$$= 5 \frac{1}{3}$$

(The unit fraction is  $\frac{1}{3}$ )

There is  $5 \frac{1}{3}$  pints of milk.

**Solve. Draw models.**

18. Georgina has 9 bags of shaved coconut. Each bag weighs  $\frac{1}{2}$  pound. What is the total weight of the bags?



$$9 \times \frac{1}{2} = \frac{9 \times 1}{2}$$

$$= \frac{9}{2}$$

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

The bags weigh  $4 \frac{1}{2}$  pounds in total.

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**Fill in the blanks to solve each problem.**

**Example**

$\frac{1}{2}$  of 18 =  $\frac{1}{2} \times 18$   
 $= \frac{1 \times 18}{2}$   
 $= \frac{18}{2}$   
 $= 9$

10.  $\frac{2}{3}$  of 24 =  $\frac{2}{3} \times \frac{24}{1}$   
 $= \frac{2 \times 24}{3}$   
 $= \frac{48}{3}$   
 $= 16$
11.  $\frac{3}{4}$  of 32 =  $\frac{3}{4} \times 32$   
 $= \frac{3 \times 32}{4}$   
 $= \frac{96}{4}$   
 $= 24$

**Write each answer in the box. Then solve the riddle.**

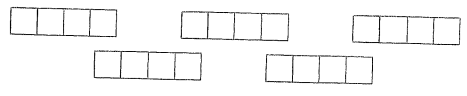
12.  $\frac{1}{4} \times 28 = 7$  (l)
13.  $\frac{2}{3} \times 21 = 14$  (o)
14.  $\frac{2}{5} \times 50 = 20$  (s)
15.  $\frac{3}{4} \times 24 = 18$  (a)
16.  $\frac{5}{6} \times 30 = 25$  (a)
17.  $\frac{6}{7} \times 35 = 30$  (k)

Which animals often sleep about 18 to 20 hours a day? Write the letters that match the answers to find out.

K	o	a	l	a	s
30	14	25	7	18	20

**Fill in the blanks to solve each problem.**

19. Brandon buys 5 cans of paint. He uses  $\frac{1}{4}$  gallon of each can of paint. How much paint did he use?



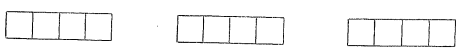
$$5 \times \frac{1}{4} = \frac{5 \times 1}{4}$$

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

$$= 1 \frac{1}{4}$$

Brandon used  $1 \frac{1}{4}$  gallons of paint.

20. A shop sold 3 truck loads of hay. Each truck had  $\frac{2}{5}$  ton of hay. How much hay was in the 3 trucks?



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

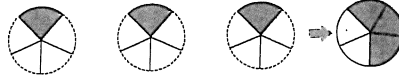
$$= \frac{6}{5}$$

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

There was  $1 \frac{1}{5}$  tons of hay in the three trucks.

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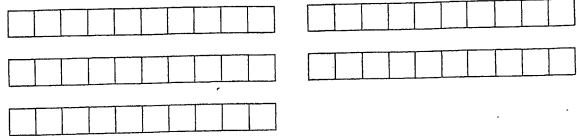
An egg omelet was cut into 5 equal parts. John and his two friends ate a piece each. What fraction of the omelet did they eat?



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

They ate  $\frac{3}{5}$  of the cake.

21. A loaf of bread was cut into 10 slices. Jordan, Mandy, Alex, Alving, and Kris ate one piece each. What fraction of the loaf of bread did they eat?



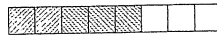
$$5 \times \frac{1}{10} = \frac{5}{10}$$

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

They ate  $\frac{1}{2}$  of the loaf of bread.

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22. A strip of paper was cut into 8 pieces. Some of the pieces were painted. Two of the pieces were painted red and 3 of the pieces were painted green. What fraction of the paper was painted?

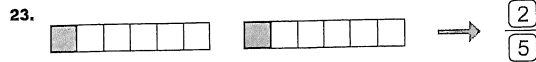


$$\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$$

$\frac{5}{8}$  of the paper was painted.

Write an addition word problem for the model below.

Solve.



Answers vary.

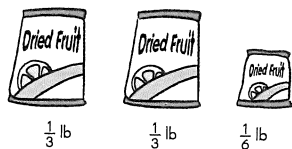
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Name: \_\_\_\_\_ Date: \_\_\_\_\_  
**Practice 8 Real-World Problems: Fractions**

Solve. Show your work.

Example

Ali bought three packages of dried fruit.



What is the total weight of all three packages of dried fruit?

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

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

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

The total weight of all three packages of dried fruit is  $\frac{5}{6}$  pound.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

3. Karen jogs  $\frac{1}{2}$  mile. Selma jogs  $\frac{1}{4}$  mile more than Karen.  
 Lena jogs  $\frac{3}{4}$  mile more than Selma. How far does Lena jog?

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

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

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

Lena jogs  $1 \frac{1}{2}$  miles.

4. Jeremy has 18 marbles. He loses 6 of them.  
 a. What fraction of the marbles does he lose?  
 b. What fraction of the marbles does he have left?

a.  $\frac{6}{18} = \frac{1}{3}$

He loses  $\frac{1}{3}$  of the marbles.

b.  $18 - 6 = 12$

$$\frac{12}{18} = \frac{2}{3}$$

$\frac{2}{3}$  of the marbles are left.

or  
 $1 - \frac{1}{3} = \frac{2}{3}$

$\frac{2}{3}$  of the marbles are left.



Solve. Show your work.

1. Jim had three waffles.  
 He ate  $\frac{1}{6}$  of one waffle, and  $\frac{2}{3}$  of another waffle.  
 How many waffles were left?

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

$$= \frac{18}{6} - \frac{1}{6} - \frac{4}{6}$$

$$= \frac{13}{6} = 2 \frac{1}{6}$$

$2 \frac{1}{6}$  waffles were left.

2. A grocery store has 5 pounds granola. One customer buys  $\frac{2}{3}$  pound granola and another buys  $\frac{5}{6}$  pound.  
 After these purchases, how much granola is left?

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

$$= \frac{30}{6} - \frac{4}{6} - \frac{5}{6}$$

$$= \frac{21}{6}$$

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

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

$3 \frac{1}{2}$  pounds of granola are left.

5. Mrs. Yan buys 4 red tulips and 5 yellow tulips.  
 a. What fraction of the tulips are red?  
 b. What fraction of the tulips are yellow?

a.  $4 + 5 = 9$

$\frac{4}{9}$  of the tulips are red.

b.  $1 - \frac{4}{9} = \frac{5}{9}$

$\frac{5}{9}$  of the tulips are yellow.

6. Charles owns 3 cats, 4 goldfish, and some parakeets. Altogether, he has 10 pets.  
 a. What fraction of his pets are goldfish?  
 b. What fraction of his pets are parakeets?

a.  $\frac{4}{10} = \frac{2}{5}$

$\frac{2}{5}$  of his pets are goldfish.

b.  $10 - 3 - 4 = 3$

$\frac{3}{10}$  of his pets are parakeets.

7. Rick had \$20. He spent \$10 on food, \$6 on a movie ticket, and saved the rest.
- How much money did he save?
  - What fraction of the total amount did he save?

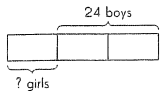
a.  $20 - 10 - 6 = 4$

Rick saved \$4.

b.  $\frac{4}{20} = \frac{1}{5}$

Rick saved  $\frac{1}{5}$  of the amount of his money.

8. There are 24 boys in a class, and  $\frac{2}{3}$  of the students in the class are boys. How many students are girls?



2 units  $\rightarrow 24$

1 unit  $\rightarrow 24 \div 2 = 12$

There are 12 girls.

11. There were 25 melons in a box at the grocery store. The store sold  $\frac{3}{5}$  of the melons. How many melons were sold?

$$\begin{aligned} \frac{3}{5} \times 25 &= \frac{3 \times 25}{5} \\ &= \frac{75}{5} \\ &= 15 \end{aligned}$$

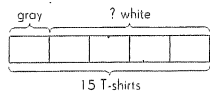
The store sold 15 melons.

12. Aya read  $\frac{1}{4}$  of a book on Monday, and  $\frac{1}{5}$  on Tuesday. There are 80 pages in the book. How many pages did she read altogether on both days?

$$\begin{aligned} \frac{1}{4} + \frac{1}{5} &= \frac{5}{20} + \frac{4}{20} \\ &= \frac{9}{20} \\ \frac{9}{20} \times 80 &= \frac{9 \times 80}{20} \\ &= \frac{720}{20} \\ &= 36 \end{aligned}$$

She read 36 pages altogether on both days.

9. One morning, The Shirt Shop sold 15 T-shirts. Of the T-shirts sold,  $\frac{1}{5}$  were gray. The rest were white. How many white T-shirts were sold?



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

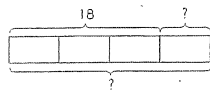
3 gray T-shirts were sold.

$15 - 3 = 12$

12 white T-shirts were sold.

10. A chef bought some green and red peppers. She bought 18 green peppers, which was  $\frac{3}{4}$  the total number.

- How many red peppers did she buy?
- How many peppers did she buy altogether?



a. 3 units  $\rightarrow 18$

1 unit  $\rightarrow 6$

She bought 6 red peppers.

b. 4 units  $\rightarrow 24$

She bought 24 peppers altogether.

13. Yulia has \$156. She spent  $\frac{3}{4}$  of it on a bag and  $\frac{1}{12}$  on a scarf. How much money did she have left?

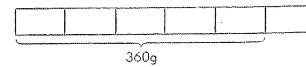
$$\begin{aligned} \frac{3}{4} + \frac{1}{12} &= \frac{9}{12} + \frac{1}{12} \\ &= \frac{10}{12} \\ &= \frac{5}{6} \end{aligned}$$

$\frac{5}{6} \times \$156 = \$130$

$\$156 - \$130 = \$26$

She had \$26 left.

14. A baker bought some butter. He used 360 grams to make some pastry. This was  $\frac{5}{6}$  of the butter he had. How much butter did he buy at first?



5 units  $\rightarrow 360$  g

1 unit  $\rightarrow 360 \div 5$   
 $= 72$  g

6 units  $\rightarrow 72 \times 6$   
 $= 432$  g

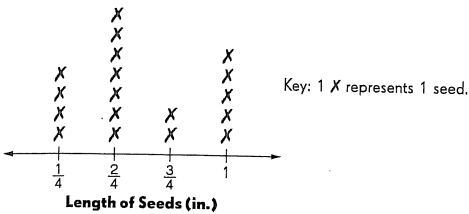
He bought 432 grams of butter at first.

Example

Karina collected some seeds and measured their lengths in fractions of an inch. She recorded the lengths in a tally chart.

Length (in.)	Tally	Number of Seeds
$\frac{1}{4}$	////	4
$\frac{2}{4}$	###/	7
$\frac{3}{4}$	//	2
1	###	5

Show the data in a line plot.



Use the data in your line plot. Answer the questions.

What is the total length of the seeds which are  $\frac{1}{4}$  inch long?

$$4 \times \frac{1}{4} = \frac{4}{4} = 1$$

The total length is 1 inch.

What is the difference in length between the longest and shortest seeds?

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

The difference is  $\frac{3}{4}$  inch.

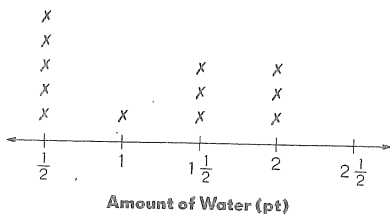
Solve.

The table shows the amount of water in some bottles.

Amount of Water (Pints)	Number of Bottles
$\frac{1}{2}$	5
1	1
$1\frac{1}{2}$	3
2	3

13. Draw a line plot to show the data.

Key: 1 X represents 1 bottle.



Use the data in your line plot. Answer the questions.

- How many bottles contain  $1\frac{1}{2}$  pints of water? 3
- What is the total amount of water in the bottles that contain  $\frac{1}{2}$  pint?  $2\frac{1}{2}$  pints
- What is the difference between the bottle with the most amount of water and the bottle with the least amount of water?  $1\frac{1}{2}$  pints

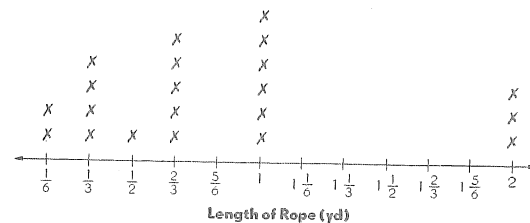
The tally chart shows the length of some ropes used to tie boxes.

Length of Rope (Yard)	Tally	Number of Pieces of Rope
$\frac{1}{6}$	//	2
$\frac{1}{3}$	////	4
$\frac{1}{2}$		1
$\frac{2}{3}$	###	5
1	###/	6
2	///	3

17. Complete the table.

18. Draw a line plot to show the data.

Key: 1 X represents 1 piece of rope.



Use the line plot to answer the questions.

- How many pieces of ropes are there? 21
- What is the length of the rope which has the most number of pieces of ropes? 1 yard
- What is the difference in length between the longest piece and the shortest piece of rope?  $1\frac{5}{6}$  yards
- What is the total length of the pieces of ropes which are  $\frac{1}{3}$  yard long?  $1\frac{1}{3}$  yards
- Rope sells for \$3 per yard. What is the total cost of all pieces that are  $\frac{1}{3}$  yard long? \$4

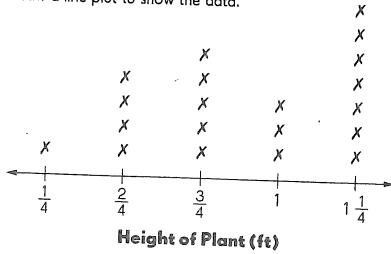
Name: \_\_\_\_\_ Date: \_\_\_\_\_

A class of 20 students each grew a plant in science class. The table shows the heights of the plants after two months.

Height of Plant (ft)	Number of Plants
$\frac{1}{4}$	1
$\frac{2}{4}$	4
$\frac{3}{4}$	5
1	3
$1\frac{1}{4}$	?

24. How many plants were  $1\frac{1}{4}$  feet tall? 7

25. Draw a line plot to show the data.



26. What does each X in your line plot represent? 1 plant

27. What is the difference between the tallest and the shortest plant? 1 foot

28. What is the total height of all the plants which are  $\frac{2}{4}$  feet tall? 2 feet

Lesson 6.9 Line plots with Fractions of Unit 187

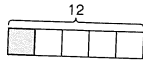
Workbook A p. 187

## Math Journal

Is the model correct? If not, explain why it is wrong. Draw the correct model.

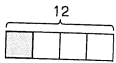
Example

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

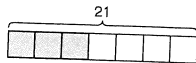


The model is wrong because it should have only four parts.

Correct model:

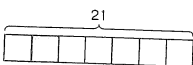


$\frac{2}{7}$  of 21



The model is wrong because only two parts should be shaded.

Correct model:



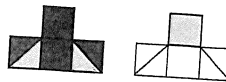


## Put On Your Thinking Cap!



### Challenging Practice

1. Show  $1\frac{1}{4}$  shaded, if 1 whole is made up of 4 squares. Some of the shading has been done for you.



2. Is the answer of  $21 \times \frac{2}{7}$  the same as that of  $2 \times \frac{21}{7}$ ? Show your work.

$$21 \times \frac{2}{7} = \frac{21 \times 2}{7} = \frac{42}{7} = 6$$

$$2 \times \frac{21}{7} = \frac{2 \times 21}{7} = \frac{42}{7} = 6$$

Yes, they are the same.

3. Write a fraction and a whole number that have the same product as the problem below.

$$8 \times \frac{3}{4} = \underline{\quad} 6$$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

Answers vary.

Thinking skill: Identifying relationships



## Put On Your Thinking Cap!



### Problem Solving

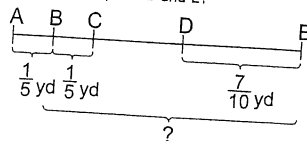
Caroline places five poles A, B, C, D, and E in order along a straight line. The distance between poles A and D is 1 yard. The distance between poles B and C is the same as the distance between poles A and B.

Poles A and B are  $\frac{1}{5}$  yard apart.

Strategy: Use a diagram

The distance between D and E is  $\frac{7}{10}$  yard.

How far apart are poles B and E?



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

Poles C and D are  $\frac{3}{5}$  yard apart.

$$\begin{aligned} \frac{1}{5} + \frac{3}{5} + \frac{7}{10} &= \frac{15}{10} \\ &= 1\frac{5}{10} \\ &= 1\frac{1}{2} \end{aligned}$$

Poles B and E are  $1\frac{1}{2}$  yards apart.

# Cumulative Review for Chapters 7 and 8

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Cumulative Review for Chapters 7 and 8

### Concepts and Skills

Write each fraction or mixed number as a decimal. (Lesson 7.1)

1.  $\frac{4}{10} = 0.4$     2.  $3\frac{3}{10} = 3.3$     3.  $\frac{18}{10} = 1.8$

Write each decimal in tenths. (Lesson 7.1)

4.  $0.6 = 6$  tenths    5.  $1.7 = 17$  tenths  
6.  $9.5 = 95$  tenths    7.  $4.2 = 42$  tenths

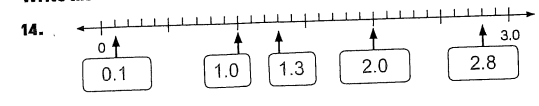
Write each of these as a decimal. (Lesson 7.1)

8. 3 ones and 4 tenths =  $3.4$     9. 8 ones and 1 tenth =  $8.1$   
10. 77 tenths =  $7.7$     11. 19 tenths =  $1.9$

Fill in the blanks. (Lesson 7.1)

12. 22 tenths = 2 ones and  $2$  tenths  
13.  $3.2 = 3$  ones and  $2$  tenths

Write the correct decimal in each box. (Lesson 7.1)



Complete the expanded form of each decimal. (Lesson 7.1)

15.  $5.4 = 5 + 0.4$     16.  $7.1 = 7 + 0.1$   
17.  $3.6 = 3 + 0.6$     18.  $10.2 = 10 + 0.2$

Fill in the blanks. (Lesson 7.1)

19. In 22.3, the digit 3 is in the tenths place.  
Its value is 0.3

Write each fraction or mixed number as a decimal. (Lesson 7.2)

20.  $\frac{9}{100} = 0.09$   
21.  $2\frac{26}{100} = 2.26$   
22.  $\frac{105}{100} = 1.05$

Write each decimal in hundredths. (Lesson 7.2)

23.  $0.06 = 6$  hundredths  
24.  $1.33 = 133$  hundredths  
25.  $2.5 = 250$  hundredths

Write each of these as a decimal. (Lesson 7.2)

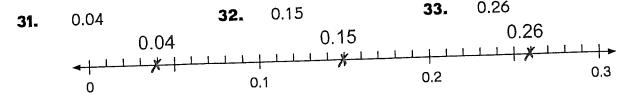
26. 2 ones and 6 hundredths =  $2.06$   
27. 5 tenths 5 hundredths =  $0.55$   
28. 7 ones and 3 tenths 4 hundredths =  $7.34$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Fill in the blanks. (Lesson 7.2)

29. 16 hundredths = 1 tenth  $6$  hundredths  
30.  $0.45 = 4$  tenths  $5$  hundredths

Mark X to show where each decimal is located on the number line. Label its value. (Lesson 7.2)



Complete. (Lesson 7.2)

34.  $5.2 = 5$  ones and  $2$  tenths  
35.  $0.86 = 8$  tenths  $6$  hundredths  
36.  $3.7 = 37$  tenths  
37.  $0.93 = 93$  hundredths

Write each sum as a decimal. (Lesson 7.2)

38.  $7 + 0.6 + 0.02 = 7.62$   
39.  $10 + 0.4 + 0.04 = 10.44$   
40.  $5 + \frac{1}{10} + \frac{8}{100} = 5.18$   
41.  $9 + \frac{3}{10} + \frac{7}{100} = 9.37$

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Fill in the blanks. (Lesson 7.2)

42. In 14.68, the digit 8 is in the hundredths place.  
Its value is 0.08

Fill in the blanks. (Lesson 7.2)

43.  $\$0.75 = 75$  cents  
44.  $\$12.25 = 1,225$  cents  
45.  $\$8.05 = 805$  cents

Write each amount of money in decimal form. (Lesson 7.2)

46. 65 cents =  $\$.65$   
47. 10 dollars and 90 cents =  $\$10.90$   
48. 2 dollars and 5 cents =  $\$2.05$

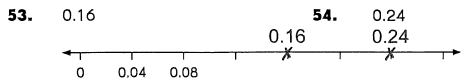
Fill in the blanks. (Lesson 7.3)

49. 0.1 more than 1.1 is  $1.2$   
50. 0.2 less than 2 is  $1.8$   
51. 0.01 less than 0.1 is  $0.09$   
52. 0.03 more than 0.07 is  $0.10$

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Mark X to show where each decimal is located on the number line. Label its value. (Lesson 7.3)



Compare. Write > or <. (Lesson 7.3)

55.  $4.1 > 0.41$                       56.  $0.73 > 0.70$

Circle the greatest decimal and underline the least. (Lesson 7.3)

57. 3.04   3.4   0.34

58. 0.6   0.61   0.65

Answers vary.  
Sample answer: 0.92

Fill in the blank. (Lesson 7.3)

59. Write a decimal that is greater than 0.9 but less than 1.0. \_\_\_\_\_

Round each decimal to the nearest whole number. (Lesson 7.4)

60.  $4.36 = 4$    61.  $7.81 = 8$    62.  $5.07 = 5$

Round each decimal to the nearest tenth. (Lesson 7.4)

63.  $2.39 = 2.4$    64.  $6.63 = 6.6$    65.  $4.00 = 4.0$

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Problem Solving

Solve. Show your work. (Lesson 8.3)

80. Lina thinks of a number. When she adds 9.65 to it, she gets 20.7.  
What number is Lina thinking of?  
 $20.7 - 9.65 = 11.05$   
The number is 11.05.

81. Suri bought a skirt for \$25.90 and a sweatshirt for \$19.90.  
She paid the cashier \$50.  
How much change did she receive?  
Cost of skirt + cost of sweatshirt = total cost  
 $\$25.90 + \$19.90 = \$45.80$   
The skirt and sweatshirt cost \$45.80.  
 $\$50 - \text{total cost} = \text{amount of change}$   
 $\$50 - \$45.80 = \$4.20$   
Suri received \$4.20 change.

Write each decimal as a fraction in simplest form. (Lesson 7.5)

66.  $0.6 = \frac{3}{5}$

67.  $0.55 = \frac{11}{20}$

Write each fraction or mixed number as a decimal. (Lesson 7.5)

68.  $\frac{1}{5} = 0.2$

69.  $\frac{9}{20} = 0.45$

70.  $\frac{5}{2} = 2.5$

71.  $1\frac{3}{4} = 1.75$

72.  $4\frac{2}{5} = 4.4$

73.  $5\frac{1}{4} = 5.25$

Find each sum or difference. (Lessons 8.1 and 8.2)

74. 
$$\begin{array}{r} 6.74 \\ + 2.17 \\ \hline 8.91 \end{array}$$

75. 
$$\begin{array}{r} 3.28 \\ + 0.91 \\ \hline 4.19 \end{array}$$

76. 
$$\begin{array}{r} 5.76 \\ + 4.26 \\ \hline 10.02 \end{array}$$

77. 
$$\begin{array}{r} 8.105 \\ - 1.33 \\ \hline 5.72 \end{array}$$

78. 
$$\begin{array}{r} 8.72 \\ - 3.43 \\ \hline 5.29 \end{array}$$

79. 
$$\begin{array}{r} 5.21 \\ - 5.79 \\ \hline 0.57 \end{array}$$

82. Jim bought a pen and a calculator. He paid the cashier \$50 and received \$20.45 change. If the pen cost \$4.50, how much did the calculator cost?  
 $\$50 - \text{amount of change} = \text{total cost}$   
 $\$50 - \$20.45 = \$29.55$   
The pen and calculator cost \$29.55 altogether.  
Total cost – cost of pen = cost of calculator  
 $\$29.55 - \$4.50 = \$25.05$   
The calculator cost \$25.05.

83. A pole is painted white and red. The white part is 0.75 meter long and the red part is 1.45 meters longer. What is the length of the pole?  
Length of white part + 1.45 m = length of red part  
 $0.75 + 1.45 = 2.20$   
The length of the red part is 2.2 meters.  
Length of red part + length of white part = length of pole  
 $2.2 + 0.75 = 2.95$   
The length of the pole is 2.95 meters.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

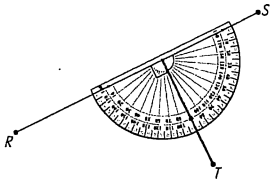
## Chapter 10 Perpendicular and Parallel Line Segments

### Practice 1 Drawing Perpendicular Line Segments

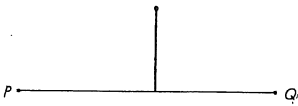
Use a protractor to draw perpendicular line segments.

Example

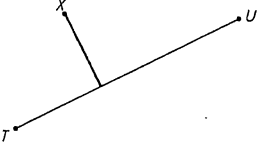
Draw a line segment perpendicular to  $\overline{RS}$  through point  $T$ .



1. Draw a line segment perpendicular to  $\overline{PQ}$ .



2. Draw a line segment perpendicular to  $\overline{TU}$  through point  $X$ .

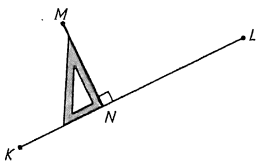


Lesson 10.1 Drawing Perpendicular Line Segments 67

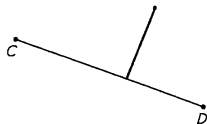
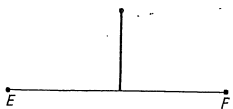
Workbook B p. 67

Use a drawing triangle to draw perpendicular line segments.

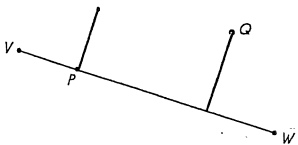
Example



3. Draw a line segment perpendicular to  $\overline{EF}$ .
4. Draw a line segment perpendicular to  $\overline{CD}$ .



5. Draw a line segment perpendicular to  $\overline{VW}$  at point  $P$ . Then, draw another line segment perpendicular to  $\overline{VW}$  through point  $Q$ .



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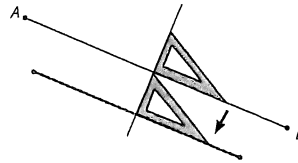
Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 2 Drawing Parallel Line Segments

Use a drawing triangle and a straightedge to draw parallel line segments.

Example

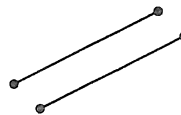
Draw a line segment parallel to  $\overline{AB}$ .



1. Draw a pair of parallel line segments.

Answers vary.

Sample answer:

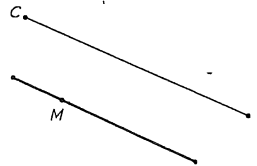


Lesson 10.2 Drawing Parallel Line Segments 69

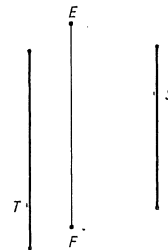
Workbook B p. 69

Use a drawing triangle and a straightedge to draw parallel line segments.

2. Draw a line segment parallel to  $\overline{CD}$  through point  $M$ .



3. Draw a line segment parallel to  $\overline{EF}$  through point  $T$ . Then, draw another line segment parallel to  $\overline{EF}$  through point  $S$ .



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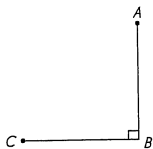
Workbook B p. 70

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 3 Horizontal and Vertical Lines

Answer the questions.

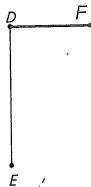
1.  $\overline{AB}$  is perpendicular to  $\overline{BC}$ .



If  $\overline{AB}$  is a vertical line segment, what do you know about  $\overline{BC}$ ?

$\overline{BC}$  is a horizontal line segment.

2. a.  $\overline{DE}$  is a vertical line segment. Draw a horizontal line segment through point  $D$  and label it  $\overline{DF}$ .

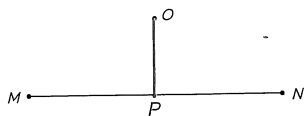


- b. What do you know about the angle formed by  $\overline{DE}$  and  $\overline{DF}$ ?

The angle measures  $90^\circ$ .

Complete.

3. a.  $\overline{MN}$  is a horizontal line segment. Draw a vertical line segment through point  $O$  to meet  $\overline{MN}$  and label the point  $P$ .



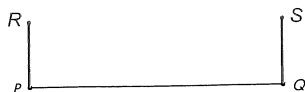
- b. What do you know about  $\overline{MN}$  and  $\overline{OP}$ ?

$\overline{OP}$  is perpendicular to  $\overline{MN}$ .

- c. How many right angles are formed by  $\overline{MN}$  and  $\overline{OP}$ ?

Two

4. a.  $\overline{PQ}$  is a horizontal line segment. Draw a vertical line segment at point  $P$ . Name it  $\overline{PR}$ . Then draw a vertical line segment at point  $Q$ . Name it  $\overline{QS}$ .



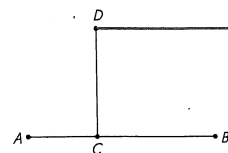
- b. What do you know about  $\overline{PR}$  and  $\overline{QS}$ ? Check with a drawing triangle and a straightedge.

$\overline{PR}$  is parallel to  $\overline{QS}$ .

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Complete.

5. a.  $\overline{AB}$  is a horizontal line segment and  $\overline{CD}$  is a vertical line segment. At point  $D$ , draw a line segment parallel to  $\overline{AB}$ . Name it  $\overline{DE}$ .



Answers vary.

- b. What do you know about  $\overline{CD}$  and  $\overline{DE}$ ?

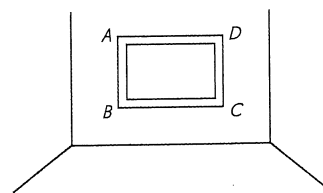
$\overline{CD}$  is perpendicular to  $\overline{DE}$ .

Check with a drawing triangle.



Complete.

6.  $ABCD$  is a whiteboard fixed to the wall.



Name the vertical and horizontal line segments on the whiteboard.

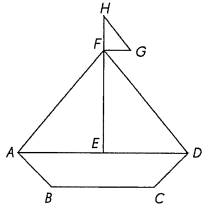
Vertical line segments:  $\overline{AB}, \overline{DC}$

Horizontal line segments:  $\overline{AD}, \overline{BC}$

# Put On Your Thinking Cap!

## Challenging Practice

In the figure, use a protractor, drawing triangle, and a straightedge to name three pairs of line segments that are

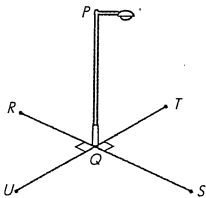


- perpendicular.  $\overline{AD}$  and  $\overline{EF}$  |  $\overline{HF}$  and  $\overline{FG}$  |  $\overline{HE}$  and  $\overline{FG}$   
 $\overline{HE}$  and  $\overline{AD}$  |  $\overline{FE}$  and  $\overline{FG}$
- parallel.  $\overline{FG}$  and  $\overline{ED}$  |  $\overline{AD}$  and  $\overline{BC}$  |  $\overline{FG}$  and  $\overline{AD}$  |  $\overline{FG}$  and  $\overline{BC}$   
 $\overline{FG}$  and  $\overline{AE}$  |  $\overline{BC}$  and  $\overline{ED}$  |  $\overline{HG}$  and  $\overline{FD}$

Thinking Skill: Classifying  
Strategy: Guess and check

### Solve.

$PQ$  is a lamp post standing vertically on the ground.  
 $RS$  and  $UT$  are horizontal line segments on the ground passing through point  $Q$ .  
 $QT$  is perpendicular to  $QS$ .



- Identify two other pairs of line segments that are perpendicular.  
Answers vary. Sample answer:  $RQ \perp UQ$ ,  
 $RQ \perp QT$

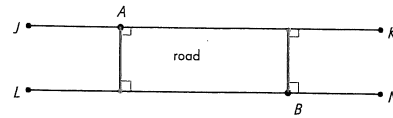
- How many right angles are formed at point  $Q$ ? Eight

Thinking Skill: Classifying  
Strategy: Guess and check

# Put On Your Thinking Cap!

## Problem Solving

The diagram shows a road with parallel curbs  $\overline{JK}$  and  $\overline{LM}$ .



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- Danie is standing at point  $A$  and Alicia is standing at point  $B$ . They both want to cross the road. Use a drawing triangle to draw the shortest route each can take, and mark all the right angles like this  $\perp$ . Measure the distance along each route.

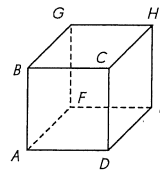
- What do you know about the distance between parallel line segments?

Parallel line segments are always the same distance apart.

Thinking Skill: Comparing  
Strategy: Use a diagram

### Solve.

The cube is placed on a flat surface.



- How many vertical line segments are there? 4
- How many horizontal line segments are there? 8
- How many right angles are there? 24

Thinking Skill: Identifying patterns and relationships  
Strategy: Guess and check

# Practice and Apply

Workbook pages for Chapter 11, Lesson 11.1

Name: \_\_\_\_\_ Date: \_\_\_\_\_

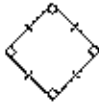
## Chapter 11 Squares and Rectangles

### Practice 1 Squares and Rectangles

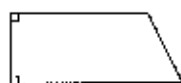
Fill in the blanks with yes or no.

Example

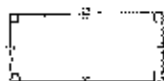
Is this a square? Yes



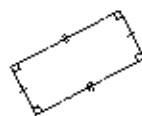
1. Is this a rectangle? No



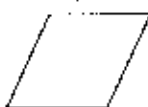
2. Is this a square? No



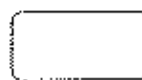
3. Is this a rectangle? Yes



4. Is this a square? No



5. Is this a rectangle? No



Lesson 11.1 Squares and Rectangles 79

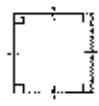
Workbook B p. 79

Fill in the blanks.

Example

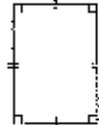
Is this a square? Yes

Why or why not? All its sides are of equal length, and it has four right angles.



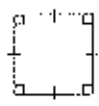
6. Is this a rectangle? Yes

Why or why not? Its opposite sides are of equal length and parallel, and it has four right angles.




7. Is this a rectangle? Yes

Why or why not? It is a special type of rectangle. Its opposite sides are of equal length, and it has four right angles.



8. Is this a square? No

Why or why not? Not all its sides are of equal length.



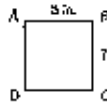
80 Chapter 11 Squares and Rectangles

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Find the lengths of the unknown sides.

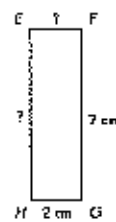
Example

ABCD is a square.



BC = 5 in.

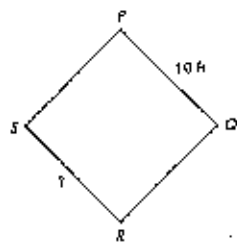
9. EFGH is a rectangle.



EF = 2 cm

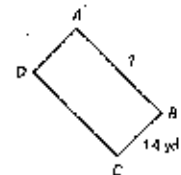
EH = 7 cm

10. PQRS is a square.



SR = 10 ft

11. ABCD is a rectangle. Its length is twice its width.




AB = 28 yd

Lesson 11.1 Squares and Rectangles 81

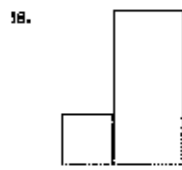
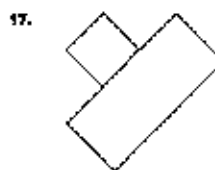
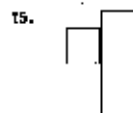
Workbook B p. 81

Draw a line segment to break up each figure into two rectangles.

Example




Draw a line segment to break up each figure into one square and one rectangle.



82 Chapter 11 Squares and Rectangles

Workbook B p. 82

# Practice and Apply

Workbook pages for Chapter 11, Lesson 11.2

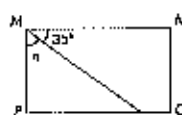
Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Practice 2 Properties of Squares and Rectangles

All the figures are rectangles. Find the measures of the unknown angles.

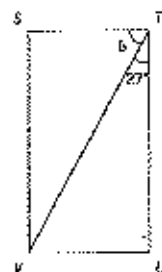
Example

Find the measure of  $\angle a$ .



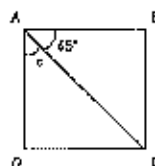
$$\begin{aligned} \text{Measure of } \angle a &= 90^\circ - 35^\circ \\ &= 55^\circ \end{aligned}$$

1. Find the measure of  $\angle b$ .



$$\begin{aligned} \text{Measure of } \angle b &= 90^\circ - 27^\circ \\ &= 63^\circ \end{aligned}$$

2. Find the measure of  $\angle c$ .



$$\begin{aligned} \text{Measure of } \angle c &= 90^\circ - 45^\circ \\ &= 45^\circ \end{aligned}$$

Lesson 11.2 Properties of Squares and Rectangles

83

Workbook B p. 83

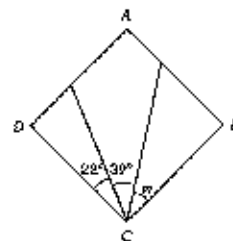
All the figures are rectangles. Find the measures of the unknown angles.

3. Find the measure of  $\angle p$ .



$$\begin{aligned} \text{Measure of } \angle p &= 90^\circ - 36^\circ - 18^\circ \\ &= 36^\circ \end{aligned}$$

4. Find the measure of  $\angle m$ .

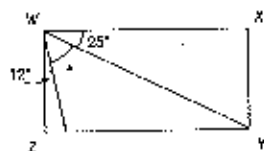


$$\begin{aligned} \text{Measure of } \angle m &= 90^\circ - 22^\circ - 39^\circ \\ &= 29^\circ \end{aligned}$$

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The figure is a rectangle. Find the measure of the unknown angle.

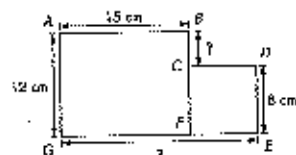
5. Find the measure of  $\angle z$ .



$$\begin{aligned} \text{Measure of } \angle z &= 90^\circ - 25^\circ - 12^\circ \\ &= 53^\circ \end{aligned}$$

Find the lengths of the unknown sides.

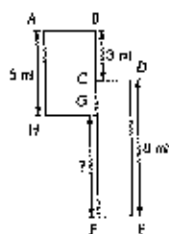
6. The figure is made up of a rectangle and a square. Find BC and GE.



$$\begin{aligned} BC &= 12 - 8 \\ &= 4 \text{ cm} \\ GE &= 15 + 8 \\ &= 23 \text{ cm} \end{aligned}$$

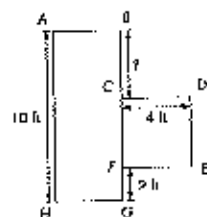
Find the lengths of the unknown sides.

9. The figure is made up of two rectangles. Find FG.



$$\begin{aligned} CG &= 5 - 3 \\ &= 2 \text{ m} \\ FG &= 8 - 2 \\ &= 6 \text{ m} \end{aligned}$$

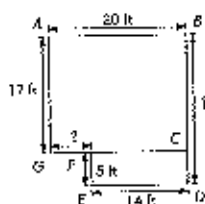
10. The figure is made up of a square and a rectangle. Find BC.



$$\begin{aligned} BC &= 10 - 4 - 2 \\ &= 4 \text{ ft} \end{aligned}$$

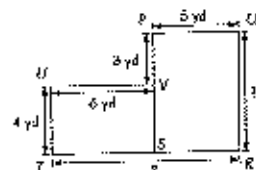
Find the lengths of the unknown sides.

7. The figure is made up of two rectangles. Find BD and FG.



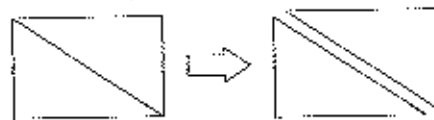
$$\begin{aligned} BD &= 17 + 5 \\ &= 22 \text{ ft} \\ FG &= 20 - 14 \\ &= 6 \text{ ft} \end{aligned}$$

8. The figure is made up of two rectangles. Find QR and RT.

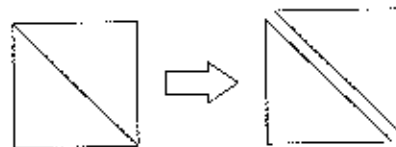


$$\begin{aligned} QR &= 3 + 4 \\ &= 7 \text{ yd} \\ RT &= 5 + 6 \\ &= 11 \text{ yd} \end{aligned}$$

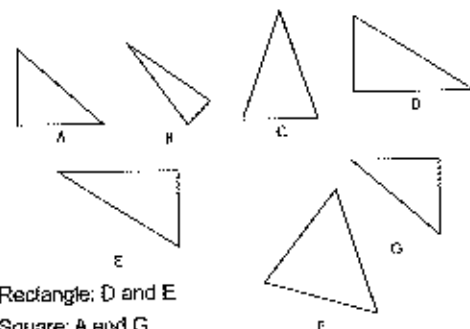
When we divide a rectangle into two, we get two right triangles.



In the same way, we can divide a square into two right triangles.



11. Which two of these right triangles make a rectangle and which two make a square?



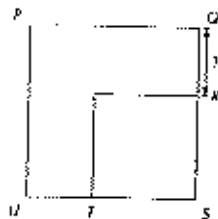
Rectangle: D and E  
Square: A and G



## Put On Your Thinking Cap!

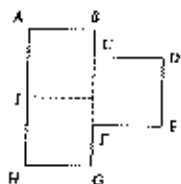
### Challenging Practice

1. The figure is made up of two squares, one with 10-inch sides and the other with 6-inch sides. Find  $QR$ .



$QR = 4$  in.

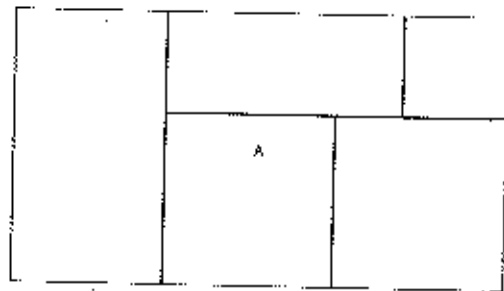
2. The figure is made up of three identical squares with 3-inch sides. Find the total length of  $BC$  and  $FG$ .



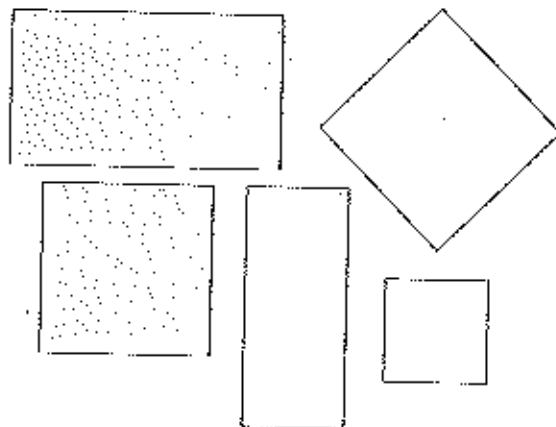
Thinking Skills: Spatial visualization, Deduction

$BC + FG = 3$  in.

3. Cut out the shaded rectangles and squares. Arrange them to fit inside rectangle A without overlapping. Then attach them with tape.



Answers vary.



Name \_\_\_\_\_ Date \_\_\_\_\_



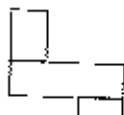
## Put On Your Thinking Cap!

### Problem Solving

1. Look at the figure. What is the least number of squares that must be added to make a rectangle? 5 squares



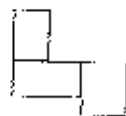
2. Draw line segments to divide the figure into three rectangles in three ways.



first way



second way



third way

# Practice and Apply

Workbook pages for Chapter 13, Lesson 13.1

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Chapter 13 Area and Perimeter

### Practice 1 Area of a Rectangle

Find the area of each figure.

Example

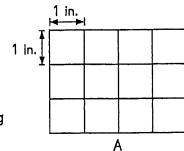
There are 3 rows of one-inch squares.

Each row has 4 one-inch squares.

$$\underline{3} \times \underline{4} = \underline{12}$$

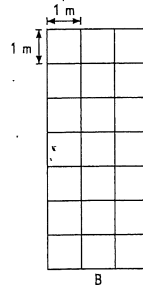
There are 12 one-inch squares covering rectangle A.

$$\text{Area of rectangle A} = \underline{12} \text{ in.}^2$$



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1.



There are 7 rows of one-meter squares.

Each row has 3 one-meter squares.

$$\underline{7} \times \underline{3} = \underline{21}$$

There are 21 one-meter squares covering rectangle B.

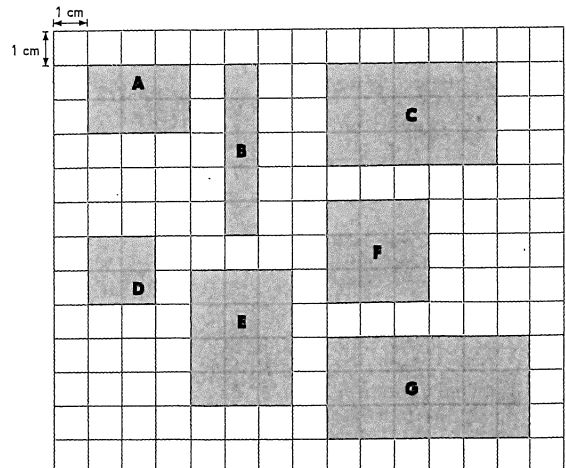
$$\text{Area of rectangle B} = \underline{21} \text{ m}^2$$

Lesson 13.1 Area of a Rectangle 133

Workbook B p. 133

Look at the rectangles in the grid. Write the length, width, and area of each rectangle in the grid. Give your answers in the correct units.

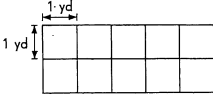
2.

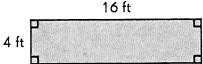


Rectangle	Length	Width	Area = Length × Width
A	3 cm	2 cm	6 cm <sup>2</sup>
B	5 cm	1 cm	5 cm <sup>2</sup>
C	5 cm	3 cm	15 cm <sup>2</sup>
D	2 cm	2 cm	4 cm <sup>2</sup>
E	4 cm	3 cm	12 cm <sup>2</sup>
F	3 cm	3 cm	9 cm <sup>2</sup>
G	6 cm	3 cm	18 cm <sup>2</sup>

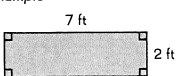
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
**Complete to find the area of each figure.**

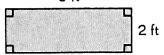
3.  Area = length  $\times$  width  
 = 5  $\times$  2  
 = 10  $\text{yd}^2$   
 The area is 10 square yards.

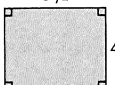
4.  Area = 16  $\times$  4  
 = 64  $\text{ft}^2$   
 The area is 64 square feet.

**Find the perimeter and area of each rectangle or square.**

Example  Perimeter = 18 ft  
 Area = 14  $\text{ft}^2$

5.  Perimeter = 16 in.  
 Area = 16  $\text{in.}^2$

6.  Perimeter = 16 ft  
 Area = 12  $\text{ft}^2$

7.  Perimeter = 18 yd  
 Area = 20  $\text{yd}^2$

**Solve. Show your work.**

Example Ashley has a rug that measures 3 yards by 2 yards on her bedroom floor. What area of her bedroom floor is covered by the rug?  
 Area = length  $\times$  width  
 =  $3 \times 2$   
 =  $6 \text{ yd}^2$   
 The area of her bedroom floor covered by the rug is 6 square yards.

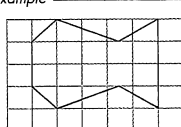
8. Paula wants to paint one of the walls in her room blue. The wall measures 5 meters by 3 meters. What is the area of the wall she has to paint?  
 Area = length  $\times$  width  
 =  $5 \times 3$   
 =  $15 \text{ m}^2$   
 She has to paint 15 square meters of the wall.

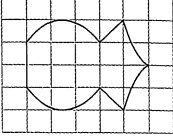
9. The area of a nature reserve is 100 square miles. Oak trees were planted on a square plot of land in the nature reserve with sides that measure 8 miles each. What area of the nature reserve is not covered by oak trees?  
 Area covered by oak trees = length of side  $\times$  length of side  
 =  $8 \times 8$   
 =  $64 \text{ mi}^2$   
 Area not covered by oak trees =  $100 - 64$   
 =  $36 \text{ mi}^2$   
 36 square miles of the nature reserve is not covered by oak trees.

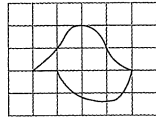
**Solve. Show your work.**

10. Yolanda has a piece of rectangular fabric measuring 30 centimeters by 9 centimeters. She uses half of the material to make a puppet. What is the area of the leftover fabric?  
 Area of fabric = length  $\times$  width  
 =  $30 \times 9$   
 =  $270 \text{ cm}^2$   
 Area of leftover fabric =  $270 \div 2$   
 =  $135 \text{ cm}^2$   
 The area of the leftover fabric is 135 square centimeters.

**Estimate the area of each figure in square units.**

Example  Estimated area = 14-15 square units

11.  Estimated area = 14-16 square units

12.  Estimated area = 7-8 square units.

**Math Journal**

**Look at John's answers for the area and perimeter of the figures.**

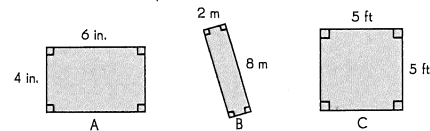


Figure	Length	Width	Area	Perimeter
A	6 in.	4 in.	(24 in.)	(10 in.)
B	8 m	2 m	16 $\text{m}^2$	(20 cm)
C	5 ft	5 ft	(10 $\text{ft}^2$ )	20 ft

John's mistakes are circled.

**Explain why these answers are wrong. Write the correct answers.**

Example  
 Area of figure A:  
 The unit for the area of figure A should be 'in.<sup>2</sup>'

- Perimeter of figure A: The perimeter of figure A should include all its lengths and widths. The perimeter of figure A is 20 inches. The unit for the perimeter of figure B should be 'm'. The perimeter of figure B is 20 meters.
- Perimeter of figure B: The perimeter of figure B is 20 meters.
- Area of figure C: The area of figure C should be length of side  $\times$  length of side. The area of figure C is 25 square feet.

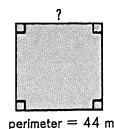
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Solve. Show your work.**

3. A square field has a perimeter of 44 meters.  
Find the length of one side of the field.

$$\begin{aligned} \text{Length of one side} &= \text{perimeter} \div 4 \\ &= 44 \div 4 \\ &= 11 \text{ m} \end{aligned}$$

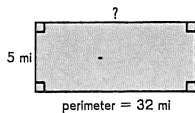
The length of one side of the field is 11 meters.



4. The perimeter of a rectangular town is 32 miles. Its width is 5 miles.  
Find the length.

$$\begin{aligned} \text{Length} + \text{width} &= \text{perimeter} \div 2 \\ &= 32 \div 2 \\ &= 16 \text{ mi} \\ 5 + \text{length} &= 16 \text{ mi} \\ \text{Length} &= 11 \text{ mi} \end{aligned}$$

The length of the town is 11 miles.

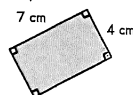


Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Practice 2 Rectangles and Squares**

Find the perimeter of each figure.

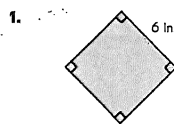
Example



Perimeter of rectangle

$$\begin{aligned} &= 7 + 4 + 7 + 4 \\ &= 22 \text{ cm} \end{aligned}$$

The perimeter of the rectangle is 22 centimeters.



$$\begin{aligned} \text{Perimeter of square} &= 4 \times 6 \\ &= 24 \text{ in.} \end{aligned}$$

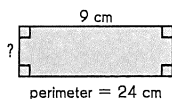
The perimeter of the square is 24 inches.

**Solve. Show your work.**

5. The perimeter of a rectangle is 24 centimeters. Its length is 9 centimeters.  
Find the width.

$$\begin{aligned} \text{Length} + \text{width} &= \text{perimeter} \div 2 \\ &= 24 \div 2 \\ &= 12 \text{ cm} \\ 9 + \text{width} &= 12 \text{ cm} \\ - \text{width} &= 3 \text{ cm} \end{aligned}$$

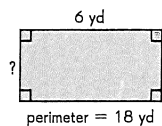
The width of the rectangle is 3 centimeters.



6. The perimeter of a rectangular garden is 18 yards. Its length is 6 yards.  
Find its width.

$$\begin{aligned} \text{Length} + \text{width} &= \text{perimeter} \div 2 \\ &= 18 \div 2 \\ &= 9 \text{ yd} \\ 6 + \text{width} &= 9 \text{ yd} \\ \text{Width} &= 3 \text{ yd} \end{aligned}$$

The width of the garden is 3 yards.



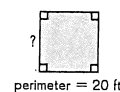
**Solve. Show your work.**

Example

The perimeter of a square flower garden is 20 feet.  
Find the length of one side of the flower garden.

$$\begin{aligned} \text{Length of one side} &= \text{perimeter} \div 4 \\ &= 20 \div 4 \\ &= 5 \text{ ft} \end{aligned}$$

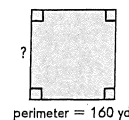
The length of one side of the flower garden is 5 feet.



2. The perimeter of a square building is 160 yards.  
Find the length of one side of the building.

$$\begin{aligned} \text{Length of one side} &= \text{perimeter} \div 4 \\ &= 160 \div 4 \\ &= 40 \text{ yd} \end{aligned}$$

The length of one side of the building is 40 yards.



# Practice and Apply

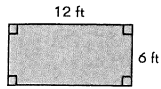
## Workbook pages for Chapter 13, Lesson 13.2

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 3 Rectangles and Squares

Find the area of each figure.

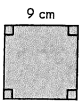
Example



$$\begin{aligned} \text{Area of the rectangle} &= 12 \times 6 \\ &= 72 \text{ ft}^2 \end{aligned}$$

The area of the rectangle is 72 square feet.

1.



$$\begin{aligned} \text{Area of the square} &= 9 \times 9 \\ &= 81 \text{ cm}^2 \end{aligned}$$

The area of the square is 81 square centimeters.

Lesson 13.2 Rectangles and Squares 143

Workbook B p. 143

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Solve. Show your work.

3. The area of a rectangular carpet is 84 square meters. Its width is 7 meters.

a. Find the length.

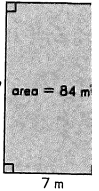
$$\begin{aligned} \text{Length} &= \text{area} \div \text{width} \\ &= 84 \div 7 = 12 \text{ m} \end{aligned}$$

The length of the carpet is 12 meters.

b. Find the perimeter of the carpet.

$$\begin{aligned} \text{Perimeter} &= \text{length} + \text{width} + \text{length} + \text{width} \\ &= 12 + 7 + 12 + 7 = 38 \text{ m} \end{aligned}$$

The perimeter of the carpet is 38 meters.



4. The area of a square is 64 square inches. Find the length of one side of the square. (Hint: What number multiplied by itself is equal to 64?)

$$\begin{aligned} \text{Area} &= \text{length of side} \times \text{length of side} \\ 64 &= 8 \times 8 \end{aligned}$$

The length of one side of the square is 8 inches.



5. The area of a square garden is 100 square meters.

a. Find the length of each side of the garden.

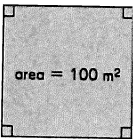
$$\begin{aligned} \text{Area} &= \text{length of side} \times \text{length of side} \\ 100 &= 10 \times 10 \end{aligned}$$

The length of each side of the garden is 10 meters.

b. Find the perimeter of the garden.

$$\begin{aligned} 4 \times \text{length of side} &= \text{perimeter} \\ 4 \times 10 &= 40 \end{aligned}$$

The perimeter of the garden is 40 meters.



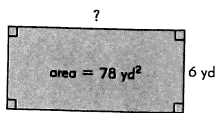
Lesson 13.2 Rectangles and Squares 144

Workbook B p. 144

Solve. Show your work.

Example

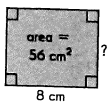
The area of a rectangular hall is 78 square yards. Its width is 6 yards. Find the length.



$$\begin{aligned} \text{Length} \times \text{width} &= \text{area} \\ \text{Length} \times 6 &= 78 \text{ yd}^2 \\ \text{Length} &= 78 \div 6 \\ &= 13 \text{ yd} \end{aligned}$$

The length of the hall is 13 yards.

2. A rectangle has an area of 56 square centimeters. Its length is 8 centimeters. Find the width.



$$\begin{aligned} \text{Length} \times \text{width} &= \text{area} \\ 8 \times \text{width} &= 56 \text{ cm}^2 \\ \text{Width} &= 56 \div 8 \\ &= 7 \text{ cm} \end{aligned}$$

The width of the rectangle is 7 centimeters.

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Solve. Show your work.

6. The area of a rectangular recreation area is 45 square miles. Its width is 5 miles.

a. Find the length.

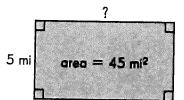
$$\begin{aligned} \text{Area} \div \text{width} &= \text{length} \\ 45 \div 5 &= 9 \end{aligned}$$

The length of the recreation area is 9 miles.

b. Find the perimeter.

$$\begin{aligned} \text{Length} + \text{width} + \text{length} + \text{width} &= \text{perimeter} \\ 5 + 9 + 5 + 9 &= 28 \end{aligned}$$

The perimeter of the recreation area is 28 miles.



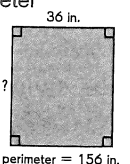
7. The perimeter of a rectangular poster is 156 inches. Its width is 36 inches.

a. Find the length.

$$\begin{aligned} \text{Length} + \text{width} + \text{length} + \text{width} &= \text{perimeter} \\ \text{Length} + 36 &= 78 \text{ in.} \end{aligned}$$

$$\begin{aligned} \text{Length} + 36 &= 78 \text{ in.} \\ \text{Length} &= 78 \text{ in.} - 36 \text{ in.} \\ &= 42 \text{ in.} \end{aligned}$$

The length of the poster is 42 inches.



b. Find the area.

$$\begin{aligned} \text{Area} &= \text{length} \times \text{width} \\ &= 42 \times 36 \\ &= 1,512 \text{ in.}^2 \end{aligned}$$

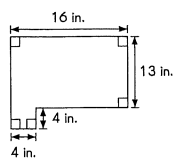
The area of the poster is 1,512 square inches.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Practice 4 Composite Figures

Find the lengths of the unknown sides of each figure.  
Then find the perimeter of each figure.

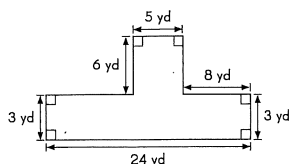
Example



Length of first unknown side =  $16 - 4 = 12$  in.  
Length of second unknown side =  $13 + 4 = 17$  in.  
Perimeter of figure =  $16 + 13 + 12 + 4 + 4 + 17 = 66$  in.

Perimeter = 66 in.

1.



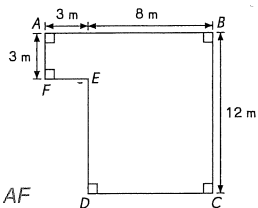
Length of first unknown side = 6 yd  
Length of second unknown side =  $24 - 8 - 5 = 11$  yd  
Perimeter of figure =  $11 + 6 + 5 + 6 + 8 + 3 + 24 + 3 = 66$  yd

Perimeter = 66 yd

Solve. Show your work.

2. Tom wants to fence in the piece of land shown in the diagram.  
Find the perimeter of the piece of land to find the length of fencing material he needs.

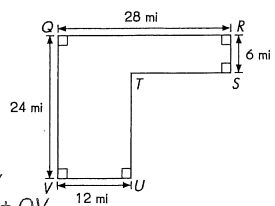
$AB = 3 + 8 = 11$  m  
 $CD = 8$  m  
 $DE = BC - AF = 12 - 3 = 9$  m  
 $EF = 3$  m  
Perimeter of figure  $ABCDEF = AB + BC + CD + DE + EF + AF = 11 + 12 + 8 + 9 + 3 + 3 = 46$  m



Perimeter = 46 m

3. Find the perimeter of this figure.

$ST = QR - UV = 28 - 12 = 16$  mi  
 $TU = QV - RS = 24 - 6 = 18$  mi  
Perimeter of figure  $QRSTUV = QR + RS + ST + TU + UV + QV = 28 + 6 + 16 + 18 + 12 + 24 = 104$  mi

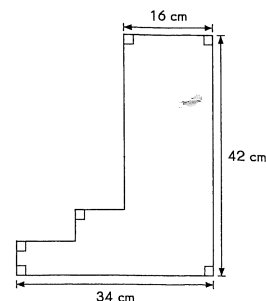


Perimeter = 104 mi

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Solve. Show your work.

4. Find the perimeter of the figure.  
 $34 + 34 + 42 + 42 = 152$  cm<sup>2</sup>



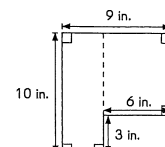
Perimeter = 152 cm

Find the area of each composite figure. Show your work.

Example

Break up the figure into two rectangles as shown.  
Then find the area of the whole figure.

Area of rectangle 1 = length  $\times$  width  
 $= 10 \times 3 = 30$  in.<sup>2</sup>  
Area of rectangle 2 = length  $\times$  width  
 $= 7 \times 6 = 42$  in.<sup>2</sup>

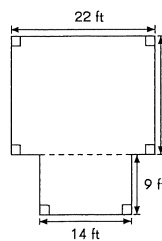


Total area = area of rectangle 1 + area of rectangle 2  
 $= 30 + 42 = 72$  in.<sup>2</sup>

Area = 72 in.<sup>2</sup>

Find the area of each composite figure. Show your work.

5.

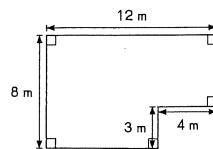


Area of rectangle 1 = length  $\times$  width  
 $= 22 \times 18 = 396$  ft<sup>2</sup>  
Area of rectangle 2 = length  $\times$  width  
 $= 14 \times 9 = 126$  ft<sup>2</sup>

Area of composite figure = area of rectangle 1 + area of rectangle 2  
 $= 396 + 126 = 522$  ft<sup>2</sup>

Area = 522 ft<sup>2</sup>

6.



Area of rectangle 1 = length  $\times$  width  
 $= 12 \times 5 = 60$  m<sup>2</sup>  
Area of rectangle 2 = length  $\times$  width  
 $= 8 \times 3 = 24$  m<sup>2</sup>

Area of composite figure = area of rectangle 1 + area of rectangle 2  
 $= 60 + 24 = 84$  m<sup>2</sup>

Area = 84 m<sup>2</sup>

More than 2 rectangles are possible.

# Practice and Apply

Workbook pages for Chapter 13, Lesson 13.4

Name: \_\_\_\_\_ Date: \_\_\_\_\_

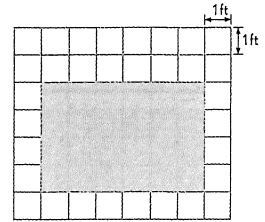
## Practice 5 Using Formulas for Area and Perimeter

Solve. Show your work.

Example

The floor of a patio measuring 8 feet by 7 feet is tiled with 1-foot square tiles. The shaded area in the figure is tiled in black, and the unshaded area is tiled in white. What is the area tiled in white?

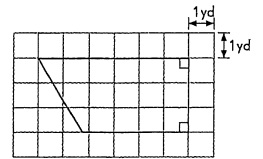
$$\begin{aligned} \text{Area of patio} &= 8 \times 7 \\ &= 56 \text{ ft}^2 \\ \text{Shaded area} &= 6 \times 4 \\ &= 24 \text{ ft}^2 \\ \text{Area of patio} - \text{shaded area} \\ &= 56 - 24 \\ &= 32 \text{ ft}^2 \\ \text{The area tiled in white is} \\ &32 \text{ square feet.} \end{aligned}$$



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1. The floor of Mr. Jones' living room is in the shape shown below.

- a. Estimate, in square yards, the area of his living room. 15 yd<sup>2</sup>



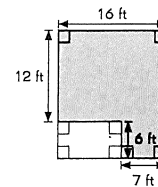
- b. Mr. Jones wants to carpet his living room. If a roll of carpet is 3 yards wide, what is the smallest length of carpet Mr. Jones should buy?  
12 yd

Lesson 13.4 Using Formulas for Area and Perimeter 151

Workbook B p. 151

Solve. Show your work.

2. The figure shows a small rectangle and a large rectangle. Find the area of the shaded part of the figure.



$$\begin{aligned} \text{Area of large rectangle} &= \frac{16}{288} \times \frac{18}{\text{ft}^2} \\ &= \frac{288}{\text{ft}^2} \end{aligned}$$

$$\begin{aligned} \text{Area of small rectangle} &= \frac{6}{54} \times \frac{9}{\text{ft}^2} \\ &= \frac{54}{\text{ft}^2} \end{aligned}$$

$$\begin{aligned} \text{Area of shaded part} &= \text{area of large rectangle} - \text{area of small rectangle} \\ &= \frac{288}{234} - \frac{54}{\text{ft}^2} \\ &= \frac{234}{\text{ft}^2} \end{aligned}$$

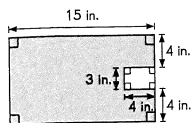
The area of the shaded part is 234 square feet.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Solve. Show your work.**

3. The figure shows a small rectangle and a large rectangle. Find the area of the shaded part of the figure.



$$\begin{aligned} \text{Area of large rectangle} &= \frac{15}{165} \times \frac{11}{\text{in.}^2} \\ &= 165 \text{ in.}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of small rectangle} &= \frac{3}{12} \times \frac{4}{\text{in.}^2} \\ &= 12 \text{ in.}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of shaded part} &= \frac{165}{153} - \frac{12}{\text{in.}^2} \\ &= 153 \text{ in.}^2 \end{aligned}$$

The area of the shaded part is 153 square inches.

**Example**

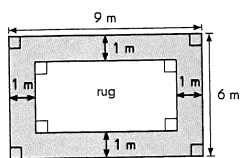
A rug is centered on a rectangular floor as shown in the diagram. Find the area of the rug.

$$\begin{aligned} \text{Length of rug} &= 9 - 1 - 1 \\ &= 7 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Width of rug} &= 6 - 1 - 1 \\ &= 4 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Area of rug} &= 7 \times 4 \\ &= 28 \text{ m}^2 \end{aligned}$$

The area of the rug is 28 square meters.



**Solve. Show your work.**

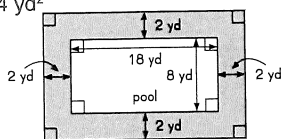
4. A rectangular pool is surrounded by a 2-yard-wide deck as shown in the diagram. Find the area of the deck.

$$\begin{aligned} \text{Area of large rectangle} &= 22 \times 12 \\ &= 264 \text{ yd}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of pool} &= 18 \times 8 \\ &= 144 \text{ yd}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of deck} &= 264 - 144 \\ &= 120 \text{ yd}^2 \end{aligned}$$

The area of the deck is 120 square yards.



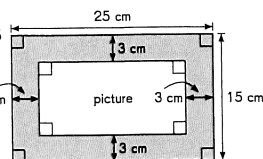
5. A rectangular picture frame measures 25 centimeters by 15 centimeters. It has a wooden border 3 centimeters wide. To fit the picture frame, how large should a picture be?

$$\begin{aligned} \text{Length of picture} &= 25 - 3 - 3 \\ &= 19 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Width of picture} &= 15 - 3 - 3 \\ &= 9 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Area of picture} &= 19 \times 9 \\ &= 171 \text{ cm}^2 \end{aligned}$$

The picture should be 171 square centimeters.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Solve. Show your work.**

6. Renee has a piece of rectangular cardboard measuring 90 centimeters by 80 centimeters. She cuts out a small rectangular piece measuring 15 centimeters by 20 centimeters.

- a. Find the area of the remaining piece of cardboard.

$$\begin{aligned} \text{Area of cardboard} &= \text{length} \times \text{width} \\ &= 90 \times 80 \\ &= 7,200 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of small cutout} &= \text{length} \times \text{width} \\ \text{Area of cutout} &= 15 \times 20 \\ &= 300 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of remaining piece} &= \text{area of cardboard} \\ &\quad - \text{area of cutout} \\ &= 7,200 - 300 \\ &= 6,900 \text{ cm}^2 \end{aligned}$$

The area of the remaining piece of cardboard is 6,900 square centimeters.

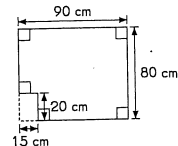
- b. Find the perimeter of the remaining piece of cardboard.

$$\begin{aligned} \text{Perimeter of remaining piece} &= 90 + 80 + 75 \\ &\quad + 20 + 15 + 60 \\ &= 340 \text{ cm} \end{aligned}$$

The perimeter of the remaining piece of cardboard is 340 centimeters.

- c. Compare the perimeter of the remaining piece of cardboard with that of the original piece of cardboard. Which one is greater?

They are the same length.



**Solve. Show your work.**

7. Melanie makes a path 1 yard wide around her rectangular patch of land as shown in the diagram. Find the perimeter and area of the patch of land.

$$\begin{aligned} \text{Length of patch of land} &= 20 - 1 - 1 \\ &= 18 \text{ yd} \end{aligned}$$

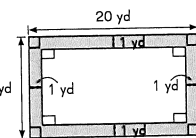
$$\begin{aligned} \text{Width of patch of land} &= 12 - 1 - 1 \\ &= 10 \text{ yd} \end{aligned}$$

$$\begin{aligned} \text{Perimeter of patch of land} &= 18 + 18 + 10 + 10 \\ &= 56 \text{ yd} \end{aligned}$$

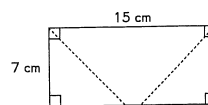
$$\begin{aligned} \text{Area of patch of land} &= 18 \times 10 \\ &= 180 \text{ yd}^2 \end{aligned}$$

The perimeter of the patch of land is 56 yards.

The area of the patch of land is 180 square yards.



8. A rectangular piece of paper measuring 15 centimeters by 7 centimeters is folded along the dotted lines to form the figure shown.



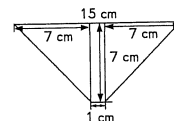
Find the area of the figure formed.

$$7 \times 7 = 49$$

$$1 \times 7 = 7$$

$$\begin{aligned} \text{Area of figure} &= 49 + 7 \\ &= 56 \text{ cm}^2 \end{aligned}$$

The area of the figure formed is 56 square centimeters.



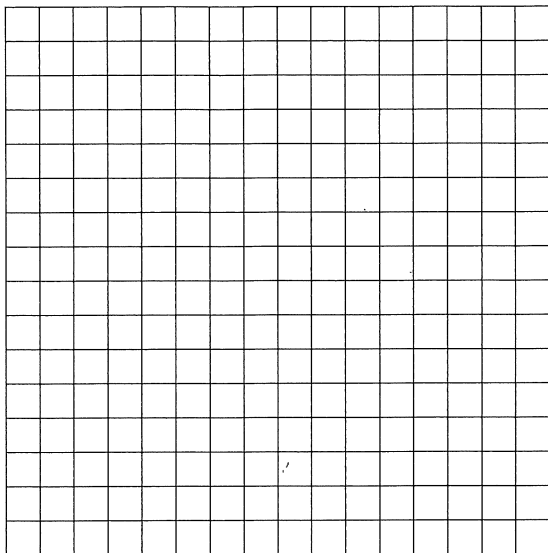
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Put On Your Thinking Cap!**

**Challenging Practice**

See Additional Answers.

1. Using the gridlines, draw as many different rectangles as you can that have an area of 12 square centimeters. Do the same for rectangles with an area of 9 square centimeters. How many rectangles can you draw for each area?



Thinking Skill: Identifying patterns and relationships  
 Strategy: Act it out

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Solve. Show your work.**

4. A rectangular garden measuring 15 meters by 8 meters is bordered by a house on one side as shown. How much fencing material is needed for the garden?

$$\begin{aligned} \text{Length of fencing material} \\ \text{needed} &= 15 + 8 + 15 \\ &= 38 \text{ m} \end{aligned}$$

38 meters of fencing material is needed for the garden.



5. Mrs. Evan covered the rectangular floor of her living room with a parallelogram-shaped carpet as shown. The floor measures 5 feet by 7 feet. How much of the floor is covered with carpet?

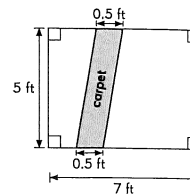
$$\begin{aligned} \text{Area of living room} &= 5 \times 7 \\ &= 35 \text{ ft}^2 \end{aligned}$$

The uncarpeted area forms an area of length  $7 - 0.5 = 6.5$  ft, and width 5 ft.

$$\begin{aligned} \text{Area not covered with carpet} &= 5 \times 6.5 \\ &= 32.5 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Carpeted area} &= \text{area of living room} - \\ &\quad \text{uncarpeted area} \\ &= 35 - 32.5 \\ &= 2.5 \text{ ft}^2 \end{aligned}$$

The area of the floor covered with carpet is 2.5 square feet.



**Solve. Show your work.**

2. The length of a painting is 3 times its width. Its perimeter is 64 inches. Find the length.

$$8 \text{ units} \rightarrow 64 \text{ in.}$$

$$1 \text{ unit} \rightarrow 64 \div 8 = 8 \text{ in.}$$

$$\text{Width} = 8 \text{ in.}$$

$$\begin{aligned} \text{Length of the painting} &= 3 \times 8 \\ &= 24 \text{ in.} \end{aligned}$$

The length of the painting is 24 inches.

3. The length of a dog run is twice its width. Its area is 50 square yards. Find the length and width of the dog run.

$$50 \div 2 = 25$$

$$5 \times 5 = 25$$

$$\text{Width} = 5 \text{ yd}$$

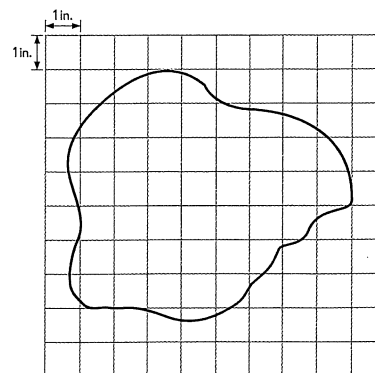
$$\begin{aligned} \text{Length} &= 2 \times 5 \\ &= 10 \text{ yd} \end{aligned}$$

The width of the dog run is 5 yards.

The length of the dog run is 10 yards.

**Estimate the area.**

6. Peter wanted to make a collage of a park. How much paper would he need to make this pond?



Number of = 31

Number of = 3-4

Number of = 9-10

Estimated area = 41-42 in.<sup>2</sup>

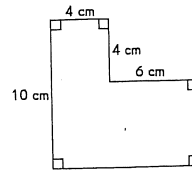


# Put On Your Thinking Cap!



## Problem Solving

1. Shawn has a piece of cardboard as shown in the diagram. He wants to cut out as many squares as possible from the cardboard. How many squares can he cut if each side of a square is



Strategy: Use a diagram

- 2 centimeters long? 19
- 3 centimeters long? 7
- 4 centimeters long? 3

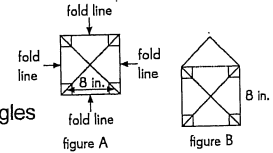
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2. Figure A shows a piece of paper folded to form a square with 8-inch sides as shown in the diagram. Figure B shows one of the flaps opened. Find the area of figure B.

$$\begin{aligned} \text{Area of figure A} &= 8 \times 8 \\ &= 64 \text{ in.}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of one triangle} &= 64 \div 4 \\ &= 16 \text{ in.}^2 \end{aligned}$$

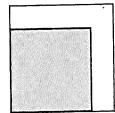
$$\begin{aligned} \text{Area of figure B} &= \text{area of 5 triangles} \\ &= 5 \times 16 \\ &= 80 \text{ in.}^2 \end{aligned}$$



The area of figure B is 80 square inches.

### Solve. Show your work.

3. The figure shows two squares. The area of the unshaded part of the figure is 9 square feet. If the sides of both the squares are whole numbers, find the perimeter of the unshaded part.



	1st Guess	2nd Guess	3rd Guess	4th Guess
Area of large square	$2 \times 2$ $= 4 \text{ ft}^2$	$3 \times 3$ $= 9 \text{ ft}^2$	$4 \times 4$ $= 16 \text{ ft}^2$	$5 \times 5$ $= 25 \text{ ft}^2$
Area of small square	$1 \times 1$ $= 1 \text{ ft}^2$	$1 \times 1$ $= 1 \text{ ft}^2$	$2 \times 2$ $= 4 \text{ ft}^2$	$4 \times 4$ $= 16 \text{ ft}^2$
Area of unshaded part	$3 \text{ ft}^2$	$8 \text{ ft}^2$	$12 \text{ ft}^2$	$9 \text{ ft}^2$

From the 4th guess, side of big square = 5 ft  
side of small square = 4 ft.

$$\begin{aligned} \text{Perimeter of the unshaded part} \\ &= 5 + 5 + 1 + 4 + 4 + 1 \\ &= 20 \text{ ft} \end{aligned}$$

The perimeter of the unshaded part is 20 feet.