GLENCOE MATHEMATICS

ALGEBRA

Prerequisite Skills Workbook: Remediation and Intervention

For use with

Glencoe Pre-Algebra

Glencoe Algebra 1

Glencoe Algebra: Concepts and Applications

Glencoe McGraw-Hill

New York, New York
Columbus, Ohio
Chicago, Illinois
Peoria, Illinois
Woodland Hills, California

Glencoe/McGraw-Hill
A Division of The McGraw-Hill Companies

Send all inquiries to:
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240-4027

ISBN: 0-07-827759-0 *Algebra Prerequisite Skills Workbook*

1 2 3 4 5 6 7 8 9 10 024 11 10 09 08 07 06 05 04 03 02

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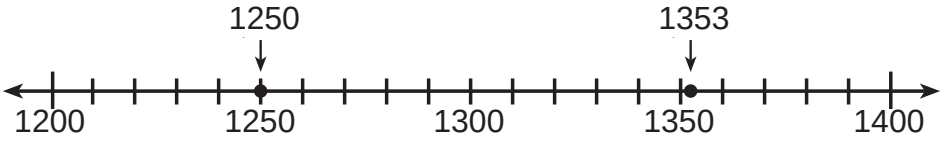
SKILL 1

Name _____ Date _____ Period _____

Comparing and Ordering Whole Numbers

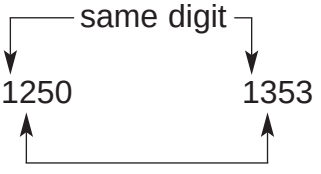
You can use a number line to compare whole numbers such as 1353 and 1250.



On a number line, values increase as you move to the right.

1250 is to the left of 1353.	1353 is to the right of 1250.
1250 **is less than** 1353.	1353 **is greater than** 1250.
1250 < 1353	**1353 > 1250**

You can compare numbers without a number line. Start at the left and compare the digits in each place-value position.



In the hundreds place, 2 < 3.

So, 1250 < 1353.

Examples

Replace each ◯ with <, >, or = to make a true sentence.

1 **5749 ◯ 5746**

In the ones place, 9 > 6.

So, 5749 > 5746.

2 **1432 ◯ 989**

On a number line, 1432 is to the right of 989.

So, 1432 > 989.

3 **Order 34, 22, 39, and 105 from least to greatest.**

Compare the hundreds. 105 is the greatest.

Compare the tens. 22 is the least.

Compare the ones. 34 is less than 39.

So the order from least to greatest is 22, 34, 39, 105

Write using the symbols <, >, or = .

1. 9 is greater than 7.

2. 38 is less than 83.

3. 480 is greater than 48.

4. 500 is greater than 498.

5. 832 is equal to 832.

6. 365 is less than 375.

SKILL 1

Name _____ Date _____ Period _____

Comparing and Ordering Whole Numbers *(continued)*

Fill in the blank with <, >, or = to make a true sentence.

7. 435 _____ 534

8. 6739 _____ 6738

9. 8762 _____ 8672

10. 892 _____ 2531

11. 7059 _____ 7061

12. 629,356 _____ 630,200

13. 487,926 _____ 487,826

14. 74,923 _____ 74,923

15. 15,538 _____ 15,358

16. 124,462 _____ 124,433

17. 49,675 _____ 49,675

18. 753,021 _____ 743,012

19. 64,336 _____ 65,376

20. 819,461 _____ 803,642

Order the numbers from least to greatest.

21. 48 52 46 67

22. 102 120 112 201

23. 987 978 990 897

24. 2063 2060 2058

25. 99 989 809

26. 4007 4700 4070

27. 865 635 402 615

28. 2143 2413 2341

29. 602 206 620 260

30. 6300 6003 6030

Solve. Use the chart.

31. List the states in order of size from least to greatest.

32. Which state has an area between 57,000 and 60,000 square miles?

Areas of Some Midwestern States	
State	**Area (square miles)**
Illinois	56,345
Indiana	36,185
Michigan	58,527
Ohio	41,330
Wisconsin	56,123

SKILL 2

Name _____ Date _____ Period _____

Rounding Whole Numbers

The distance from Atlanta, Georgia, to Memphis, Tennessee, is 371 miles. If you tell a friend that the distance is about 400 miles, you have **rounded** the number.

On a number line, you can see that 371 is between 300 and 400. It is closer to 400. *To the nearest hundred*, 371 rounds to 400.

You can also round numbers without using a number line. First, look at the digit to the right of the place being rounded.

- If the digit to the right is 5, 6, 7, 8, or 9, round up.
- If the digit to the right is 0, 1, 2, 3, or 4, the underlined digit remains the same.

Examples

1 **Round 84,373 to the nearest thousand.**

84,373

thousands → *The digit in the thousand place remains the same since the digit to its right is 3.*

To the nearest thousand, 84,373 rounds to 84,000.

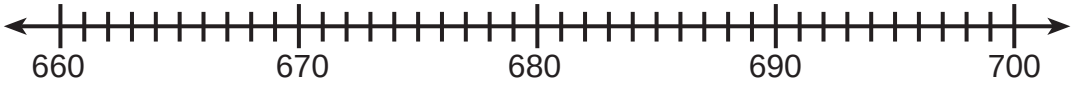
2 **Round 3,546,238 to the nearest million.**

3,546,238

millions → *Round up since the digit is 5.*

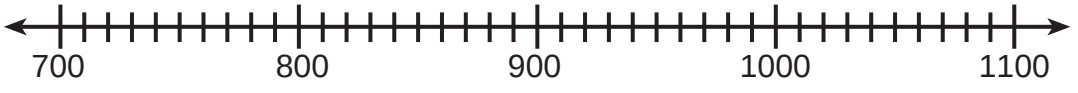
To the nearest million, 3,546,238 rounds to 4,000,000.

Round to the nearest ten. Use the number line if necessary.



1. 682 **2.** 675 **3.** 698 **4.** 661

Round to the nearest hundred. Use the number line if necessary.



5. 830 **6.** 850 **7.** 778

8. 879 **9.** 950 **10.** 1022

SKILL 2

Name _____ Date _____ Period _____

Rounding Whole Numbers *(continued)*

Round to the nearest thousand. Use the number line if necessary.

11. 3100 **12.** 2500 **13.** 2262

14. 4700 **15.** 5860 **16.** 4082

17. 3643 **18.** 4216 **19.** 5910

Round to the underlined place-value position.

20. 2<u>6</u>7 **21.** 40<u>9</u>1

22. <u>4</u>20,800 **23.** 5<u>6</u>7,000

24. 43,<u>7</u>28 **25.** 30<u>7</u>,792

26. 1<u>4</u>,350 **27.** <u>9</u>,798

28. <u>3</u>,398,000 **29.** 1<u>8</u>,499,898

30. 5<u>3</u>2,795 **31.** <u>8</u>24,619

32. <u>6</u>,321,510 **33.** 2<u>4</u>,053,217

34. 12<u>7</u>,610,573 **35.** 34<u>6</u>,872,000

Solve. Use the chart.

36. List the oceans in order of size from least area to greatest area.

37. Round each area to the nearest million.

Areas of Oceans	
Ocean	**Area (square kilometers)**
Arctic	9,485,000
Atlantic	86,557,000
Indian	73,427,000
Pacific	166,241,000

SKILL 3

Name _____ Date _____ Period _____

Adding Whole Numbers

To add whole numbers, first add the ones. Then add the digits in each place from right to left.

Examples

1

7056	→	$\overset{1}{7}056$	→	$\overset{11}{7}056$	→	$\overset{11}{7}056$
+ 973	→	+ 973	→	+ 973	→	+ 973
9		29		029		8029
Add the ones.		*Add the tens.*		*Add the hundreds.*		*Add the thousands.*

2 $406 + $881 + $75

$$\begin{array}{r} \$\overset{11}{4}06 \\ 881 \\ +\ \ 75 \\ \hline \$1362 \end{array}$$

Write in columns.

Add.

1. 72 + 65

2. 62 + 83

3. 39 + 37

4. 66 + 85

5. 768 + 67

6. 495 + 48

7. $470 + 583

8. 237 + 579

9. 1570 + 2823

10. 5126 + 2899

11. 3973 + 1689

12. 1482 + 3497

SKILL 3

Name _____ Date _____ Period _____

Adding Whole Numbers *(continued)*

13. 4632 + 705

14. 2039 + 758

15. 6720 + 2385

16. 7916 + 8295

17. 14,832 + 6229

18. 23,467 + 7324

19. 15,732 + 8615

20. 24,816 + 15,995

21. 36, 54, + 21

22. 65, 89, + 23

23. 168, 275, + 256

24. 245, 87, + 316

25. 43, 128, + 210

26. 439, 64, + 87

27. 518, 192, + 36

28. 425, 376, + 124

29. 5 + 27 + 168 =

30. 463 + 309 + 1542 =

31. \$46 + \$93 + \$18 + \$62 =

32. 636 + 4923 + 481 =

Solve.

33. Karen had \$273 in her savings account. She makes deposits of \$15 and \$43. How much does Karen have in her savings account now?

34. One day, 148 copies of the student newspaper were sold. On the previous day, 164 copies were sold. How many copies were sold during these two days?

SKILL 4

Name _____ Date _____ Period _____

Subtracting Whole Numbers

To subtract whole numbers, first subtract the ones. Then subtract the digits in each place from right to left. Rename as needed.

Examples

1

896	896	896
− 145	− 145	− 145
1	51	751
Subtract the ones.	*Subtract the tens.*	*Subtract the hundreds.*

2

381	$3\cancel{8}^{7}\cancel{1}^{11}$	$\cancel{3}^{2}\cancel{8}^{17}\cancel{1}^{11}$
− 285	− 285	− 285
	6	96

Since 1 < 5, rename 8 tens as 7 tens and 10 ones. Then, 10 ones + 1 one = 11 ones.

3

506	$\cancel{5}^{49}\cancel{0}^{16}6$	$\cancel{5}^{49}\cancel{0}^{16}6$
− 238	− 238	− 238
	8	268

Since 6 < 8, rename 50 tens as 49 tens 10 ones. Then, 10 ones + 6 ones = 16 ones.

Subtract.

1. 87 − 53

2. 56 − 40

3. 854 − 630

4. 695 − 132

5. 34 − 8

6. 70 − 28

7. \$78 − 59

8. 480 − 63

SKILL 4

Name _____ Date _____ Period _____

Subtracting Whole Numbers *(continued)*

9. 407
− 139

10. 908
− 439

11. 320
− 152

12. 300
− 105

13. 515
− 298

14. 735
− 596

15. 810
− 635

16. 401
− 293

17. 6827
− 5752

18. 1297
− 898

19. 6243
− 4564

20. 5690
− 792

21. 1516 − 835 =

22. 8312 − 5943 =

23. 16,202 − 9814 =

24. 12,915 − 8036 =

25. 51,520 − 35,630 =

26. 37,982 − 19,395 =

27. 70,605 − 38,296 =

28. 30,005 − 17,008 =

Solve.

29. A cassette recorder costs $340 at one store. At another store, the same brand costs $298. How much would you save by buying the recorder at the second store?

30. The Colorado River is 1,450 miles long. The Yukon River is 1,770 miles long. How much longer is the Yukon River?

SKILL 5

Name _____ Date _____ Period _____

Multiplying Whole Numbers

To multiply by a one-digit whole number, first multiply the ones. Then multiply the digits in each place from right to left.

Example

1

$\overset{3}{8}35$	$\overset{23}{8}35$	$\overset{23}{8}35$
$\times\ 6$	$\times\ 6$	$\times\ 6$
0	10	5010
Multiply the ones.	*Multiply the tens. Add 3.*	*Multiply the hundreds. Add 2.*

To multiply by a two digit whole number, first multiply by the ones. Then multiply by the tens.

Examples

2

2609	2609	2609
$\times\ 78$	$\times\ 78$	$\times\ 78$
	20872	20872
		182630
		203,502

3

1047	1407	1407
$\times\ 60$	$\times\ 60$	$\times\ 60$
	0	62,820
	Any number multiplied by zero is zero.	

Multiply.

1. 700 × 25

2. 602 × 4

3. 218 × 63

4. \$189 × 42

5. \$125 × 11

6. 264 × 40

7. 3265 × 72

8. 6019 × 94

SKILL 5

Name _____ Date _____ Period _____

Multiplying Whole Numbers *(continued)*

9. $\begin{array}{r} 3841 \\ \times\ \ 65 \\ \hline \end{array}$

10. $\begin{array}{r} \$7903 \\ \times\ \ \ \ \ 3 \\ \hline \end{array}$

11. $\begin{array}{r} 16{,}009 \\ \times\ \ \ \ 80 \\ \hline \end{array}$

12. $\begin{array}{r} 28{,}706 \\ \times\ \ \ \ 49 \\ \hline \end{array}$

13. $\begin{array}{r} 4216 \\ \times\ \ \ \ \ 8 \\ \hline \end{array}$

14. $\begin{array}{r} 5310 \\ \times\ \ \ 50 \\ \hline \end{array}$

15. $\begin{array}{r} 8020 \\ \times\ \ 16 \\ \hline \end{array}$

16. $\begin{array}{r} 19{,}634 \\ \times\ \ \ \ 25 \\ \hline \end{array}$

17. $819 \times 8 =$

18. $438 \times 6 =$

19. $6420 \times 40 =$

20. $7253 \times 38 =$

21. $\$8053 \times 5 =$

22. $450 \times 30 =$

23. $\$605 \times 15 =$

24. $79{,}025 \times 61 =$

Solve.

25. There are 42 rows of seats in the theater. There are 36 seats in each row. How many seats are in the theater?

26. A truck carries 278 crates. Each crate holds 45 pounds of fruit. How many pounds of fruit does the truck carry?

SKILL 6

Name _____ Date _____ Period

Dividing Whole Numbers

To divide whole numbers, start with the digit in the left most position. Then divide the digit in each place from left to right.

Examples

1

```
      1                12                127
4 )508           4 )508            4 )508
   − 4↓             − 4↓              − 4↓
     10               10                10
                    − 8                 − 8
                      28                28
                                      − 28
                                        0
```

Start with the hundreds. → *Divide the tens.* → *Divide the ones. The remainder is 0.*

2

```
        9                90                90 R 25
26 )2365         26 )2365          26 )2365
   −234             −234↓             −234↓
       2               25                25
                     − 0               − 0
                      25                25
```

3 3468 ÷ 17

```
      2                20                204
17 )3468         17 )3468          17 )3468
   −34              −34↓              −34 ↓
     0                06                068
                                      − 68
                                        0
```

Since 6 < 17, the quotient has 0 tens.

Divide.

1. 5)3255 **2.** 70)359 **3.** 47)517 **4.** 18)901

SKILL 6

Name _____ Date _____ Period _____

Dividing Whole Numbers *(continued)*

Divide.

5. $65\overline{)1300}$

6. $50\overline{)2500}$

7. $59\overline{)3776}$

8. $23\overline{)1187}$

9. $15\overline{)1260}$

10. $9\overline{)769}$

11. $6\overline{)5246}$

12. $12\overline{)1176}$

13. $27\overline{)1435}$

14. $37\overline{)592}$

15. $37\overline{)1000}$

16. $81\overline{)5430}$

17. $46\overline{)\$1656}$

18. $42\overline{)2480}$

19. $86\overline{)3440}$

20. $62\overline{)1858}$

21. $72\overline{)43{,}704}$

22. $46\overline{)20{,}700}$

23. $5202 \div 18 =$

24. $2619 \div 3 =$

25. $37{,}513 \div 4 =$

26. $4886 \div 17 =$

Solve.

27. Each tent is put up with 12 poles. How many tents can be put up with 200 poles?

18. Gary buys backpacks to sell at his sporting goods store. Each backpack costs $38. How many backpacks can he buy for $270?

SKILL 7

Name _____ Date _____ Period _____

Divisibility Rules

The following rules will help you determine if a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10.

A number is divisible by:

- 2 if the ones digit is divisible by 2.
- 3 if the sum of the digits is divisible by 3.
- 4 if the number formed by the last two digits is divisible by 4.
- 5 if the ones digit is 0 or 5.
- 6 if the number is divisible by 2 and 3.
- 8 if the number formed by the last three digits is divisible by 8.
- 9 if the sum of the digits is divisible by 9.
- 10 if the ones digit is 0.

Example **Determine whether 2120 is divisible by 2, 3, 4, 5, 6, 9, or 10.**

2: The ones digit is divisible by 2.
2120 is divisible by 2.

3: The sum of the digits $2 + 1 + 2 + 0 = 5$, is not divisible by 3.
2120 is not divisible by 3.

4: The number formed by the last two digits, 20, is divisible by 4.
2120 is divisible by 4.

5: The ones digit is 0.
2120 is divisible by 5.

6: The number is divisible by 2 but not by 3.
2120 is not divisible by 6.

8: The number formed by the last 3 digits, 120, is divisible by 8.
2120 is divisible by 8.

9: The sum of the digits, $2 + 1 + 2 + 0 = 5$, is not divisible by 9.
2120 is not divisible by 9.

10: The ones digit is 0.
2120 is divisible by 10.

2120 is divisible by 2, 4, 5, 8, and 10.

***Determine whether the first number is divisible by the second number. Write* yes *or* no.**

1. 4829; 9 **2.** 482; 2 **3.** 1692; 6

4. 1355; 10 **5.** 633; 3 **6.** 724; 4

7. 3714; 8 **8.** 912; 9 **9.** 559; 5

10. 20,454; 6 **11.** 616; 8 **12.** 3000; 4

SKILL 7

Name _____ Date _____ Period _____

Divisibility Rules *(continued)*

Determine whether each number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10.

13. 80

14. 91

15. 180

16. 333

17. 1024

18. 11,010

19. Is 9 a factor of 154?

20. Is 6 a factor of 102?

21. Is 486 divisible by 6?

22. Is 441 divisible by 9?

Determine whether the first number is divisible by the second number.

23. 4281; 2

24. 2670; 10

25. 3945; 6

26. 6132; 4

27. 8304; 3

28. 6201; 9

29. 4517; 9

30. 2304; 8

31. 7000; 5

32. 10,000; 8

33. 9420; 6

34. 822; 4

Use mental math to find a number that satisfies the given conditions.

35. a number divisible by both 3 and 5

36. a four-digit number divisible by 3, but *not* by 9

37. a five-digit number *not* divisible by 3 or 10

38. a four-digit number divisible by 2 and 4, but *not* by 8

SKILL 8

Name _____ Date _____ Period _____

Decimals and Place Value

You can use a place-value chart like the one below to help you write and read decimals and understand their values.

The decimal 160.289 is shown in the chart at the right. The place-value chart can be extended in either direction. The digit 9, together with its place value, names the number nine thousandths or 0.009.

thousands	hundreds	tens	ones	tenths	hundredths	thousandths	ten-thousandths
	1	6	0.	2	8	9	

9 thousandths or 0.009

8 hundredths or 0.08

2 tenths or 0.2

Notice that the decimal point separates the ones and tenths places. It is read as *and*.

The decimal 160.289 is read as *one hundred sixty and two hundred eighty-nine thousandths*.

Examples **1** **Write nine and five hundred twenty-six ten-thousandths as a number.**

9.0526

2 **Write 623.75 in words.**

six hundred twenty-three and seventy-five hundredths

Write the number named by the underlined digit in words.

1. 0.<u>4</u>5 **2.** 2.36<u>9</u> **3.** 110.5<u>1</u>

4. 43.<u>6</u>72 **5.** 98.00<u>8</u> **6.** 5.312<u>6</u>

7. 16.0<u>9</u> **8.** 2.06<u>7</u>4 **9.** 2.067<u>4</u>

10. 0.0<u>8</u>7 **11.** 0.0<u>2</u>51 **12.** 7.585<u>7</u>

SKILL 8

Name _____ Date _____ Period _____

Decimals and Place Value *(continued)*

Write each of the following as a decimal.

13. twelve hundredths

14. four and three tenths

15. five thousandths

16. fifty-one ten-thousandths

17. seventy-five and nine thousandths

18. one hundred four and thirty-four thousandths

19. twenty and four hundred forty-five ten-thousandths

20. sixteen and forty-five thousandths

21. fifty-six and thirty-four hundredths

Write each number in words.

22. 6.04

23. 0.017

24. 5.1648

25. 18.456

26. 145.007

27. 28.796

28. 787.462

29. 9.0045

In the 1996 Olympics, Michael Johnson won both the men's 200-meter and 400-meter track competitions.

30. His time for the 200-meter competition was 19.32 seconds Write this decimal in words.

31. His time for the 400-meter competition was forty-three and forty–nine hundredths seconds. Write this as a decimal.

SKILL 9

Name _____ Date _____ Period _____

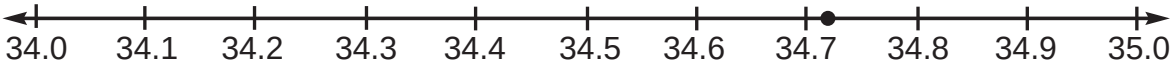
Rounding Decimals

Round 34.725 to the nearest tenth.

You can use a number line.

Find the approximate location of 34.725 on the number line.

34.725 is closer to 34.7 than to 34.8
34.725 rounded to the nearest tenth is 34.7.

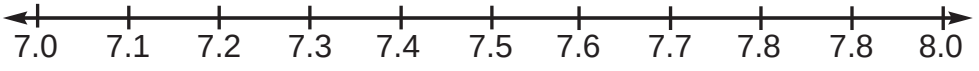


You can also round without a number line.

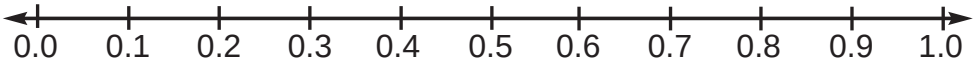
Find the place to which you want to round.	Look at the digit to the right. If the digit is less than 5, round down. If the digit is 5 or greater, round up.	2 is less than 5. Round down.
34.**7**25	34.7**2**5	34.7

Use each number line to show how to round the decimal to the nearest tenth.

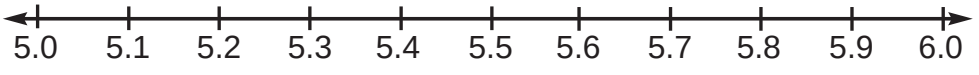
1. 7.82



2. 0.39



3. 5.071



Round each number to the underlined place-value position.

4. 6.$\underline{3}$2 **5.** 0.4$\underline{7}$21 **6.** 26.$\underline{4}$44 **7.** 1.$\underline{1}$61

8. 362.08$\underline{4}$6 **9.** 15.5$\underline{5}$3 **10.** 151.3$\underline{9}$1 **11.** 0.$\underline{5}$5

12. 631.00$\underline{0}$8 **13.** 17.3$\underline{2}$7 **14.** 3.$\underline{0}$9 **15.** 1.$\underline{5}$8

SKILL 9

Name _____ Date _____ Period _____

Rounding Decimals *(continued)*

Round each number to the underlined place-value position.

16. 1.7$\underline{2}$6

17. 5$\underline{4}$.38

18. 0.$\underline{5}$8

19. 0.9$\underline{1}$42

20. 80.$\underline{6}$59

21. 23$\underline{2}$.1

22. 1.$\underline{0}$63

23. 0.$\underline{5}$5

24. 0.$\underline{8}$194

25. 0.4$\underline{9}$6

26. 3.01$\underline{8}$2

27. 71.$\underline{4}$05

28. $\underline{9}$.63

29. 32.$\underline{7}$1

30. 2.6$\underline{7}$1

31. 4.05$\underline{0}$7

32. 89.$\underline{9}$5

33. 0.1$\underline{3}$4

34. 5.$\underline{8}$93

35. 52$\underline{0}$.6

36. 0.70$\underline{9}$8

37. 1.8$\underline{4}$5

38. 34.$\underline{5}$5

39. 29.$\underline{2}$5

40. 56.09$\underline{2}$4

41. 1199.7

42. 0.$\underline{4}$6

43. 0.$\underline{3}$546

SKILL 10

Name _____ Date _____ Period _____

Comparing and Ordering Decimals

To compare decimals, you compare digits in each place-value position from left to right.

Examples **1** **Compare 3.0752 and 3.1042.**

same

In the tenths place, 0 < 1, so 3.0752 is the least.

3.0752

3.1042

So, 3.0752 < 3.1042.

2 **Fill in the blank with < , > , or = to make a true sentence.**

14.19 _____ 14.103

In the hundredths place, 9 > 0. So 14.19 > 14.103.

3 **Order the following set of decimals from least to greatest.**

8.4, 8.41, 8.406, 8.442

Annex zeros so all decimals have the same number of place-value positions.

8.400, 8.410, 8.406, 8.442

So, 8.400 < 8.406 < 8.410 < 8.442.

The decimals in order from least to greatest are

8.4, 8.406, 8.41, 8.442.

State whether each statement is true or false.

1. 0.3 = 0.30

2. 0.001 = 0.01

3. 0.7 > 0.8

4. 0.204 < 0.24

5. 17 = 17.00

6. 0.9 > 2.0

SKILL 10

Name _____ Date _____ Period _____

Comparing and Ordering Decimals *(continued)*

Fill in the blank with $<$, $>$, or $=$ to make a true sentence.

7. 0.205 _____ 0.250

8. 6.035 _____ 6.0353

9. 0.40 _____ 0.400

10. 0.55 _____ 0.5

11. 6.4 _____ 6.400

12. 1.05 _____ 1.005

13. 0.002 _____ 0.02

14. 0.615 _____ 0.651

15. 7 _____ 7.00

16. 15.3 _____ 15.30

17. 11.01 _____ 11.10

18. 124.6 _____ 124.48

Order each set of decimals from least to greatest.

19. 0.03, 0.3, 0.003, 3.0

20. 5.23, 5.203, 5.21, 5.3

21. 0.91, 0.866, 0.9, 0.87

22. 2.03, 2.13, 2.3, 2.033

23. 16.4, 16.04, 16.45, 16.001

24. 8.7, 8.07, 8.17, 8.01

25. 114.2, 114.02, 114.202, 114.002

26. 0.362, 0.306, 0.31, 0.36

Solve.

27. In gymnastics, Maria receives an average score of 9.7. Rebecca receives an average score of 9.69. Who is the winner?

28. Three golfers have the following stroke averages. Rank the golfers in order from lowest to highest stroke average.

Lopez	71.2
Higuchi	72.17
Blalock	72.15

SKILL 11

Name _____ Date _____ Period _____

Adding Decimals

To add decimals, first line up the decimal points. Then add as with whole numbers.

Examples ***1*** **Add: 36.801 + 8.945.**

```
 11
 36.801
+ 8.945
 45.746
```

2 **Add: 7.3 + 9 + 8.45.**

```
  7.30
  9.00
+ 8.45
 24.75
```

Write 9 as 9.00.

3 **Add: $415 + $29.05.**

```
   1
$415.00
+ 29.05
$444.05
```

Annex zeros to $415 to help align the decimal points.

Add.

1. $27.06 + 7.06

2. 1.034 + 0.08

3. 68.7 + 8.41

4. 42.6 + 21.919

5. 93.7 + 24.85

6. 140.98 + 16.5

7. 15.987 + 9.07

8. 478.98 + 99.076

9. 14.16 + 8.9

10. 67.032 + 5.98

11. 246.38 + 19.976

12. 17.32 + 8.963

SKILL 11

Name _____ Date _____ Period _____

Adding Decimals *(continued)*

Add.

13. 510.35
+ 6.7

14. 83.675
+ 2.95

15. 6.852
+ 3.97

16. 14.8
+ 9.63

17. 0.4
0.6
+ 0.7

18. 6.5
2.81
+ 7.9

19. 0.21
0.619
+ 0.394

20. $3.33
6.67
+ 0.24

21. 7.41
2.835
+ 0.9

22. $19.99
7.99
+ 24.50

23. 3.04 + 0.6 =

24. 8 + 4.7 =

25. 19.642 + 2.61 =

26. 8.543 + 3.29 =

27. 1.61 + 3.807 =

28. 543 + 9.29 =

Solve.

29. A gymnast scored 9.65 on the beam, 9.59 on the floor, 9.76 on the bars, and 9.52 on the vault. What was the gymnast's total score?

30. A ticket to the game cost Andrea $12. She also spent $8.09 on food. How much did she spend in all?

SKILL 12

Name _____ Date _____ Period _____

Subtracting Decimals

To subtract decimals, line up the decimal points.
Then subtract as with whole numbers.

Examples **1** **Subtract: 8.1 − 4.75.**

$$\begin{array}{r} 8.\cancel{1}^{0}\cancel{0}^{10} \\ -\ 4.75 \\ \hline 3.35 \end{array}$$

Annex a zero to 8.1 to help align the decimal points.

2 **Subtract: \$84 − \$1.79.**

$$\begin{array}{r} \$8\cancel{4}^{3}.\cancel{0}^{9}\cancel{0}^{10} \\ -\ 1.79 \\ \hline \$82.21 \end{array}$$

Annex two zeros to \$84 to help align the decimal points.

3 **Subtract: 16.703 − 8.**

$$\begin{array}{r} 16.703 \\ -\ 8.000 \\ \hline 8.703 \end{array}$$

Annex three zeros to 8 to help align the decimal points.

Subtract.

1. $\begin{array}{r} 9.14 \\ -\ 2.075 \\ \hline \end{array}$

2. $\begin{array}{r} 712.53 \\ -\ 6.44 \\ \hline \end{array}$

3. $\begin{array}{r} 20.14 \\ -\ 8.093 \\ \hline \end{array}$

4. $\begin{array}{r} \$12.65 \\ -\ 10.99 \\ \hline \end{array}$

5. $\begin{array}{r} 14.395 \\ -\ 2.654 \\ \hline \end{array}$

6. $\begin{array}{r} 2.42 \\ -\ 0.5 \\ \hline \end{array}$

7. $\begin{array}{r} 0.261 \\ -\ 0.09 \\ \hline \end{array}$

8. $\begin{array}{r} 9.407 \\ -\ 0.22 \\ \hline \end{array}$

9. $\begin{array}{r} 6.324 \\ -\ 0.75 \\ \hline \end{array}$

10. $\begin{array}{r} 42.903 \\ -\ 8.05 \\ \hline \end{array}$

11. $\begin{array}{r} 16.37 \\ -\ 5.609 \\ \hline \end{array}$

12. $\begin{array}{r} 18 \\ -\ 7.63 \\ \hline \end{array}$

SKILL 12

Name _____ Date _____ Period _____

Subtracting Decimals *(continued)*

Subtract.

13. 142.6 − 85.92

14. 25.37 − 8.889

15. 48.3 − 6.75

16. 237.84 − 6.964

17. 581.2 − 106.81

18. 99.2 − 38.576

19. 12.752 − 6.9

20. 639.07 − 64.961

21. 4 − 1.5

22. 0.4 − 0.15

23. 112.8 − 81.93

24. $26 − 0.81

25. 1 − 0.37

26. 14.9 − 8.261

27. $73 − 9.69

28. 5 − 0.088

29. 6.51 − 0.8 =

30. 10.86 − 6.872 =

31. 2.43 − 0.965 =

32. $81 − $4.83 =

33. 210 − 56.765 =

34. 16.7 − 0.082 =

Solve.

35. Mrs. Taylor's class has earned $190.32 for their class project. They need $250. How much more do they need to earn?

36. Connie has 20 mL of sulfuric acid. Her experiment calls for 1.6 mL. How many mL will Connie have left after the experiment?

SKILL 13

Name _____ Date _____ Period _____

Multiplying Decimals by Whole Numbers

To multiply a decimal by a whole number, first multiply as with whole numbers. Then place the decimal point in the product. The product has the same number of decimal places as the decimal factor.

Examples ***1*** **Multiply: 421 × 0.6.**

```
  421
× 0.6        ←——   1 decimal place in the decimal factor
 252.6       ←——   1 decimal place in the product
```

2 **Multiply: $6.16 × 47.**

```
 $6.16       ←——   2 decimal places in the decimal factor
 × 47
  4312
 24640
$289.52      ←——   2 decimal places in the product
```

Multiply.

1. 23 × 0.8

2. 45 × 0.9

3. 216 × 0.2

4. $0.83 × 7

5. $4.16 × 15

6. 27 × 0.6

7. 0.63 × 4

8. $5.65 × 14

9. 231 × 0.41

10. 0.62 × 11

11. $7.44 × 26

12. 218 × 0.54

SKILL 13

Name _____ Date _____ Period _____

Multiplying Decimals by Whole Numbers *(continued)*

Multiply.

13. $\begin{array}{r} 113 \\ \times\ 0.6 \\ \hline \end{array}$

14. $\begin{array}{r} 2.48 \\ \times\ \ 24 \\ \hline \end{array}$

15. $\begin{array}{r} 15.48 \\ \times\ \ \ 19 \\ \hline \end{array}$

16. $\begin{array}{r} 214.8 \\ \times\ \ \ 37 \\ \hline \end{array}$

17. $\begin{array}{r} 438 \\ \times\ 0.85 \\ \hline \end{array}$

18. $\begin{array}{r} 395 \\ \times\ 2.63 \\ \hline \end{array}$

19. $\begin{array}{r} 87 \\ \times\ 0.8 \\ \hline \end{array}$

20. $\begin{array}{r} 416 \\ \times\ 0.38 \\ \hline \end{array}$

21. $25 \times 0.15 =$

22. $206 \times \$0.49 =$

23. $\$0.23 \times 15 =$

24. $0.47 \times 35 =$

25. $19 \times 0.19 =$

26. $419 \times 2.3 =$

27. $4.67 \times 15 =$

28. $0.842 \times 93 =$

29. $\$16.50 \times 12 =$

30. $143 \times 0.55 =$

Solve.

31. Turkey is on sale for \$0.89 per pound. How much does William pay for a 14-pound turkey?

32. A clothing fabric factory needs 3.25 yards of fabric to make one skirt. How many yards are needed to make 2,000 skirts?

SKILL 14

Name _____ Date _____ Period _____

Multiplying Decimals by Decimals

Multiply decimals just like you multiply whole numbers. The number of decimal places in the product is equal to the sum of the number of decimal places in the factors.

Example **Multiply 0.038 and 0.17.**

$$\begin{array}{rl} 0.038 & \longleftarrow \textit{three decimal places} \\ \times\ 0.17 & \longleftarrow \textit{two decimal places} \\ \hline 266 & \\ 38 & \\ \hline 0.00646 & \longleftarrow \textit{five decimal places} \end{array}$$

The product is 0.00646.

Place the decimal point in each product.

1. $1.47 \times 6 = 882$

2. $0.9 \times 2.7 = 243$

3. $6.48 \times 2.4 = 15552$

Multiply.

4. $\begin{array}{r} 0.8 \\ \times\ 7 \\ \hline \end{array}$

5. $\begin{array}{r} 0.04 \\ \times\ 0.3 \\ \hline \end{array}$

6. $\begin{array}{r} 0.16 \\ \times\ 26 \\ \hline \end{array}$

7. $\begin{array}{r} 0.003 \\ \times\ 4.2 \\ \hline \end{array}$

8. 12.2×0.06

9. 0.0015×0.15

10. 1.9×2.2

11. 3.59×0.02

12. 12.2×0.007

13. 0.7×3.11

SKILL 14

Name _____ Date _____ Period _____

Multiplying Decimals by Decimals *(continued)*

Multiply.

14. $\begin{array}{r} 0.6 \\ \times\ 0.7 \\ \hline \end{array}$

15. $\begin{array}{r} 6.3 \\ \times\ 5.1 \\ \hline \end{array}$

16. $\begin{array}{r} 18.2 \\ \times\ 0.51 \\ \hline \end{array}$

17. 0.52×0.03

18. 0.29×29.1

19. 6.1×0.0054

20. 6.8×0.39

21. 3.57×0.09

22. 3.72×8.4

Solve each equation.

23. $t = 0.32 \times 0.05$

24. $6.4 \times 3.9 = h$

25. $k = 0.09 \times 2.3$

26. $a = 0.4 \times 9$

27. $0.23 \times 0.003 = m$

28. $1.09 \times 6.24 = v$

Evaluate each expression if m = 0.9 and n = 6.2.

29. $m \cdot 0.43$

30. $0.002 \cdot n$

31. $17.4 \cdot m$

Evaluate each expression if a = 0.4 and b = 5.8.

32. $0.48 \cdot a$

33. $b \cdot 13.8$

34. $0.003 \cdot a$

35. $1.4 \cdot b$

36. $3.6 \cdot a$

37. $24.5 \cdot a$

SKILL 15

Name _____ Date _____ Period _____

Dividing Decimals by Whole Numbers

To divide a decimal by a whole number, first place the decimal point in the quotient directly above the decimal point in the dividend. Then divide as with numbers.

Examples **1** **Divide \$58.10 by 7.**

```
      .                      8.                    $8.30
7 )$58.10   ──►      7 )$58.10   ──►      7 )$58.10
                      − 56                   − 56 ↓
                        2                      2 1 ↓
                                             − 2 1 ↓
                                                00
                                              − 00
                                                 0
```

Place the decimal point in the quotient.

2 **Divide 17.5 by 14.**

```
      .                      1.25
14 )17.5    ──►     14 )17.50
                     − 14
                       3 5
                     − 2 8
                        70
                      − 70
                         0
```

Annex zeros in the dividend.

Divide until the remainder is 0.

Divide.

1. 9)12.6 **2.** 9)\$4.14 **3.** 4)\$23.64 **4.** 26)0.52

5. 16)25.6 **6.** 32)\$2.88 **7.** 9)27.54 **8.** 4)\$11.60

SKILL 15

Name _____ Date _____ Period _____

Dividing Decimals by Whole Numbers *(continued)*

Divide.

9. $6\overline{)1.5}$

10. $18\overline{)25.2}$

11. $34\overline{)53.72}$

12. $14\overline{)37.8}$

13. $29\overline{)104.4}$

14. $34\overline{)12.92}$

15. $61\overline{)103.7}$

16. $74\overline{)26.64}$

17. $12\overline{)301.8}$

18. $33\overline{)89.1}$

19. $26\overline{)50.7}$

20. $15\overline{)\$62.40}$

21. $2.4 \div 96 =$

22. $5.59 \div 26 =$

23. $15.5 \div 50 =$

24. $34.55 \div 20 =$

25. $30.45 \div 35 =$

26. $27.93 \div 19 =$

27. $41.8 \div 55 =$

28. $411.84 \div 72 =$

Solve.

29. Eric bought an 8-ounce can of frozen orange juice on sale for $0.72. What is the cost per ounce?

30. Lucy runs 4 miles in 22.7 minutes. What is her average time per mile?

SKILL 16

Name _____ Date _____ Period _____

Dividing Decimals by Decimals

To divide by a decimal, change the divisor to a whole number.

Example **Find 0.5194 ÷ 0.49.**

1.06	
0.49.)0.51.94	*Change 0.49 to 49.*
49	*Move the decimal point two places to the right.*
2 94	*Move the decimal point in the dividend the*
2 94	*same number of places to the right.*
0	*Divide as with whole numbers.*

Without finding or changing each quotient, change each problem so that the divisor is a whole number.

1. 3.4 ÷ 1.1

2. 76.44 ÷ 0.006

3. 0.56 ÷ 0.4

4. 89.45 ÷ 0.908

5. 5.675 ÷ 6.8

6. 0.00864 ÷ 0.012

7. 0.84 ÷ 0.2

8. 1.02 ÷ 0.3

9. 3.9 ÷ 1.3

10. 13.6 ÷ 0.003

11. 1.622 ÷ 1.4

12. 0.00025 ÷ 0.035

Divide.

13. $0.9\overline{)6.3}$

14. $0.6\overline{)0.540}$

15. $0.3\overline{)129}$

16. $2.4\overline{)0.192}$

17. $0.44\overline{)5.28}$

18. $0.025\overline{)0.04}$

SKILL 16

Name _____ Date _____ Period _____

Dividing Decimals by Decimals *(continued)*

Divide.

19. $0.5\overline{)9.5}$

20. $0.8\overline{)0.048}$

21. $0.4\overline{)82}$

22. $3.5\overline{)2.38}$

23. $0.62\overline{)600.16}$

24. $0.015\overline{)0.06}$

25. $1.4\overline{)121.8}$

26. $8\overline{)0.0092}$

27. $0.38\overline{)760.38}$

28. $1.3\overline{)780}$

29. $0.08\overline{)0.0012}$

30. $0.7\overline{)5.95}$

Solve each equation.

31. $7.8 \div 2.6 = k$

32. $3.92 \div 0.08 = m$

33. $s = 149.73 \div 0.23$

34. $v = 155 \div 0.1$

35. $c = 1098 \div 6.1$

36. $3633.4 \div 3.7 = d$

37. $903.6 \div 25.1 = n$

38. $363.6 \div 5 = r$

39. $2.004 \div 0.2 = b$

40. $w = 84.7 \div 3.85$

41. $165.2 \div 8.26 = t$

42. $29.28 \div 1.22 = s$

43. $y = 0.0528 \div 0.06$

44. $16.84 \div 0.4 = m$

45. $k = 2.05 \div 0.5$

SKILL 17

Name _____ Date _____ Period _____

Multiplying Decimals by Powers of 10

You can find the product of a decimal and a power of 10 without using a calculator or paper and pencil. Suppose you wanted to find the product of 36 and powers of 10.

Decimal		Power of Ten		Quotient
36	÷	10^{-3} or 0.001	=	0.036
36	÷	10^{-2} or 0.01	=	0.36
36	÷	10^{-1} or 0.1	=	3.6
36	÷	10^{0} or 1	=	36
36	÷	10^{1} or 10	=	360
36	÷	10^{2} or 100	=	3600
36	÷	10^{3} or 1000	=	36,000
36	÷	10^{4} or 10,000	=	360,000

For powers of 10 that are less than 1, the exponent in the power of 10 tells you the number of places to move the decimal point to the right. For powers of 10 that are greater than 1, the decimal point moves to the left.

Examples ***1*** $\mathbf{6 \cdot 10^3 = 6000}$ *Move the decimal point 3 places to the right.*

2 $\mathbf{4.5 \cdot 10^{-2} = 0.045}$ *Move the decimal point 2 places to the left.*

Multiply mentally.

1. $8 \cdot 0.01$

2. $55.8 \cdot 100$

3. $59 \cdot 10^4$

4. $14 \cdot 0.1$

5. $0.13 \cdot 10^{-3}$

6. $18 \cdot 10^2$

7. $17 \cdot 100$

8. $1.46 \cdot 0.001$

9. $12 \cdot 10^{-1}$

SKILL 17

Name _____ Date _____ Period _____

Multiplying Decimals by Powers of 10 *(continued)*

Multiply mentally.

10. $77 \cdot 1000$

11. $143 \cdot 100$

12. $15 \cdot 10$

13. $15 \cdot 10^0$

14. $1.36 \cdot 1000$

15. $184 \cdot 10^{-3}$

16. $1.7 \cdot 0.01$

17. $0.08 \cdot 10^{-2}$

18. $1432 \cdot 10^4$

19. $43 \cdot 10$

20. $13.5 \cdot 0.01$

21. $55 \cdot 10^{-2}$

22. $137 \cdot 100$

23. $43 \cdot 1000$

24. $281 \cdot 10^2$

Solve each equation.

25. $v = 78 \cdot 10$

26. $q = 654 \cdot 10^0$

27. $m = 198 \cdot 0.001$

28. $r = 876 \cdot 100$

29. $s = 15 \cdot 10^{-2}$

30. $t = 12.5 \cdot 0.01$

31. $p = 1.4 \cdot 1000$

32. $q = 385 \cdot 10^{-3}$

33. $u = 8.8 \cdot 10$

34. $14 \cdot 100 = r$

35. $w = 1.34 \cdot 10^3$

36. $k = 14.8 \cdot 0.1$

37. $n = 123 \cdot 0.1$

38. $4326 \cdot 10^0 = y$

39. $81.18 \cdot 10^{-3} = j$

40. $480 \cdot 10^4 = m$

41. $r = 6820 \cdot 10^1$

42. $q = 2.813 \cdot 10^{-2}$

SKILL 18

Name _____ Date _____ Period _____

Dividing Decimals by Powers of 10

You can find the quotient of a decimal and a power of 10 without using a calculator or paper and pencil. Suppose you wanted to find the quotient of 5540 and powers of 10.

Decimal		Power of Ten		Quotient
5540	÷	10^{-3} or 0.001	=	5,540,000
5540	÷	10^{-2} or 0.01	=	554,000
5540	÷	10^{-1} or 0.1	=	55,400
5540	÷	100 or 1	=	5540
5540	÷	10^{1} or 10	=	554
5540	÷	10^{2} or 100	=	55.4
5540	÷	10^{3} or 1000	=	5.54
5540	÷	10^{4} or 10,000	=	0.554

For powers of 10 that are less than 1, the exponent in the power of 10 tells you the number of places to move the decimal point to the left. For powers of 10 that are greater than 1, the decimal point moves to the right.

Examples ***1*** **$8 \div 103 = 0.008$** *Move the decimal point 3 places to the left.*

2 **$0.34 \div 10^{-2} = 34$** *Move the decimal point 2 places to the right.*

Divide mentally.

1. $6 \div 0.01$

2. $35.7 \div 100$

3. $764 \div 10^{4}$

4. $18 \div 0.1$

5. $0.145 \div 10^{-3}$

6. $24 \div 10^{2}$

7. $47 \div 100$

8. $1.53 \div 0.001$

9. $61 \div 10^{-1}$

SKILL 18

Name _____ Date _____ Period _____

Dividing Decimals by Powers of 10 *(continued)*

Divide mentally.

10. $88 \div 1000$

11. $234 \div 100$

12. $34 \div 10$

13. $19 \div 10^0$

14. $1.27 \div 1000$

15. $765 \div 10^{-3}$

16. $1.1 \div 0.01$

17. $0.04 \div 10^{-2}$

18. $1561 \div 10^4$

19. $54 \div 10$

20. $15.2 \div 0.01$

21. $66 \div 10^{-2}$

22. $128 \div 100$

23. $55{,}510 \div 1000$

24. $426 \div 10^2$

Solve each equation.

25. $v = 87 \div 10$

26. $q = 737 \div 10^0$

27. $m = 891 \div 0.001$

28. $r = 678 \div 100$

29. $s = 24 \div 10^{-2}$

30. $t = 16.4 \div 0.01$

31. $p = 1.3 \div 1000$

32. $q = 0.573 \div 10^{-3}$

33. $u = 9.9 \div 10$

34. $148 \div 100 = r$

35. $w = 1.28 \div 10^3$

36. $k = 16.5 \div 0.1$

37. $n = 154 \div 0.1$

38. $3546 \div 10^0 = y$

39. $41.14 \div 10^{-3} = j$

40. $360 \div 10^4 = m$

41. $r = 7610 \div 10^1$

42. $q = 2.532 \div 10^{-2}$

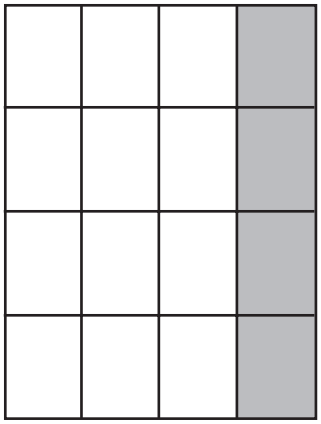
SKILL 19

Name _____ Date _____ Period _____

Equivalent Fractions

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

$$\frac{4}{16} \overset{\div 4}{\underset{\div 4}{=}} \frac{1}{4} \qquad \frac{1}{4} \overset{\times 4}{\underset{\times 4}{=}} \frac{4}{16}$$



The shaded region at the right shows that $\frac{4}{16}$ and $\frac{1}{4}$ are equivalent.

Examples

1 **Complete $\frac{9}{12} = \frac{18}{}$ so that the fractions are equivalent.**

$$\frac{9}{12} = \frac{18}{} \longrightarrow \frac{9}{12} \overset{\times 2}{\underset{\times 2}{=}} \frac{18}{24}$$

Since $9 \times 2 = 18$, multiply both the numerator and the denominator by 2.

2 **Find three fractions equivalent to $\frac{4}{9}$.**

$$\frac{4}{9} \longrightarrow \frac{4}{9} \overset{\times 2}{\underset{\times 2}{=}} \frac{8}{18} \longrightarrow \frac{4}{9} \overset{\times 3}{\underset{\times 3}{=}} \frac{12}{27} \longrightarrow \frac{4}{9} \overset{\times 4}{\underset{\times 4}{=}} \frac{16}{36}$$

Complete so that the fractions are equivalent.

1. $\frac{3}{4} = \frac{}{12}$ **2.** $\frac{4}{9} = \frac{}{18}$ **3.** $\frac{4}{5} = \frac{}{20}$ **4.** $\frac{5}{8} = \frac{}{24}$

SKILL 19

Name _____ Date _____ Period _____

Equivalent Fractions *(continued)*

Complete so that the fractions are equivalent.

5. $\frac{3}{5} = \frac{15}{}$

6. $\frac{5}{7} = \frac{10}{}$

7. $\frac{4}{9} = \frac{12}{}$

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

9. $\frac{2}{3} = \frac{}{24}$

10. $\frac{5}{15} = \frac{}{3}$

11. $\frac{5}{20} = \frac{}{4}$

12. $\frac{7}{56} = \frac{}{8}$

13. $\frac{16}{40} = \frac{2}{}$

14. $\frac{27}{72} = \frac{3}{}$

15. $\frac{40}{64} = \frac{5}{}$

16. $\frac{10}{45} = \frac{2}{}$

17. $\frac{16}{18} = \frac{8}{}$

18. $\frac{4}{7} = \frac{}{42}$

19. $\frac{6}{11} = \frac{}{33}$

20. $\frac{5}{12} = \frac{25}{}$

Find three fractions equivalent to each of the following.

21. $\frac{1}{2}$

22. $\frac{4}{5}$

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

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

25. $\frac{7}{8}$

26. $\frac{9}{10}$

Solve.

27. Ms. Yen works 10 months of 12 each year. Give two fractions that represent the fraction of a year she works.

28. During a basketball game, there are 10 players on the floor. Five of the players are on the home team. Give two fractions that represent the fraction of players on the floor that are on the home team.

SKILL 20

Name _____ Date _____ Period _____

Simplifying Fractions

To write a fraction in simplest form, divide both the numerator and denominator by their greatest common factor (GCF).

Example 1 **Write $\frac{16}{100}$ in simplest form.**

Step 1	Step 2
Find the GCF of 16 and 100. You can use prime factorization. $16 = 2 \times 2 \times 2 \times 2$ $100 = 2 \times 2 \times 5 \times 5$ GCF: $2 \times 2 = 4$	Divide both 16 and 100 by their GCF, 4. $\frac{16}{100} \xrightarrow{\div 4} \frac{4}{25}$ $\frac{16}{100} = \frac{4}{25}$ $\frac{4}{25} \xrightarrow{\div 4} \frac{16}{100}$ *A fraction is in simplest form when the GCF of both its numerator and denominator is 1.*

The fraction $\frac{16}{100}$ written in simplest from is $\frac{4}{25}$.

Example 2 **Write $\frac{6}{15}$ in simplest form.**

$6 = 3 \times 2$
$15 = 3 \times 5$

GCF: 3

$\frac{6}{15} \xrightarrow{\div 3} \frac{2}{5}$

$\frac{6}{15} = \frac{2}{5}$

$\frac{2}{5} \xrightarrow{\div 3} \frac{6}{15}$

Write each fraction in simplest form.

1. $\frac{4}{6}$ **2.** $\frac{2}{4}$ **3.** $\frac{6}{12}$ **4.** $\frac{8}{10}$

5. $\frac{6}{14}$ **6.** $\frac{6}{9}$ **7.** $\frac{2}{8}$ **8.** $\frac{3}{12}$

SKILL 20

Name _____ Date _____ Period _____

Simplifying Fractions *(continued)*

Write each fraction in simplest form.

9. $\frac{13}{26}$ **10.** $\frac{16}{24}$ **11.** $\frac{12}{18}$ **12.** $\frac{12}{16}$

13. $\frac{5}{15}$ **14.** $\frac{15}{25}$ **15.** $\frac{3}{15}$ **16.** $\frac{10}{30}$

17. $\frac{9}{21}$ **18.** $\frac{14}{30}$ **19.** $\frac{20}{36}$ **20.** $\frac{6}{24}$

21. $\frac{27}{9}$ **22.** $\frac{10}{100}$ **23.** $\frac{25}{40}$ **24.** $\frac{8}{16}$

25. $\frac{10}{25}$ **26.** $\frac{8}{40}$ **27.** $\frac{12}{30}$ **28.** $\frac{16}{20}$

29. $\frac{7}{42}$ **30.** $\frac{15}{30}$ **31.** $\frac{9}{33}$ **32.** $\frac{10}{16}$

Solve. Write the answer in simplest form.

33. Tara takes 12 vacation days in June, which has 30 days. What fraction of the month is she on vacation? Express your answer in simplest form.

34. During a one-hour (60 minute) practice, Calvin shot free throws for 15 minutes. What fraction of an hour did he shoot free throws? Express your answer in simplest form.

SKILL 21

Name _____ Date _____ Period _____

Writing Improper Fractions as Mixed Numbers

A fraction such as $\frac{8}{5}$ is called an **improper fraction** because the numerator is greater than the denominator. Improper fractions are often expressed as mixed numbers. A **mixed number** is the sum of a whole number and a fraction. Follow the steps in Example 1 to write $\frac{8}{5}$ as a mixed number.

Example 1 **Write $\frac{8}{5}$ as a mixed number in simplest form.**

Step 1	Step 2
Divide the numerator by the denominator.	Write the remainder as a fraction.
$\begin{array}{r} 1 \\ 5\overline{)8} \\ -\ 5 \\ \hline 3 \end{array}$	$\begin{array}{r} 1\frac{3}{5} \\ 5\overline{)8} \\ -\ 5 \\ \hline 3 \end{array}$

Example 2 **Write $\frac{38}{4}$ as a mixed number in simplest form.**

$$\begin{array}{r} 9\frac{2}{4} = 9\frac{1}{2} \\ 4\overline{)38} \\ -\ 36 \\ \hline 2 \end{array}$$

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

1. $\frac{7}{5}$ **2.** $\frac{13}{8}$ **3.** $\frac{13}{4}$ **4.** $\frac{22}{7}$

5. $\frac{6}{4}$ **6.** $\frac{14}{8}$ **7.** $\frac{9}{6}$ **8.** $\frac{14}{10}$

SKILL 21

Name _____ Date _____ Period _____

Writing Improper Fractions as Mixed Numbers *(continued)*

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

9. $\frac{28}{16}$ **10.** $\frac{25}{10}$ **11.** $\frac{33}{9}$ **12.** $\frac{40}{16}$

13. $\frac{13}{5}$ **14.** $\frac{9}{2}$ **15.** $\frac{15}{3}$ **16.** $\frac{21}{8}$

17. $\frac{17}{12}$ **18.** $\frac{12}{5}$ **19.** $\frac{13}{3}$ **20.** $\frac{15}{10}$

21. $\frac{28}{12}$ **22.** $\frac{21}{5}$ **23.** $\frac{19}{6}$ **24.** $\frac{31}{8}$

25. $\frac{16}{5}$ **26.** $\frac{27}{15}$ **27.** $\frac{32}{12}$ **28.** $\frac{48}{24}$

29. $\frac{36}{24}$ **30.** $\frac{25}{20}$ **31.** $\frac{30}{12}$ **32.** $\frac{24}{10}$

Solve. Write each answer as a mixed number in simplest form.

33. Carrie rode her bike 22 miles in 3 hours. What is the average number of miles she rode in one hour?

34. Mr. Steele has managed the Classic Theater for 21 months. How many years has he managed the Classic Theater?

SKILL 22

Name _____ Date _____ Period _____

Writing Mixed Numbers as Improper Fractions

Follow the steps in Example 1 to change a mixed number to an improper fraction.

Example 1 **Write $3\frac{1}{2}$ as an improper fraction.**

Step 1	Step 2
First multiply the whole number by the denominator and add the numerator. Then write this sum over the denominator. $3\frac{1}{2} = \frac{(3 \times 2) + 1}{2}$	Simplify. $\frac{(3 \times 2) + 1}{2} = \frac{6 + 1}{2}$ or $\frac{7}{2}$

Example 2 **Write $8\frac{3}{5}$ as an improper fraction.**

$8\frac{3}{5} = \frac{(5 \times 8) + 3}{5} = \frac{43}{5}$

Write each mixed number as an improper fraction.

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

5. $2\frac{3}{16}$ **6.** $4\frac{3}{10}$ **7.** $4\frac{2}{3}$ **8.** $3\frac{3}{5}$

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

SKILL 22

Name _____ Date _____ Period _____

Writing Mixed Numbers as Improper Fractions *(continued)*

Write each mixed number as an improper fraction.

13. $1\frac{3}{8}$ **14.** $5\frac{2}{5}$ **15.** $2\frac{3}{4}$ **16.** $1\frac{7}{8}$

17. $1\frac{7}{12}$ **18.** $4\frac{1}{2}$ **19.** $2\frac{9}{10}$ **20.** $3\frac{5}{8}$

21. $3\frac{2}{3}$ **22.** $4\frac{3}{4}$ **23.** $5\frac{2}{3}$ **24.** $5\frac{1}{8}$

25. $5\frac{9}{10}$ **26.** $6\frac{7}{8}$ **27.** $4\frac{3}{10}$ **28.** $10\frac{2}{3}$

29. $9\frac{7}{12}$ **30.** $8\frac{5}{11}$ **31.** $15\frac{2}{7}$ **32.** $12\frac{4}{7}$

33. $11\frac{4}{5}$ **34.** $18\frac{2}{3}$ **35.** $20\frac{1}{4}$ **36.** $16\frac{4}{9}$

37. $5\frac{12}{13}$ **38.** $16\frac{2}{13}$ **39.** $24\frac{1}{3}$ **40.** $8\frac{16}{17}$

41. $9\frac{5}{17}$ **42.** $7\frac{6}{19}$ **43.** $5\frac{8}{9}$ **44.** $16\frac{10}{13}$

SKILL 23

Name _____ Date _____ Period _____

Comparing and Ordering Fractions

One way to compare fractions is to express them as fractions with the same denominator. The **least common denominator (LCD)** is the least common multiple of the denominators.

Example **Replace the ◯ with <, >, or = to make a true sentence.**

$\frac{5}{8}$ ◯ $\frac{2}{3}$

The LCM of 8 and 3 is 24. Express $\frac{5}{8}$ and $\frac{2}{3}$ as fractions with a denominator of 24.

$$\frac{5}{8} \xrightarrow{\times 3} \frac{15}{24} \qquad \frac{2}{3} \xrightarrow{\times 8} \frac{16}{24}$$

$\frac{15}{24}$ ◯ $\frac{16}{24}$ Compare the numerators. Since $15 < 16$, $\frac{15}{24} < \frac{16}{24}$. Therefore, $\frac{5}{8} < \frac{2}{3}$.

Find the LCD for each pair of fractions.

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

4. $\frac{4}{5}, \frac{2}{3}$ **5.** $\frac{5}{8}, \frac{7}{12}$ **6.** $\frac{1}{2}, \frac{6}{7}$

7. $\frac{1}{6}, \frac{9}{10}$ **8.** $\frac{3}{4}, \frac{2}{9}$ **9.** $\frac{5}{12}, \frac{3}{16}$

Replace each ◯ with <, >, or = to make a true sentence.

10. $\frac{3}{4}$ ◯ $\frac{4}{5}$ **11.** $\frac{3}{8}$ ◯ $\frac{9}{24}$ **12.** $\frac{2}{3}$ ◯ $\frac{9}{15}$

13. $\frac{7}{12}$ ◯ $\frac{2}{3}$ **14.** $\frac{5}{11}$ ◯ $\frac{1}{3}$ **15.** $\frac{27}{36}$ ◯ $\frac{3}{4}$

SKILL 23

Name _____ Date _____ Period _____

Comparing and Ordering Fractions *(continued)*

Replace each ◯ with $<$, $>$, or $=$ to make a true sentence.

16. $\frac{5}{6}$ ◯ $\frac{7}{8}$

17. $\frac{6}{7}$ ◯ $\frac{4}{5}$

18. $\frac{3}{9}$ ◯ $\frac{1}{3}$

19. $\frac{5}{8}$ ◯ $\frac{7}{12}$

20. $\frac{5}{7}$ ◯ $\frac{7}{10}$

21. $\frac{2}{3}$ ◯ $\frac{3}{4}$

22. $\frac{2}{15}$ ◯ $\frac{1}{6}$

23. $\frac{3}{8}$ ◯ $\frac{6}{16}$

24. $\frac{5}{12}$ ◯ $\frac{2}{5}$

25. $\frac{3}{10}$ ◯ $\frac{5}{14}$

26. $\frac{4}{9}$ ◯ $\frac{3}{7}$

27. $\frac{1}{6}$ ◯ $\frac{2}{12}$

28. $\frac{3}{5}$ ◯ $\frac{5}{9}$

29. $\frac{7}{9}$ ◯ $\frac{4}{7}$

30. $\frac{9}{10}$ ◯ $\frac{11}{12}$

31. $\frac{1}{4}$ ◯ $\frac{2}{8}$

32. $\frac{2}{9}$ ◯ $\frac{4}{15}$

33. $\frac{8}{9}$ ◯ $\frac{7}{8}$

Order the following fractions from least to greatest.

34. $\frac{3}{4}, \frac{2}{5}, \frac{5}{8}, \frac{1}{2}$

35. $\frac{2}{3}, \frac{4}{9}, \frac{5}{6}, \frac{7}{12}$

36. $\frac{1}{3}, \frac{2}{7}, \frac{3}{14}, \frac{1}{6}$

37. $\frac{7}{15}, \frac{3}{5}, \frac{5}{12}, \frac{1}{2}$

38. $\frac{11}{12}, \frac{5}{6}, \frac{3}{4}, \frac{9}{16}$

39. $\frac{4}{5}, \frac{2}{3}, \frac{11}{35}, \frac{7}{9}$

40. $\frac{7}{8}, \frac{4}{5}, \frac{3}{4}, \frac{9}{10}$

41. $\frac{1}{3}, \frac{2}{5}, \frac{3}{12}, \frac{3}{10}$

42. $\frac{1}{2}, \frac{3}{5}, \frac{2}{7}, \frac{5}{9}$

43. $\frac{1}{10}, \frac{2}{3}, \frac{1}{12}, \frac{5}{6}$

SKILL 24

Name _____ Date _____ Period _____

Multiplying Fractions

To multiply fractions, multiply the numerators. Then multiply the denominators. Simplify the product if possible.

Examples **1** **Multiply $\frac{4}{7}$ times $\frac{5}{9}$.**

$\frac{4}{7} \times \frac{5}{9} = \frac{4 \times 5}{7 \times 9}$ *Multiply the numerators. Multiply the denominators.*

$= \frac{20}{63}$

The product of $\frac{4}{7}$ and $\frac{5}{9}$ is $\frac{20}{63}$.

2 **Multiply $\frac{5}{6}$ times $\frac{3}{5}$.**

$\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5}$ *Multiply the numerators. Multiply the denominators.*

$= \frac{15}{30}$ or $\frac{1}{2}$ *Simplify.*

The product of $\frac{5}{6}$ and $\frac{3}{5}$ is $\frac{1}{2}$.

Multiply.

1. $\frac{2}{3} \times \frac{1}{4}$

2. $\frac{3}{7} \times \frac{1}{2}$

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

4. $\frac{1}{2} \times \frac{6}{7}$

5. $\frac{7}{10} \times \frac{5}{7}$

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

7. $\frac{1}{3} \times \frac{1}{5}$

8. $\frac{5}{8} \times \frac{1}{2}$

9. $\frac{4}{9} \times \frac{3}{4}$

10. $\frac{2}{3} \times \frac{3}{8}$

11. $\frac{1}{7} \times \frac{1}{7}$

12. $\frac{2}{9} \times \frac{1}{2}$

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

14. $\frac{2}{7} \times \frac{1}{3}$

15. $\frac{5}{12} \times \frac{1}{5}$

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

17. $\frac{6}{7} \times \frac{8}{15}$

18. $\frac{8}{9} \times \frac{9}{10}$

19. $\frac{4}{5} \times \frac{5}{14}$

20. $\frac{7}{8} \times \frac{4}{9}$

21. $\frac{5}{8} \times \frac{3}{4}$

SKILL 24

Name _____ Date _____ Period _____

Multiplying Fractions *(continued)*

Use the recipe for lemon chicken saute below to answer Exercises 22–25.

6 boneless chicken breasts, rolled in flour	$\frac{1}{3}$ cup teriyaki sauce
$\frac{1}{4}$ cup butter	$\frac{1}{2}$ teaspoon sugar
3 tablespoons lemon juice	$\frac{1}{8}$ teaspoon pepper
1 teaspoon garlic	

22. If Julie wants to make half of this recipe, how much pepper should she use?

23. If Julie wants to make one-third of this recipe, how much teriyaki sauce should she use?

24. If Julie wants to make two-thirds of this recipe, how much sugar should she use?

25. If Julie wants to make two-thirds of this recipe, how much butter should she use?

26. If about $\frac{1}{3}$ of Earth is able to be farmed and $\frac{2}{5}$ of this land is planted in grain crops, what part of Earth is planted in grain crops?

27. Two fifths of the students at Main Street Middle School are in seventh grade. If half of the students in seventh grade are boys, what fraction of the students are seventh grade boys?

SKILL 25

Name _____ Date _____ Period _____

Multiplying Fractions and Mixed Numbers

To multiply fractions: Multiply the numerators.
Then multiply the denominators.

$$\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5} = \frac{15}{30} = \frac{1}{2}$$

To multiply mixed numbers: Rename each mixed number as a fraction.
Multiply the fractions.

$$7 \times 1\frac{1}{4} = \frac{7}{1} \times \frac{5}{4} = \frac{35}{4} = 8\frac{3}{4}$$

Multiply. Write each product in simplest form.

1. $\frac{2}{3} \times \frac{1}{4}$

2. $\frac{3}{7} \times \frac{1}{2}$

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

4. $\frac{1}{2} \times \frac{6}{7}$

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

6. $\frac{7}{10} \times \frac{5}{7}$

7. $\frac{4}{9} \times 3$

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

9. $1\frac{1}{2} \times 6$

10. $\frac{3}{4} \times 1\frac{2}{3}$

11. $3\frac{1}{3} \times 2\frac{1}{2}$

12. $4\frac{1}{5} \times \frac{1}{7}$

SKILL 25

Name _____ Date _____ Period _____

Multiplying Fractions and Mixed Numbers *(continued)*

Multiply. Write each product in simplest form.

13. $1\frac{1}{9} \times \frac{3}{5}$

14. $6 \times \frac{11}{12}$

15. $\frac{1}{2} \times 2\frac{2}{3}$

16. $\frac{2}{3} \times \frac{1}{2}$

17. $\frac{3}{4} \times \frac{1}{9}$

18. $3 \times \frac{4}{9}$

19. $\frac{1}{5} \times \frac{1}{4}$

20. $\frac{1}{4} \times \frac{4}{5}$

21. $\frac{4}{9} \times \frac{3}{4}$

22. $\frac{13}{21} \times \frac{7}{13}$

23. $\frac{7}{8} \times \frac{4}{9}$

24. $\frac{5}{7} \times \frac{7}{10}$

25. $\frac{4}{5} \times \frac{5}{14}$

26. $\frac{1}{4} \times \frac{5}{8}$

27. $\frac{2}{3} \times \frac{5}{9}$

28. $\frac{4}{5} \times 7$

29. $2\frac{2}{5} \times 1\frac{3}{7}$

30. $6 \times \frac{2}{3}$

31. $3\frac{3}{4} \times \frac{1}{2}$

32. $1\frac{5}{9} \times 2\frac{4}{7}$

33. $4\frac{1}{3} \times \frac{1}{2}$

SKILL 26

Name _____ Date _____ Period _____

Dividing Fractions

To divide by a fraction, multiply by its reciprocal.
Simplify the quotient if possible.

Examples **1** **Divide $\frac{2}{3}$ by $\frac{5}{7}$.**

$\frac{2}{3} \div \frac{5}{7} = \frac{2}{3} \times \frac{7}{5}$ *Multiply by the reciprocal of $\frac{5}{7}$.*

$= \frac{2 \times 7}{3 \times 5}$ *Multiply the numerators. Multiply the denominators.*

$= \frac{14}{15}$

The quotient is $\frac{14}{15}$.

2 **Divide $\frac{3}{4}$ by $\frac{9}{10}$.**

$\frac{3}{4} \div \frac{9}{10} = \frac{3}{4} \times \frac{10}{9}$ *Multiply by the reciprocal of $\frac{9}{10}$.*

$= \frac{3 \times 10}{4 \times 9}$ *Multiply the numerators. Multiply the denominators.*

$= \frac{30}{36}$ or $\frac{5}{6}$ *Simplify.*

The quotient is $\frac{5}{6}$.

Divide.

1. $\frac{3}{4} \div \frac{1}{2}$

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

3. $\frac{1}{5} \div \frac{1}{4}$

4. $\frac{4}{7} \div \frac{8}{9}$

5. $\frac{3}{8} \div \frac{3}{4}$

6. $\frac{9}{7} \div \frac{3}{14}$

7. $\frac{4}{5} \div \frac{2}{5}$

8. $\frac{7}{8} \div \frac{1}{4}$

9. $\frac{2}{5} \div \frac{5}{8}$

SKILL 26

Name _____ Date _____ Period _____

Dividing Fractions *(continued)*

Divide.

10. $\frac{1}{3} \div \frac{1}{6}$

11. $\frac{5}{8} \div \frac{5}{12}$

12. $\frac{4}{5} \div \frac{2}{7}$

13. $\frac{2}{5} \div \frac{3}{10}$

14. $\frac{5}{7} \div \frac{3}{4}$

15. $\frac{2}{3} \div \frac{4}{9}$

16. $\frac{4}{7} \div \frac{4}{5}$

17. $\frac{5}{6} \div \frac{1}{9}$

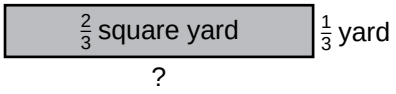
18. $\frac{4}{5} \div \frac{2}{3}$

19. About $\frac{1}{20}$ of the population of the world lives in South America. If about $\frac{1}{35}$ of the population of the world lives in Brazil, what fraction of the population of South America lives in Brazil?

20. Three fourths of a pizza is left. If the pizza was originally cut in $\frac{1}{8}$ pieces, how many pieces are left?

The area of each rectangle is given. Find the missing length for each rectangle.

21.



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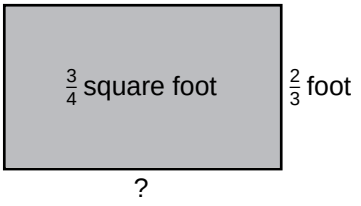

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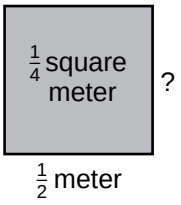

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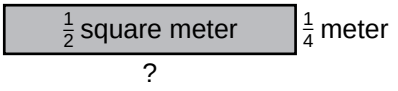


SKILL 27

Name _____ Date _____ Period _____

Dividing Fractions and Mixed Numbers

To divide fractions and mixed numbers:

1. Write any mixed numbers as improper fractions.
2. Find the reciprocal of the divisor.
3. Multiply the dividend by the reciprocal of the divisor.

Examples **1** $\mathbf{\frac{5}{8} \div \frac{5}{12}}$ *The reciprocal of* $\frac{5}{12}$ *is* $\frac{12}{5}$.

$$\frac{5}{8} \div \frac{5}{12} = \frac{5}{8} \times \frac{12}{5}$$
$$= \frac{60}{40} \text{ or } 1\frac{1}{2}$$

2 $\mathbf{7 \div 3\frac{1}{2} \longrightarrow \frac{7}{1} \div \frac{7}{2}}$ *The reciprocal of* $\frac{7}{2}$ *is* $\frac{2}{7}$.

$$7 \div 3\frac{1}{2} = \frac{7}{1} \times \frac{2}{7}$$
$$= \frac{14}{7} \text{ or } 2$$

Name the reciprocal of each number.

1. $\frac{6}{11}$ **2.** $\frac{14}{5}$ **3.** 8 **4.** $\frac{1}{5}$

Divide. Write each quotient in simplest form.

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

8. $8 \div \frac{1}{3}$ **9.** $\frac{5}{9} \div 5$ **10.** $\frac{2}{4} \div 1\frac{1}{2}$

11. $2\frac{1}{2} \div 5$ **12.** $3\frac{1}{3} \div \frac{2}{9}$ **13.** $\frac{5}{8} \div 2\frac{1}{2}$

SKILL 27

Name _____ Date _____ Period _____

Dividing Fractions and Mixed Numbers *(continued)*

Divide. Write each quotient in simplest form.

14. $1\frac{1}{3} \div 2\frac{1}{2}$

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

16. $\frac{9}{10} \div 5\frac{2}{5}$

17. $\frac{7}{8} \div \frac{2}{3}$

18. $5 \div \frac{3}{5}$

19. $3\frac{1}{4} \div 2\frac{1}{3}$

Solve each equation. Write each answer in simplest form.

20. $s = \frac{3}{4} \div \frac{1}{2}$

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

22. $\frac{1}{5} \div \frac{1}{4} = y$

23. $u = 4 \div \frac{1}{3}$

24. $\frac{4}{7} \div \frac{8}{9} = j$

25. $w = \frac{3}{8} \div \frac{3}{4}$

26. $\frac{9}{7} \div 1\frac{3}{4} = h$

27. $\frac{4}{5} \div \frac{2}{5} = p$

28. $5 \div 3\frac{3}{4} = q$

29. $c = \frac{3}{8} \div 2\frac{1}{4}$

30 $t = 7\frac{1}{3} \div 4$

31. $m = 3\frac{1}{4} \div 2\frac{1}{4}$

32. $n = 1\frac{2}{7} \div 1\frac{13}{14}$

33. $1\frac{1}{5} \div \frac{3}{10} = r$

34. $7\frac{1}{2} \div 2\frac{5}{6} = w$

SKILL 28

Name _____ Date _____ Period _____

Adding Fractions

To add fractions with like denominators, add the numerators. Write the sum over the common denominator. Simplify the sum if possible.

Example 1 **Add:** $\frac{7}{8} + \frac{5}{8}$.

$$\begin{array}{r} \frac{7}{8} \\ +\ \frac{5}{8} \\ \hline \frac{12}{8} = \frac{3}{2} \text{ or } 1\frac{1}{2} \end{array}$$

Simplify the sum.

To add fractions with unlike denominators, rename the fractions with a common denominator. Then add the fractions.

Example 2 **Add:** $\frac{1}{9} + \frac{5}{6}$.

$$\begin{array}{rcl} \frac{1}{9} & = & \frac{2}{18} \\ +\ \frac{5}{6} & = & \frac{15}{18} \\ \hline & & \frac{17}{18} \end{array}$$

Use 18 for the common denominator.

Add.

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

2. $\begin{array}{r} \frac{5}{9} \\ +\ \frac{4}{9} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{11}{15} \\ +\ \frac{2}{15} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{11}{15} \\ +\ \frac{7}{15} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{6}{7} \\ +\ \frac{6}{7} \\ \hline \end{array}$

6. $\begin{array}{r} \frac{11}{12} \\ +\ \frac{5}{12} \\ \hline \end{array}$

SKILL 28

Name _____ Date _____ Period _____

Adding Fractions *(continued)*

Add.

7. $\begin{array}{r} \frac{3}{8} \\ +\ \frac{5}{8} \\ \hline \end{array}$

8. $\begin{array}{r} \frac{12}{13} \\ +\ \frac{14}{13} \\ \hline \end{array}$

9. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{3}{4} \\ \hline \end{array}$

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

11. $\begin{array}{r} \frac{1}{3} \\ +\ \frac{1}{6} \\ \hline \end{array}$

12. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{2}{7} \\ \hline \end{array}$

13. $\frac{7}{16} + \frac{3}{8}$

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

15. $\frac{3}{14} + \frac{1}{7}$

16. $\frac{5}{12} + \frac{1}{3}$

17. $\frac{1}{6} + \frac{1}{8}$

18. $\frac{1}{6} + \frac{4}{9}$

19. $\frac{3}{8} + \frac{5}{8} + \frac{1}{8}$

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

21. $\frac{2}{3} + \frac{3}{4} + \frac{1}{6}$

22. After running $\frac{7}{8}$ mile in a horse race, a horse ran an additional $\frac{3}{8}$ mile to cool down. How far did the horse run altogether?

23. In 1991, about $\frac{1}{5}$ of the crude oil produced was from North America, and about $\frac{2}{7}$ of the crude oil produced was from the Middle East.
What fraction of the crude oil produced was from North America or the Middle East?

24. In 1991, about $\frac{3}{10}$ of the petroleum consumed was in North America, and about $\frac{1}{5}$ of the petroleum consumed was in Western Europe. What fraction of the petroleum consumed was in North America or Western Europe?

SKILL 29

Name _____ Date _____ Period _____

Adding Fractions and Mixed Numbers

To add fractions and mixed numbers, first rename each fraction as necessary. Then add the fractions. Next, add the whole numbers. Rename and simplify if necessary.

Example 1 **Add: $4\frac{5}{6} + 5\frac{1}{4}$.**

Step 1	Step 2	Step 3
Rename each fraction by finding the LCD if necessary. $4\frac{5}{6} \rightarrow 4\frac{10}{12}$, $+\ 5\frac{1}{4} \rightarrow +\ 5\frac{3}{12}$	Add the fractions. Then add the whole numbers. $4\frac{10}{12} + 5\frac{3}{12} = 9\frac{13}{12}$	Rename and simplify if necessary. $9\frac{13}{12} = 10\frac{1}{12}$

Example 2 **Add: $14\frac{5}{9} + 7$.**

$$\begin{array}{r} 14\frac{5}{9} \\ +\ 7 \\ \hline 21\frac{5}{9} \end{array}$$

Add. Write each sum in simplest form.

1. $\begin{array}{r} 13 \\ +\ 9\frac{7}{8} \\ \hline \end{array}$

2. $\begin{array}{r} 6\frac{1}{4} \\ +\ 8\frac{3}{4} \\ \hline \end{array}$

3. $\begin{array}{r} 5\frac{1}{6} \\ +\ 7\frac{1}{3} \\ \hline \end{array}$

4. $\begin{array}{r} 11\frac{3}{4} \\ +\ 8\frac{2}{3} \\ \hline \end{array}$

5. $\begin{array}{r} 16\frac{1}{2} \\ +\ 14\frac{5}{7} \\ \hline \end{array}$

6. $\begin{array}{r} 15\frac{1}{2} \\ +\ 9\frac{4}{5} \\ \hline \end{array}$

7. $\begin{array}{r} 18\frac{7}{8} \\ +\ 15\frac{5}{8} \\ \hline \end{array}$

8. $\begin{array}{r} 12\frac{1}{10} \\ +\ 7\frac{5}{6} \\ \hline \end{array}$

SKILL 29

Name _____ Date _____ Period _____

Adding Fractions and Mixed Numbers *(continued)*

Add. Write each sum in simplest form.

9. $18\frac{7}{8} + 13$

10. $11 + 3\frac{5}{9}$

11. $9\frac{7}{9} + 3\frac{4}{9}$

12. $8\frac{2}{5} + 4\frac{4}{5}$

13. $12\frac{1}{2} + 8\frac{2}{3}$

14. $14\frac{5}{8} + 6\frac{5}{6}$

15. $16\frac{2}{5} + 13\frac{3}{4}$

16. $13\frac{4}{15} + 12\frac{3}{5}$

17. $16\frac{2}{5} + 8\frac{1}{10}$

18. $12\frac{3}{8} + 10\frac{3}{4}$

19. $4\frac{4}{9} + 5\frac{5}{12}$

20. $18\frac{2}{3} + 12\frac{8}{9}$

21. $10\frac{6}{7} + 5\frac{2}{5}$

22. $15\frac{3}{4} + 8\frac{5}{8}$

23. $24\frac{1}{2} + 12\frac{3}{4}$

24. $20\frac{2}{9} + 8\frac{1}{12}$

25. $8\frac{2}{11} + 6\frac{1}{2} =$

26. $9\frac{5}{9} + 10\frac{5}{12} =$

27. $6\frac{4}{9} + 8\frac{7}{15} =$

28. $12\frac{4}{15} + 5\frac{7}{12} =$

29. $14\frac{4}{9} + 10\frac{2}{3} =$

30. $19\frac{2}{7} + 12\frac{5}{21} =$

SKILL 30

Name _____ Date _____ Period _____

Subtracting Fractions

To subtract fractions with like denominators, subtract the numerators. Write the difference over the common denominator. Simplify the difference if possible.

Example 1 **Subtract:** $\frac{3}{4} - \frac{1}{4}$.

Step 1	Step 2
Subtract the numerators. Write the difference over the like denominator. $\frac{3}{4} - \frac{1}{4} = \frac{3-1}{4}$ or $\frac{2}{4}$	Simplify the difference. $\frac{2}{4} \overset{\div 2}{=} \frac{1}{2}$ *The GCF of 2 and 4 is 2.*

To subtract fractions with unlike denominators, rename the fractions with a common denominator. Then subtract the fractions.

Example 2 **Subtract:** $\frac{7}{10} - \frac{2}{5}$.

$$\begin{array}{rcl} \frac{7}{10} & = & \frac{7}{10} \\ -\frac{2}{5} & = & \frac{4}{10} \\ \hline & & \frac{3}{10} \end{array}$$

Use 10 for the common denominator.

Subtract. Write each difference in simplest form.

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

2. $\frac{9}{10} - \frac{3}{10}$

3. $\frac{9}{16} - \frac{3}{16}$

4. $\frac{11}{12} - \frac{3}{12}$

SKILL 30

Name _____ Date _____ Period _____

Subtracting Fractions *(continued)*

Subtract. Write each difference in simplest form.

5. $\frac{11}{14} - \frac{5}{14}$

6. $\frac{8}{9} - \frac{2}{9}$

7. $\frac{5}{6} - \frac{1}{3}$

8. $\frac{11}{12} - \frac{3}{4}$

9. $\frac{9}{10} - \frac{2}{5}$

10. $\frac{5}{7} - \frac{3}{14}$

11. $\frac{20}{21} - \frac{5}{14}$

12. $\frac{9}{14} - \frac{1}{2}$

13. $\frac{11}{15} - \frac{3}{10}$

14. $\frac{5}{6} - \frac{1}{12}$

15. $\frac{7}{18} - \frac{1}{6}$

16. $\frac{9}{20} - \frac{1}{8}$

17. $\frac{7}{12} - \frac{2}{9}$

18. $\frac{13}{18} - \frac{5}{12}$

19. $\frac{9}{16} - \frac{1}{6}$

20. $\frac{17}{24} - \frac{3}{10}$

SKILL 31

Name _____ Date _____ Period _____

Subtracting Fractions and Mixed Numbers

To subtract fractions and mixed numbers, first rename each fraction by finding the LCD if necessary. Then rename, if necessary, to subtract. Next subtract the fractions and then the whole numbers. Rename and simplify if necessary.

Example 1 **Find $4\frac{2}{5} - 1\frac{9}{10}$.**

Step 1	Step 2	Step 3
Rename each fraction finding the LCD if necessary. $4\frac{2}{5} \rightarrow 4\frac{4}{10}$ $-\ 1\frac{9}{10} \rightarrow -\ 1\frac{9}{10}$	Rename if necessary to subtract. $4\frac{4}{10} = 3 + \frac{10}{10} + \frac{4}{10}$ $= 3\frac{14}{10}$ $4\frac{4}{10} \rightarrow 3\frac{14}{10}$ $-\ 1\frac{9}{10} \rightarrow -\ 1\frac{9}{10}$	Subtract and simplify if necessary. $3\frac{14}{10}$ $-\ 1\frac{9}{10}$ $2\frac{5}{10}$ or $2\frac{1}{2}$

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

$$\begin{array}{rcr} 6 & \rightarrow & 5\frac{6}{6} \\ -\ 3\frac{1}{6} & \rightarrow & -\ 3\frac{1}{6} \\ \hline & & 2\frac{5}{6} \end{array}$$

Subtract. Write each difference in simplest form.

1. $14\frac{2}{3} - 12$

2. $10 - 4\frac{3}{4}$

3. $7\frac{7}{9} - 3\frac{4}{9}$

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

5. $15\frac{1}{4} - 5\frac{1}{2}$

6. $16\frac{3}{8} - 2\frac{5}{6}$

7. $14\frac{3}{7} - 10\frac{1}{2}$

8. $18\frac{3}{10} - 7\frac{4}{5}$

SKILL 31

Name _____ Date _____ Period _____

Subtracting Fractions and Mixed Numbers *(continued)*

Subtract. Write each difference in simplest form.

9. $8\frac{1}{5} - 2\frac{3}{5}$

10. $6 - 3\frac{2}{7}$

11. $9\frac{5}{12} - 3\frac{3}{4}$

12. $16\frac{2}{9} - 2\frac{2}{3}$

13. $23\frac{1}{2} - 15\frac{1}{4}$

14. $13\frac{2}{15} - 8\frac{1}{5}$

15. $16\frac{3}{8} - 14\frac{3}{4}$

16. $19\frac{1}{6} - 4\frac{2}{3}$

17. $9\frac{2}{9} - 1\frac{1}{18}$

18. $7 - 2\frac{4}{7}$

19. $16\frac{3}{4} - 5\frac{11}{12}$

20. $12\frac{1}{3} - 10\frac{3}{4}$

21. $26\frac{1}{4} - 15\frac{3}{5}$

22. $14\frac{1}{9} - 8\frac{2}{3}$

23. $15\frac{1}{8} - 6\frac{1}{4}$

24. $18\frac{1}{2} - 9\frac{7}{8}$

25. $6\frac{3}{11} - 5\frac{1}{3}$

26. $12\frac{5}{7} - 6\frac{1}{2}$

27. $8\frac{2}{9} - 1\frac{7}{12}$

28. $14\frac{3}{10} - 6\frac{4}{5}$

29. $12\frac{5}{6} - 10\frac{2}{3}$

30. $21\frac{2}{5} - 18\frac{7}{15}$

SKILL 32

Name _____ Date _____ Period _____

Changing Fractions to Decimals

A fraction is another way of writing a division problem. To change a fraction to a decimal, divide the numerator by the denominator.

Examples **1** **About $\frac{1}{20}$ of the heat in a house is lost through the doors. Write this fraction as a decimal.**

$\frac{1}{20}$ means $1 \div 20$ or $20\overline{)1}$.

$$\begin{array}{r} 0.05 \\ 20\overline{)1.00} \end{array}$$

So, $\frac{1}{20} = 0.05$.

2 **Express $\frac{1}{3}$ as a decimal.**

$$\begin{array}{r} 0.33... \\ 3\overline{)1.00} \end{array}$$

$\frac{1}{3} = 0.33...$ or $0.\overline{3}$ *The bar status shows that 3 repeats.*

Express each fraction as a decimal. Use bar notation if necessary.

1. $\frac{4}{25}$ **2.** $\frac{3}{5}$ **3.** $\frac{7}{20}$ **4.** $\frac{3}{50}$

5. $\frac{9}{10}$ **6.** $\frac{7}{8}$ **7.** $\frac{1}{3}$ **8.** $\frac{14}{16}$

9. $\frac{20}{30}$ **10.** $\frac{5}{9}$ **11.** $\frac{19}{20}$ **12.** $\frac{5}{200}$

SKILL 32

Name _____ Date _____ Period _____

Changing Fractions to Decimals *(continued)*

Express each fraction as a decimal. Use bar notation if necessary.

13. $\frac{10}{50}$ **14.** $\frac{13}{20}$ **15.** $\frac{5}{6}$ **16.** $\frac{4}{5}$

17. $\frac{7}{10}$ **18.** $\frac{13}{40}$ **19.** $\frac{39}{50}$ **20.** $\frac{2}{25}$

21. $\frac{7}{16}$ **22.** $\frac{34}{125}$ **23.** $\frac{16}{25}$ **24.** $\frac{99}{100}$

25. $\frac{17}{20}$ **26.** $\frac{3}{150}$ **27.** $\frac{3}{8}$ **28.** $\frac{2}{3}$

A mill is a unit of money that is used in assessing taxes. One mill is equal to $\frac{1}{10}$ of a cent or $\frac{1}{1000}$ of a dollar.

29. Money is usually written using decimals. Express each fraction above as a decimal using the correct money symbol.

30. Find the number of cents and the number of dollars equal to 375 mills.

31. Find the number of cents and the number of dollars equal to 775 mills.

32. Find the number of cents and the number of dollars equal to 1,000 mills.

SKILL 33

Name _____ Date _____ Period _____

Writing Decimals as Fractions

To write a terminating decimal as a fraction, write the digits to the right of the decimal point over a power of ten. The power of ten is determined by the place-value position of the last digit in the decimal. For example, if the last digit is in the hundredths place, use 100. If the last digit is in the thousandths place, use 1000.

Example 1 **Write 0.375 as a fraction.**

Since the last digit, 5, is in the thousandths place, write 375 over 1000. Then simplify.

$0.375 = \frac{375}{1000}$ or $\frac{3}{8}$

Repeating decimals can also be written as fractions using the method shown below.

Example 2 **Write 0.555… as a fraction.**

Let $N = 0.555\ldots$. Then $10N = 5.555\ldots$.
Subtract N from $10N$ to eliminate the repeating part.

$$\begin{aligned} 10\boldsymbol{N} &= 5.555\ldots \\ -\ \boldsymbol{N} &= 0.555\ldots \\ \hline 9\boldsymbol{N} &= 5 \\ \boldsymbol{N} &= \frac{5}{9} \end{aligned}$$

So, $0.555\ldots = \frac{5}{9}$.

Write each decimal as a fraction.

1. 0.525

2. 0.45

3. 0.333…

4. 0.43

5. 0.8

6. 0.1212…

7. 0.345

8. 0.1862

9. 0.4555…

SKILL 33

Name _____ Date _____ Period _____

Writing Decimals as Fractions *(continued)*

Write each decimal as a fraction.

10. 0.456

11. 0.32

12. 0.222…

13. 0.35

14. 0.48

15. 0.955

16. 0.8222…

17. 0.4545…

18. 0.444…

19. 0.565

20. 0.435

21. 0.552

22. 0.855

23. 0.842

24. 0.944

25. 0.732

26. 0.245

27. 0.485

28. 0.666…

29. 0.8585…

30. 0.9655

SKILL 34

Name _____ Date _____ Period _____

Writing Decimals as Percents

To express a decimal as a percent, first express the decimal as a fraction with a denominator of 100. Then express the fraction as a percent.

Examples **Express each decimal as a percent.**

1 $\mathbf{0.09} = \frac{9}{100}$
$= 9\%$

2 $\mathbf{0.005} = \frac{5}{1000}$
$= \frac{0.5}{100}$
$= 0.5\%$

3 $\mathbf{1.8} = \frac{18}{10}$
$= \frac{180}{100}$
$= 180\%$

A shortcut to writing a decimal as a percent is to move the decimal point two places to the right and add a percent sign (%).

Examples **Express each decimal as a percent.**

4 **0.25**
$0.25 = 0.25\%$
$= 25\%$

5 **0.9**
$0.9 = 0.90\%$
$= 90\%$

Express each decimal as a percent.

1. 0.66 **2.** 0.08 **3.** 0.75 **4.** 0.001

5. 1.19 **6.** 0.72 **7.** 0.136 **8.** 4.02

9. 0.18 **8.** 0.36 **11.** 0.09 **12.** 0.2

13. 0.625 **14.** 0.007 **15.** 1.4 **16.** 0.093

SKILL 34

Name _____ Date _____ Period _____

Writing Decimals as Percents *(continued)*

Express each decimal as a percent.

17. 0.8 **18.** 0.54 **19.** 3.75 **20.** 0.02

21. 0.258 **22.** 0.016 **23.** 0.49 **24.** 0.003

25. 0.96 **26.** 0.52 **27.** 0.15 **28.** 0.008

29. 3.62 **30.** 0.623 **31.** 0.035 **32.** 7.08

33. 0.5 **34.** 0.97 **35.** 0.6 **36.** 0.425

37. 0.08 **38.** 2.5 **39.** 0.001 **40.** 0.074

41. 0.345 **42.** 0.19 **43.** 0.062 **44.** 0.19

45. 0.005 **46.** 0.37 **47.** 0.8 **48.** 0.04

SKILL 35

Name _____ Date _____ Period _____

Writing Percents as Decimals

To express a percent as a decimal, divide by 100 and write as a decimal.

Examples **Express each percent as a decimal.**

1 **56%**

$56\% = \frac{56}{100}$

$= 0.56$

2 **3.4%**

$3.4\% = \frac{3.4}{100}$

$= \frac{34}{1000}$

$= 0.034$

A shortcut to writing a percent as a decimal is to move the decimal point two places to the left and drop the percent sign.

Examples **Express each percent as a decimal.**

3 **18%**

$18\% = 1\,8.$

$= 0.18$

4 **0.5%**

$0.5\% = 000.5$

$= 0.005$

Express each percent as a decimal.

1. 45% **2.** 91% **3.** 24.5% **4.** 8.37%

5. 13% **6.** 6% **7.** 76.5% **8.** 1.22%

9. 14.5% **10.** 26% **11.** 1.8% **12.** 80%

SKILL 35

Name _____ Date _____ Period _____

Writing Percents as Decimals *(continued)*

Express each percent as a decimal.

13. 8%

14. 32%

15. 15%

16. 15.7%

17. 16.23%

18. 2.01%

19. 3.2%

20. 80%

21. 1.32%

22. 21%

23. 25%

24. 13%

25. 4%

26. 40%

27. 62.5%

28. 30%

29. 60.3%

30. 12.3%

31. 10.25%

21. 8.6%

33. 12.15%

34. 102%

35. 450.5%

36. 175%

37. 0.05%

38. 0.25%

39. 0.105%

40. 14.36%

41. 2.18%

42. 38.65%

SKILL 36

Name _____ Date _____ Period _____

Writing Fractions as Percents

To express a fraction as a percent, first set up a proportion. Then solve the proportion using cross products.

Example **Express $\frac{13}{20}$ as a percent.**

$\frac{13}{20} = \frac{k}{100}$ *Set up a proportion.*

$13 \times 100 = 20 \times k$ *Find the cross products.*

$1300 = 20k$

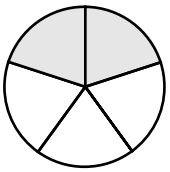
$1300 \div 20 = 20k \div 20$ *Divide each side by 20.*

$65 = k$

$\frac{13}{20} = \frac{65}{100}$ or 65%

Express each shaded section as a fraction and as a percent.

1.



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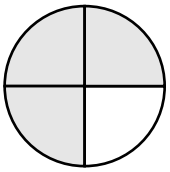

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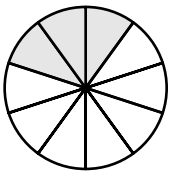

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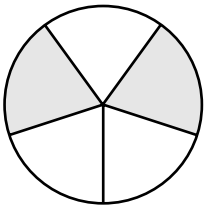

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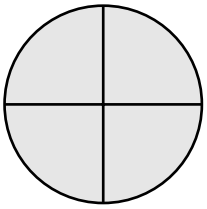

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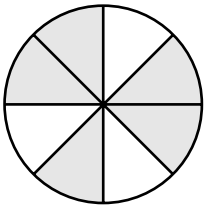


Express each fraction as a percent.

7. $\frac{17}{100}$ **8.** $\frac{4}{5}$ **9.** $\frac{1}{4}$ **10.** $\frac{8}{20}$

11. $\frac{1}{50}$ **12.** $\frac{7}{10}$ **13.** $\frac{6}{25}$ **14.** $\frac{1}{10}$

15. $\frac{1}{25}$ **16.** $\frac{1}{5}$ **17.** $\frac{6}{50}$ **18.** $\frac{8}{10}$

19. $\frac{12}{5}$ **20.** $\frac{15}{20}$ **21.** $\frac{150}{50}$ **22.** $\frac{19}{20}$

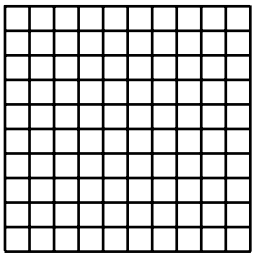
SKILL 36

Name _____ Date _____ Period _____

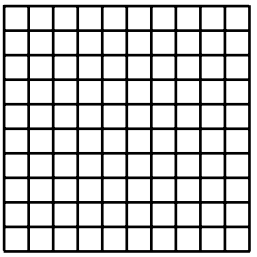
Writing Fractions as Percents *(continued)*

Use a 10 × 10 grid to shade the amount stated in each fraction. Then express each fraction as a percent.

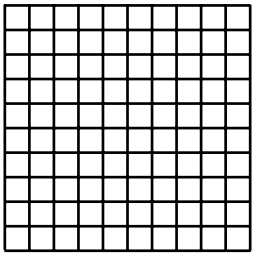
23. $\frac{1}{10}$



24. $\frac{1}{20}$



25. $\frac{1}{50}$



Express each fraction as a percent.

26. $\frac{47}{100}$ **27.** $\frac{8}{25}$ **28.** $\frac{9}{12}$ **29.** $\frac{13}{50}$

30. $\frac{11}{20}$ **31.** $\frac{7}{5}$ **32.** $\frac{3}{100}$ **33.** $\frac{21}{25}$

34. $\frac{3}{10}$ **35.** $\frac{3}{20}$ **36.** $\frac{31}{50}$ **37.** $\frac{5}{4}$

38. $\frac{6}{10}$ **39.** $\frac{15}{5}$ **40.** $\frac{12}{50}$ **41.** $\frac{1}{20}$

42. $\frac{17}{20}$ **43.** $\frac{152}{50}$ **44.** $\frac{400}{100}$ **45.** $\frac{30}{25}$

46. $\frac{9}{10}$ **47.** $\frac{49}{50}$ **48.** $\frac{24}{25}$ **49.** $\frac{40}{20}$

50. $\frac{5}{15}$ **51.** $\frac{12}{20}$ **52.** $\frac{18}{10}$ **53.** $\frac{1000}{100}$

54. $\frac{13}{20}$ **55.** $\frac{215}{50}$ **56.** $\frac{25}{20}$ **57.** $\frac{8}{5}$

58. $\frac{16}{10}$ **59.** $\frac{43}{50}$ **60.** $\frac{75}{25}$ **61.** $\frac{22}{20}$

SKILL 37

Name _____ Date _____ Period _____

Writing Percents as Fractions

To express a percent as a fraction, divide by 100 and simplify.

Examples **Express each percent as a fraction.**

1 **65%**

$65\% = \frac{65}{100}$

$= \frac{13}{20}$

2 **2.5%**

$2.5\% = \frac{2.5}{100}$

$= \frac{25}{1000}$

$= \frac{1}{40}$

Express each percent as a fraction.

1. 45%

2. 91%

3. 24.5%

4. 8%

5. 32%

6. 15%

7. 15.7%

8. 16.23%

9. 2.01%

10. 3.2%

11. 80%

12. 1.32%

13. 21%

14. 25%

15. 13%

SKILL 37

Name _____ Date _____ Period _____

Writing Percents as Fractions *(continued)*

Express each percent as a fraction.

16. 4%

17. 40%

18. 62.5%

19. 30%

20. 60.3%

21. 12.3%

22. 15%

23. 32%

24. 67%

25. 62.8%

26. 18%

27. 23%

28. 70%

29. 1.5%

30. 3.2%

31. 1.82%

32. 14.8%

33. 16%

34. 120%

35. 18.5%

36. 255%

37. 100.5%

38. 1.255%

39. 6.8%

40. 0.09%

41. 45.45%

42. 50.15%

SKILL 38

Name _____ Date _____ Period _____

Comparing and Ordering Rational Numbers

To compare fractions, write each fraction as a decimal.
Then compare the decimals.

Example 1 **Compare $\frac{2}{3}$ and $\frac{3}{5}$.**

$\frac{2}{3} = 0.6666666667$

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

Since $0.6666666667 > 0.6$, $\frac{2}{3} > \frac{3}{5}$.

To compare percents, compare the numbers without the percent sign.

Example 2 **Compare 15% and 17.5%.**

Since $15 < 17.5$, $15\% < 17.5\%$.

Fill in each ◯ with $<$, $>$, or $=$ to make a true sentence.

1. $\frac{2}{7}$ ◯ $\frac{3}{8}$

2. $\frac{3}{11}$ ◯ $\frac{1}{5}$

3. $\frac{11}{21}$ ◯ $\frac{9}{16}$

4. $\frac{14}{21}$ ◯ $\frac{10}{15}$

5. $\frac{25}{27}$ ◯ $\frac{17}{19}$

6. $\frac{3}{10}$ ◯ $\frac{4}{9}$

7. $1\frac{7}{8}$ ◯ $2\frac{4}{5}$

8. $3\frac{7}{9}$ ◯ $3\frac{6}{7}$

9. $5\frac{10}{19}$ ◯ $5\frac{15}{24}$

10. 14% ◯ 12.5%

11. 5% ◯ 8%

12. 0.04% ◯ 0.25%

13. 250% ◯ 126%

14. 16.6% ◯ 10%

15. 75.8% ◯ 75.9%

SKILL 38

Name _____ Date _____ Period _____

Comparing and Ordering Rational Numbers *(continued)*

Write each set of fractions in order from least to greatest.

16. $\frac{3}{5}, \frac{7}{9}, \frac{4}{5}, \frac{1}{2}$

17. $\frac{3}{8}, \frac{2}{7}, \frac{8}{11}, \frac{5}{16}$

18. $\frac{9}{14}, \frac{6}{7}, \frac{3}{4}, \frac{12}{19}$

19. $\frac{11}{23}, \frac{19}{27}, \frac{7}{10}, \frac{15}{17}$

The Pittsburgh Pirates have won 14 out of 21 games, and the New York Mets have won 15 out of 23 games. Use this information to answer Exercises 20–23.

20. Which team has the better record?

21. Suppose the Pirates win 2 of their next three games and the Mets win all of their next 3 games. Which team has the better record?

22. Suppose the Pirates went on to win 21 games after playing 30 games. Is their record better now than it was before? Explain.

23. Suppose the Mets went on to win 16 games after playing 30 games. Is their record better now than it was before? Explain.

24. Larry has $\frac{5}{6}$ yard of material. Does he have enough to make a vest that requires $\frac{3}{4}$ yard of material? Explain.

SKILL 39

Name _____ Date _____ Period _____

Length in the Customary System

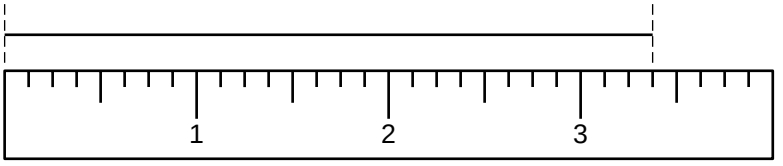
Length
1 foot (ft) = 12 inches (in.)
1 yard (yd) = 3 feet or 36 inches
1 mile (mi) = 5280 feet or 1760 yards

Example 1 **Draw a line segment measuring $3\frac{3}{8}$ inches.**

Use a ruler divided in eighths.

Find $3\frac{3}{8}$ on the ruler.

Draw the line segment from 0 to $3\frac{3}{8}$.



To change from a smaller unit to a larger unit, divide.
To change from a larger unit to a smaller unit, multiply.

Examples ***2*** **3 ft = _____ in.** *1 ft = 12 in., so multiply by 12.*

$3 \times 12 = 36$

3 ft = 36 in.

3 **9 ft = _____ yd** *1 yd = 3 ft, so divide by 3.*

$9 \div 3 = 3$

9 ft = 3 yd

Draw a line segment of each length.

1. $1\frac{1}{2}$ inches

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

3. $1\frac{1}{4}$ inches

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

5. $1\frac{3}{8}$ inches

6. $1\frac{5}{8}$ inches

7. $3\frac{1}{2}$ inches

8. $\frac{3}{8}$ inch

9. $1\frac{3}{4}$ inches

10. $2\frac{1}{4}$ inches

11. $2\frac{5}{8}$ inches

12. $3\frac{1}{8}$ inches

SKILL 39

Name _____ Date _____ Period _____

Length in the Customary System *(continued)*

Complete.

13. 5 ft = _____ in.

14. 2 mi = _____ ft

15. 12 yd = _____ ft

16. 24 in. = _____ yd

17. 48 in. = _____ ft

18. 3520 yd = _____ mi

19. 72 in. = _____ yd

20. 30 in. = _____ft

21. 4 mi = _____ ft

22. 90 in. = _____ yd

23. 60 in. = _____ yd

24. 6 mi = _____ yd

25. 6.5 ft = _____ in.

26. 15 ft = _____ yd

27. 9 yd = _____ in.

28. 12 ft = _____ in.

29. 7920 ft = _____ mi

30. 16 ft = _____ in.

SKILL 40

Name _____ Date _____ Period _____

Capacity in the Customary System

Capacity
1 cup (c) = 8 fluid ounces (fl oz)
1 pint (pt) = 2 cups
1 quart (qt) = 2 pints
1 gallon (gal) = 4 quarts

To change from one customary unit of capacity to another, you either multiply or divide.
When changing from a smaller unit to a larger unit, divide.
When changing from a larger unit to a smaller unit, multiply.

Examples

1 **12 qt = _____ pt** — *You are changing from a larger unit (qt) to a smaller unit (pt), so multiply.*

$12 \times 2 = 24$ — *Since 1qt = 2 pt, multiply by 2.*

12 qt = 24 pt

2 **8 pt = _____ gal** — *You are changing from a smaller unit (pt) to a larger unit (gal), so divide.*

$8 \div 2 = 4$ — *Divide by 2 to change pints to quarts.*

$4 \div 4 = 1$ — *Divide by 4 to change quarts to gallons.*

8 pt = 1 gal

Complete.

1. 8 c = _____ fl oz

2. 8 qt = _____ gal

3. 16 pt = _____ qt

4. 5 c = _____ pt

5. 16 qt = _____ pt

6. 18 c = _____ qt

7. 8 gal = _____ qt

8. 16 gal = _____ qt

SKILL 40

Name _____ Date _____ Period _____

Capacity in the Customary System *(continued)*

Complete.

9. 16 fl oz = _____ c

10. 16 pt = _____ c

11. 3 qt = _____ pt

12. 5 gal = _____ qt

13. 15 pt = _____ qt

14. 12pt = _____ c

15. 16 c = _____ fl oz

16. 10 pt = _____ qt

17. 3 qt = _____ c

18. 12 c = _____ fl oz

19. 64 pt = _____ gal

20. 4 gal = _____ c

21. 1 qt = _____ fl oz

22. 5 c = _____ fl oz

23. 17 c = _____ pt

24. 6 qt = _____ gal

25. 2.5 gal = _____ qt

26. $3\frac{1}{2}$ gal = _____ qt

27. 16 qt = _____ gal

28. 80 fl oz = _____ pt

29. 16 qt = _____ c

30. 8 c = _____ qt

31. A recipe calls for 3 cups of milk How many fluid ounces of milk are need for the recipe?

32. Jenna bought 64 fl oz of juice. How many quarts of juice did she buy?

SKILL 41

Name _____ Date _____ Period _____

Weight in the Customary System

Weight
1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2000 pounds

To change from one customary unit of weight to another, you either multiply or divide.
When changing from a smaller unit to a larger unit, divide.
When changing from a larger unit to a smaller unit, multiply.

Examples **1** $\mathbf{10\frac{1}{2}}$ **lb = _____ oz** *You are changing from a larger unit (lb) to a smaller unit (oz), so multiply.*

$10\frac{1}{2} \times 16 = \frac{21}{\cancel{2}_{1}} \times \frac{\cancel{16}^{8}}{1} = \frac{168}{1}$ or 168 *Since 1 pound = 16 ounces, multiply by 16.*

$10\frac{1}{2}$ lb = 168 oz

2 **32 oz = _____ lb** *You are changing from a smaller unit (oz) to a larger unit (lb), so divide.*

32 ÷ 16 = 2 *Divide by 16 to change ounces to pounds.*

32 oz = 2 lb

Complete.

1. 2 T = _____ lb

2. 8500 lb = _____ T

3. 24 oz = _____ lb

4. 4 lb = _____ oz

5. $3\frac{1}{2}$ lb = _____ oz

6. 2500 lb = _____ T

7. 10 lb = _____ oz

8. 1 T = _____ oz

SKILL 41

Name _____ Date _____ Period _____

Weight in the Customary System *(continued)*

Complete.

9. 256 oz = _____ lb

10. 16 lb = _____ oz

11. 3 T = _____ lb

12. 7 T = _____ lb

13. 12,000 lb = _____ T

14. 12 oz = _____ lb

15. 16 T = _____ lb

16. 10 T = _____ oz

17. 3 lb = _____ oz

18. 12 oz = _____ lb

19. 64 oz = _____ lb

20. 4 oz = _____ lb

21. 2.5 T = _____ lb

22. 5 lb = _____ oz

23. 17 oz = _____ lb

24. 6 oz = _____ lb

25. $\frac{1}{5}$ T = _____ lb

26. $3\frac{1}{2}$ T = _____ oz

27. 6.5 T = _____ lb

28. 500 lb = _____ T

29. 20 lb = _____ oz

30. 2.25 T = _____ lb

31. A recipe calls for 3 ounces of butter How many pounds of butter are needed for the recipe?

32. Jenna bought 64 ounces of bananas. How many pounds of bananas did she buy?

SKILL 42

Name _____ Date _____ Period _____

Length in the Metric System

Length
1 centimeter (cm) = 10 millimeters (mm)
1 meter (m) = 100 centimeters
1 meter = 1000 millimeters
1 kilometer (km) = 1000 meters

To change from one metric unit of length to another, you either multiply or divide.
When changing from a smaller unit to a larger unit, divide.
When changing from a larger unit to a smaller unit, multiply.

Examples **1** **3 m = _____ mm**

You are changing from a larger unit (m) to a smaller unit (mm), so multiply.

$3 \times 1000 = 3000$

Since 1 m = 1000 mm, multiply by 1000. Move the decimal point 3 places to the right.

3 m = 3000 mm

2 **5000 m = _____ km**

You are changing from a smaller unit (m) to a larger unit (km), so divide.

$5000 \div 1000 = 5.000$

Since 1000 meters = 1 kilometer, divide by 1000. Move the decimal point 3 places to the left.

5000 m = 5 km

Complete.

1. 300 mm = _____ cm

2. 2000 m = _____ km

3. 60 cm = _____ m

4. 1500 m = _____ km

5. 6 km = _____ m

6. 8 km = _____ cm

7. 80 mm = _____ cm

8. 160 cm = _____ m

SKILL 42

Name _____ Date _____ Period _____

Length In the Metric System *(continued)*

Complete.

9. 2000 mm = _____ cm

10. 2 m = _____ cm

11. 300 mm = _____ cm

12. 7 cm = _____ mm

13. 160 cm = _____ mm

14. 20 km = _____ m

15. 3000 cm = _____ m

16. 24,000 mm = _____ m

17. 2000 km = _____ m

18. 42 cm = _____ mm

19. 4100 cm = _____ m

20. 8700 cm = _____ m

21. 42,000 m = _____ km

22. 4 km = _____ m

23. 8 m = _____ cm

24. 50 cm = _____ mm

25. 16.3 mm = _____ cm

26. 4.1 km = _____ m

27. 15.5 cm = _____ mm

28. 160 km = _____ m

29. A napkin is 37 centimeters long. How many millimeters is this?

30. A race is 80,000 meters long. How long is the race in kilometers?

SKILL 43

Name _____ Date _____ Period _____

Capacity in the Metric System

Capacity
1 liter (L) = 1000 milliliters (mL)
1 kiloliter (kL) = 1000 liters

To change from one metric unit of capacity to another, you either multiply or divide.
When changing from a smaller unit to a larger unit, divide.
When changing from a larger unit to a smaller unit, multiply.

Examples ***1*** **1325 mL = _____ L** — *You are changing from a smaller unit (mL) to a larger unit (L), so divide.*

1325 ÷ 1000 = 1.325 — *Since 1 mL = 1000 L, divide by 1000. Move the decimal point 3 places to the left.*

1325 mL = 1.325 L

2 **2 kL = _____ L** — *You are changing from a larger unit (kL) to a smaller unit (L), so multiply.*

2 × 1000 = 2000 — *Since 1 kL = 1000 L, multiply by 1000. Move the decimal point 3 places to the right.*

2 kL = 2000 L

Complete.

1. 76 mL = _____ L

2. 1800 L = _____ kL

3. 140 L = _____ mL

4. 7500 L = _____ mL

5. 8.2 kL = _____ L

6. 140 L = _____ kL

7. 6000 mL = _____ L

8. 400 kL = _____ L

SKILL 43

Name _____ Date _____ Period _____

Capacity in the Metric System *(continued)*

Complete.

9. 5 kL = _____ L

10. 2000 L = _____ kL

11. 4 L = _____ mL

12. 1400 L = _____ kL

13. 3250 mL = _____ L

14. 3.4 kL = _____ L

15. 750 L = _____ kL

16. 940 mL = _____ L

17. 12 L = _____ mL

18. 3400 mL = _____ L

19. 86 kL = _____ L

20. 8 L = _____ mL

21. 36 kL = _____ L

22. 850 L = _____ kL

23. 2.4 L = _____ mL

24. 3.8 kL = _____ L

25. 5.35 L = _____ mL

26. 10.6 kL = _____ L

27. 180 L = _____ kL

28. 1400 mL = _____ L

29. Karen uses 2 L of liquid in her punch recipe. How many mL does she use?

30. José brought home a soft drink bottle that contained 2000 milliliters of liquid. What is the capacity in liters?

SKILL 44

Name _____ Date _____ Period _____

Mass in the Metric System

Mass
1 gram (g) = 1000 milligrams (mg)
1 kilogerams (kg) = 1000 grams

To change from one metric unit of mass to another, you either multiply or divide.
When changing from a smaller unit to a larger unit, divide.
When changing from a larger unit to a smaller unit, multiply.

Examples ***1*** **1325 mg = _____ g** *You are changing from a smaller unit (mg) to a larger unit (g), so divide.*

1325 ÷ 1000 = 1.325 *Since 1 mg = 1000 g, divide by 1000. Move the decimal point 3 places to the left.*

1325 mg = 1.325 g

2 **76 kg = _____ g** *You are changing from a larger unit (kg) to a smaller unit (g), so multiply.*

76 × 1000 = 76,000 *Since 1 kg = 1000 g, multiply by 1000. Move the decimal point 3 places to the right.*

76 kg = 76,000 g

Complete.

1. 180 mg = _____ g

2. 1600 g = _____ kg

3. 1500 kg = _____ g

4. 700 mg = _____ g

5. 8000 g = _____ mg

6. 450 kg = _____ g

7. 820 g = _____ kg

8. 4630 mg = _____ g

SKILL 44

Name _____ Date _____ Period _____

Mass in the Metric System *(continued)*

Complete.

9. 5 kg = _____ g

10. 2000 g = _____ kg

11. 4 g = _____ mg

12. 1400 g = _____ kg

13. 3250 mg = _____ g

14. 3.4 kg = _____ g

15. 750 g = _____ kg

16. 940 mg = _____ g

17. 12 g = _____ mg

18. 3400 mg = _____ g

19. 86 kg = _____ g

20. 8 g = _____ mg

21. 36 kg = _____ g

22. 850 g = _____ kg

23. 2.4 g = _____ mg

24. 3.8 kg = _____ g

25. 5.35 g = _____ mg

26. 10.6 kg = _____ g

27. 86 mg = _____ g

28. 140 kg = _____ g

29. Mr. Chang's truck can carry a payload of 11 kilograms. What is the payload in grams?

30. Jana weighed her dog at 20 kg. What is the weight of her dog in mg?

SKILL 45

Name _____ Date _____ Period _____

Converting Customary Units to Metric Units

You can use the following chart to convert customary units to metric units.

Customary Unit / Metric Unit
1 in. = 2.54 cm
1 ft = 30.48 cm or 0.3048 m
1 yd ≈ 0.914 m
1 mi ≈ 1.609 km
1 oz = 28.350 g
1 lb ≈ 454 g or 0.454 kg
1 fl oz = 29.574 mL
1 qt = 0.946 L
1 gal = 3.785 L

Examples **1** **5 ft = _____ cm**

$5 \times 30.48 = 152.4$ *1 ft = 30.48 cm, so multiply by 30.48.*

5 ft = 152.4 cm

2 **$2\frac{1}{2}$ gal = _____ L**

$2\frac{1}{2} \times 3.785 = 2.5 \times 3.785 = 9.4625$ *1 gal = 3.785 L, so multiply by 3.785.*

$2\frac{1}{2}$ gal = 9.4625 L

3 **3.5 lb = _____ kg**

$3.5 \times 0.454 = 1.589$ *1 lb ≈ 0.454 kg, so multiply by 0.454.*

3.5 lb = 1.589 kg

Complete.

1. 4 in. = _____ cm **2.** 7 oz = _____ g **3.** 2 qt = _____ L

4. 6 mi = _____ km **5.** 3 gal = _____ L **6.** 16 oz = _____ g

SKILL 45

Name _____ Date _____ Period _____

Converting Customary Units to Metric Units *(continued)*

Complete.

7. 12 fl oz = _____ mL **8.** 5 lb = _____ g **9.** 3 yd = _____ m

10. 1.5 in. = _____ cm **11.** 4 ft = _____ m **12.** 5 qt = _____ L

13. 12 oz = _____ g **14.** 10 lb = _____ kg **15.** 6 in. = _____ cm

16. 5.5 ft = _____ m **17.** 2.5 gal = _____ L **18.** $2\frac{1}{4}$ mi = _____ km

19. 6.25 yd = _____ m **20.** 18 lb = _____ kg **21.** 15 fl oz = _____ L

22. $3\frac{1}{8}$ mi = _____ km **23.** $1\frac{3}{4}$ ft = _____ cm **24.** 2.5 qt = _____ L

25. 10 fl oz = _____ mL **26.** 15 qt = _____ L **27.** 220 mi = _____ km

28. 20 yd = _____ m **29.** 20.35 lb = _____kg **30.** 20 qt = _____ L

31. 350.5 mi = _____ km **32.** 25 fl oz = _____ mL **33.** 4.5 lb = _____ kg

SKILL 46

Name _____ Date _____ Period _____

Converting Metric Units to Customary Units

You can use the following chart to convert customary units to metric units.

Customary Unit / Metric Unit
1 cm = 0.394 in.
1 m = 3.281 ft or 1.093 yd
1 km ≈ 0.621 mi
1 g ≈ 0.035 oz
1 kg = 2.205 lb g
1 mL ≈ 0.034 fl oz
1 L = 1.057 qt or 0.264 gal

Examples ***1*** **3 cm = _____ in.**

$3 \times 0.394 = 1.182$ *1 cm ≈ 0.394 in., so multiply by 0.394.*

3 cm = 1.182 in.

2 **250 g = _____ oz**

$250 \times 0.035 = 8.75$ *1 g ≈ 0.035 oz, so multiply by 0.035.*

250 g = 8.75 oz

3 **1.5 L = _____ qt**

$1.5 \times 1.057 = 1.5855$ *1 L ≈ 1.057 qt, so multiply by 1.057.*

1.5 L = 1.5855 qt

Complete.

1. 5 cm = _____ in. **2.** 787 g = _____ oz **3.** 4 L = _____qt

4. 8 km = _____ mi **5.** 2 L = _____ gal **6.** 300 g = _____ oz

7. 155 mL = _____ fl oz **8.** 9 km = _____ mi **9.** 4 m = _____ yd

SKILL 46

Name _____ Date _____ Period _____

Converting Metric Units to Customary Units *(continued)*

Complete.

10. 3.5 km = _____ mi

11. 10 mL = _____ fl oz

12. 4.5 L = _____ gal

13. 7.5 m = _____ ft

14. 2.3 m = _____ yd

15. 3.5 L = _____ qt

16. 260 mL = _____ fl oz

17. 14 kg = _____ lb

18. 3.25 m = _____ ft

19. 24.5 km = _____ mi

20. 22 L = _____ gal

21. 45 g = _____ oz

22. 1.25 m = _____ ft

23. 12 kg = _____ lb

24. 14 L = _____ gal

25. 4.65 km = _____ mi

26. 4.8 cm = _____ in.

27. 8.5 L = _____ qt

28. 40 mL = _____ fl oz

29. 10.9 L = _____ gal

30. 280 km = _____ mi

31. 8 m = _____ yd

32. 15.35 kg = _____ lb

33. 10.5 L = _____ qt

34. 6 cm = _____ in.

35. 15.5 m = _____ yd

36. 14 g = _____ oz

37. 3.25 L = _____ qt

38. 50 kg = _____ lb

39. 2.8 m = _____ ft

SKILL 47

Name _____ Date _____ Period _____

Adding and Converting Units of Time

Time
1 hour (hr) = 60 minutes (min)
1 minute (min) = 60 seconds

To add measures of time, add the seconds, add the minutes, and add the hours. Rename if necessary.

Example **Add 4 hours 25 minutes 40 seconds and 5 hours 30 minutes 25 seconds.**

4 h 25 min 40 s
+ 5 h 30 min 25 s
9 h 55 min 65 s = 9 h 56 min 5 s *Rename 65 s as 1 min 5 s.*

Rename each of the following.

1. 14 min 85 s = _____ min 25 s

2. 8 h 65 min = 9 h _____ min

3. 3 h 19 min 67 s = 3 h _____ min 7 s

4. 6 h 68 min 25 s = _____ h _____ min 25 s

5. 7 h 105 min 15 s = _____ h _____ min 15 s

6. 4 h 99 min 80 s = _____ h _____ min _____ s

7. 1 h 76 min 91 s = _____ h _____ min _____ s

8. 7 h 88 min 60 s = _____ h _____ min _____ s

SKILL 47

Name _____ Date _____ Period _____

Adding and Converting Units of Time *(continued)*

Add. Rename if necessary.

9. 35 min 45 s
+ 12 min 12 s

10. 6 h 50 min
+ 3 h 17 min

11. 9 h 45 min 10 s
+ 3 h 30 min 50 s

12. 1 h 55 min 12 s
+ 3 h 25 min 34 s

13. 11 h 33 min 6 s
+ 5 h 36 min 29 s

14. 6 h 10 min 47 s
+ 2 h 51 min 28 s

15. 7 h 30 min 52 s
+ 3 h 45 min 40 s

16. 9 h 10 min 45 s
+ 3 h 55 min 30 s

An atlas gives average travel times. Use this information to answer Exercises 17-19.

Average Travel Times	
Baton Rouge to Mobile	4 h 40 min
Mobile to Tallahassee	5 h 50 min
Tallahassee to Jacksonville	3 h 35 min

17. What is the average travel time from Baton Rouge to Tallahassee going through Mobile?

18. What is the average travel time from Mobile to Jacksonville going through Tallahassee?

19. What is the average travel time from Baton Rouge to Jacksonville going through Mobile and Tallahassee?

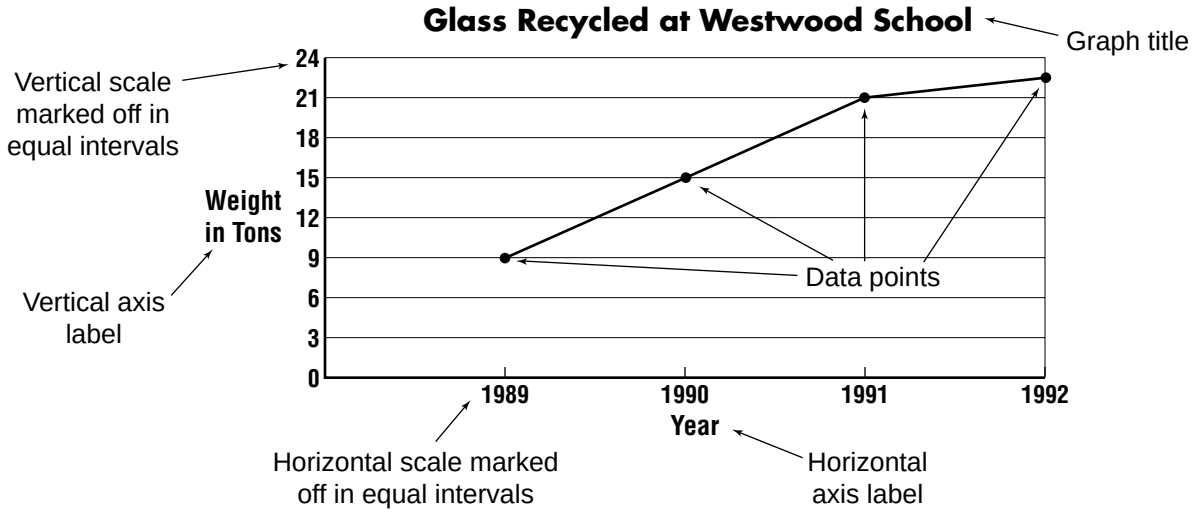
20. Wesley Paul set an age group record in the 1977 New York Marathon. He ran the race in 3 hours 31 seconds. He was 8 years old at the time. If he ran 2 hours 58 minutes 48 seconds in practice the day before the race, for how long did Wesley run on both days?

SKILL 48

Name _____ Date _____ Period _____

Line Graphs

The diagram shows the parts of a graph.



Solve.

1. Make a line graph for this set of data.

Number of Votes Expected	
Date	**Number of Votes**
3/15	18
3/30	11
4/15	15
4/30	9

2. Make a line graph for this set of data.

Evans Family Electric Bill	
Month	**Amount**
March	$129.90
April	$112.20
May	$105.00
June	$88.50

SKILL 48

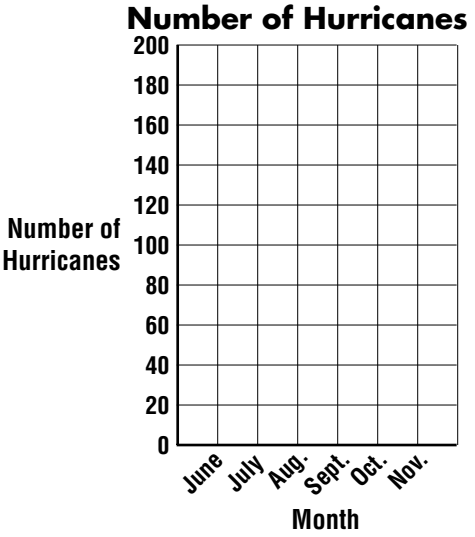
Name _____ Date _____ Period _____

Line Graphs *(continued)*

Refer to the following table for Exercises 1-2.

Recorded Number of Hurricanes by Month

Month	No. of Hurricanes
June	23
July	36
Aug.	149
Sept.	188
Oct.	95
Nov.	21



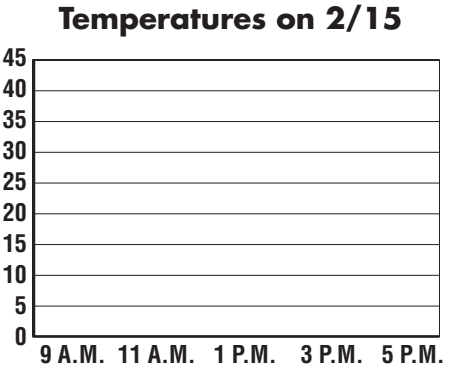
3. Complete the line graph for the data in the table.

4. After which month does the number of hurricanes start to decrease?

Use the data in the table to complete the line graph.

5. **Temperatures on 2/15**

Time	Temperature
9:00 A.M.	32° F
11:00 A.M.	35° F
1:00 P.M.	38° F
3:00 P.M.	42° F
5:00 P.M.	39° F

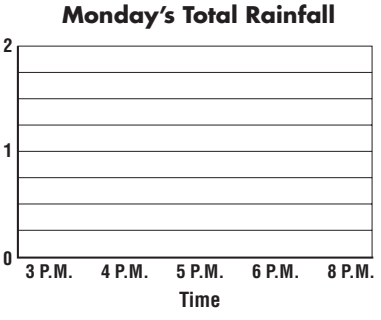


Solve. Use the line graph.

6. During which hour did the most rainfall occur?

7. How many inches of rain fell between 4 P.M. and 6 P.M.?

8. How many inches of rain fell between 3 P.M. and 8 P.M.?



SKILL 49

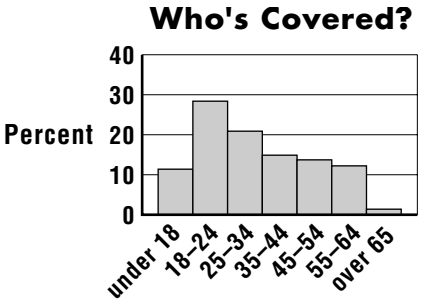
Name _____ Date _____ Period _____

Histograms

A **histogram** uses bars to display numerical data that have been organized into equal intervals.

Example **The table shows the percent of people in several age groups who are not covered by health insurance. Make a histogram of the data.**

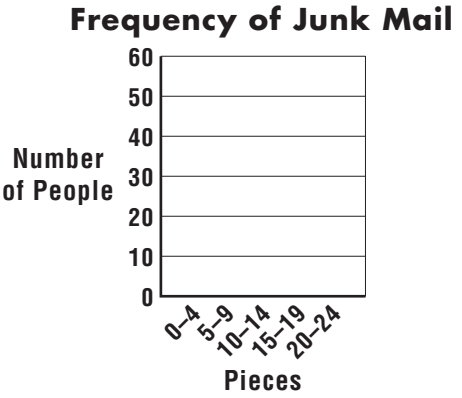
Age	Percent
under 18	12.4%
18-24	28.9%
25-34	20.9%
35-44	15.5%
45-54	14.0%
55-64	12.9%
over 65	1.2%



Make a histogram of the data below.

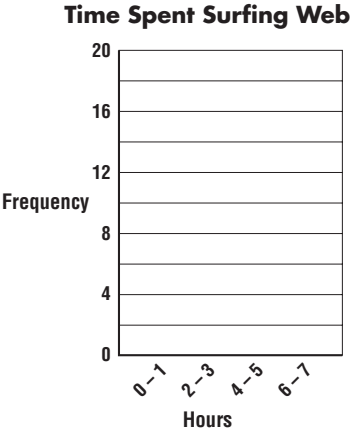
1.

Pieces of Junk Mail	Frequency
0-4	25
5-9	35
10-14	50
15-19	40
20-24	15



2.

Time Spent Surfing the Web (in hours per day)	Frequency
0-1	20
2-3	18
4-5	2
6-7	1

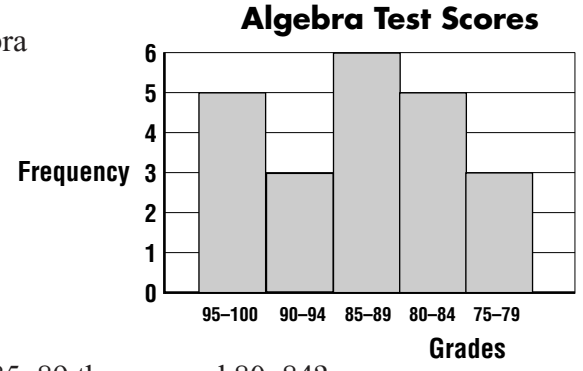


SKILL 49

Name _____ Date _____ Period _____

Histograms *(continued)*

Use the histogram at the right to answer each question.



3. How many students took the algebra test?

4. Which grade has the most test scores?

5. Which grades have the same number of test scores?

6. How many more students earned 85–89 than earned 80–84?

7. Make a frequency table of the algebra scores.

A survey was taken that asked people their height in inches. The data are shown below.

68	*69*	*72*	*64*	*74*	*56*	*62*	*58*
69	*65*	*70*	*59*	*71*	*67*	*66*	*64*
73	*78*	*70*	*52*	*61*	*68*	*67*	*66*

8. Make a frequency table and histogram of the data. Use the intervals 51-55, 56-60, 61-65, 66-70, 71-75, and 76-80.

9. How many heights are in the 66-70 interval?

10. How many people in the survey are taller than 5 feet?

11. How many people in the survey are shorter than 5 feet?

12. What interval has the greatest number of heights?

13. How many people were surveyed?

SKILL 50

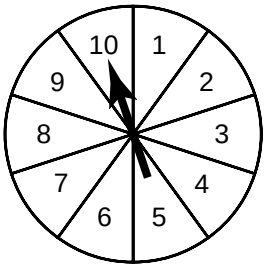
Name _____ Date _____ Period _____

Probability

The **probability** of an event is the ratio of the number of ways an event can occur to the number of possible outcomes.

$$\text{probability of an event} = \frac{\text{number of ways the event can occur}}{\text{number of possible outcomes}}$$

Example **On the spinner below, there are ten equally likely outcomes. Find the probability of spinning a number less than 5.**



Numbers less than 5 are 1, 2, 3, and 4.
There are 10 possible outcomes.

Probability of number less than 5 $= \frac{4}{10}$ or $\frac{2}{5}$.

The probability of spinning a number less than 5 is $\frac{2}{5}$.

A box of crayons contains 3 shades of red, 5 shades of blue, and 2 shades of green. If a child chooses a crayon at random, find the probability of choosing each of the following.

1. a green crayon

2. a red crayon

3. a blue crayon

4. a crayon that is *not* red

5. a red or blue crayon

6. a red or green crayon

SKILL 50

Name _____ Date _____ Period _____

Probability *(continued)*

A card is chosen at random from a deck of 52 cards. Find the probability of choosing each of the following.

7. a red card

8. the jack of diamonds

9. an ace

10. a black 10

11. a heart

12. *not* a club

A cooler contains 2 cans of grape juice, 3 cans of grapefruit juice, and 7 cans of orange juice. If a person chooses a can of juice at random, find the probability of choosing each of the following.

13. grapefruit juice

14. orange juice

15. grape juice

16. orange or grape juice

17. *not* orange juice

18. *not* grape juice

Businesses use statistical surveys to predict customers' future buying habits. A department store surveyed 200 customers on a Saturday in December to find out how much each customer spent on their visit to the store. Use the results at the right to answer Exercises 19–21.

Amount Spent	Number of Customers
Less than $2	14
$2–$4.99	36
$5–$9.99	42
$10–$19.99	32
$20–$49.99	32
$50–$99.99	22
$100 or more	22

19. What is the probability that a customer will spend less than $2.00?

20. What is the probability that a customer will spend less than $10.00?

21. What is the probability that a customer will spend between $20.00 and $100.00?

SKILL #

Name _____ Date _____ Period _____

6. How many more students earned 85–89 than earned 80–84?

7. Make a frequency table of the algebra scores.

6. How many more students earned 85–89 than earned 80–84?

7. Make a frequency table of the algebra scores.

34. $\frac{3}{4}, \frac{2}{5}, \frac{5}{8}, \frac{1}{2}$

35. $\frac{2}{3}, \frac{4}{9}, \frac{5}{6}, \frac{7}{12}$

36. $\frac{1}{3}, \frac{2}{7}, \frac{3}{14}, \frac{1}{6}$

37. $\frac{7}{15}, \frac{3}{5}, \frac{5}{12}, \frac{1}{2}$

38. $\frac{11}{12}, \frac{5}{6}, \frac{3}{4}, \frac{9}{16}$

39. $\frac{4}{5}, \frac{2}{3}, \frac{11}{35}, \frac{7}{9}$

40. $\frac{7}{8}, \frac{4}{5}, \frac{3}{4}, \frac{9}{10}$

41. $\frac{1}{3}, \frac{2}{5}, \frac{3}{12}, \frac{3}{10}$

42. $\frac{1}{2}, \frac{3}{5}, \frac{2}{7}, \frac{5}{9}$

43. $\frac{1}{10}, \frac{2}{3}, \frac{1}{12}, \frac{5}{6}$

1. 0.525 **2.** 0.45 **3.** 0.333…

4. 0.43 **5.** 0.8 **6.** 0.1212…

7. 0.345 **8.** 0.1862 **9.** 0.4555…

7. 0.345 **8.** 0.1862 **9.** 0.4555…

11. 0.345 **11.** 0.1862 **12.** 0.4555…

1. 0.66 **2.** 0.08 **3.** 0.75 **4.** 0.001

5. 1.19 **6.** 0.72 **7.** 0.136 **8.** 4.02

9. 0.18 **8.** 0.36 **11.** 0.09 **12.** 0.2

13. 0.625 **14.** 0.007 **15.** 1.4 **16.** 0.093

GLENCOE MATHEMATICS

TEACHER GUIDE

ALGEBRA

Prerequisite Skills Workbook: Remediation and Intervention

Includes:

- Correlations to *Glencoe Pre-Algebra, Glencoe Algebra: Concepts and Applications,* and *Glencoe Algebra 1*
- Answers for each worksheet

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8787 Orion Place
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ISBN: 0-07-830096-7 *Teacher Guide for Algebra Prerequisite Skills Workbook*

1 2 3 4 5 6 7 8 9 10 024 11 10 09 08 07 06 05 04 03 02

Contents

Guide for Using the *Algebra Prerequisite Skills Workbook: Remediation and Intervention*

INTRODUCTION The Prerequisite Skills Workbook is a consumable booklet from Glencoe designed to review the basic arithmetic and measurement concepts assumed as prior knowledge before beginning first-year algebra. It contains 50 lessons divided into six areas of content. Each skill lesson has two pages of examples and practice exercises to review mathematical concepts. A complete list of the skills presented in the workbook can be found on page iii.

STUDENT WORKBOOKS The Prerequisite Skills Workbook can be used with Glencoe's *Pre-Algebra, Algebra: Concepts and Applications,* and *Algebra 1.* The table on pages v–vi shows which skills correspond to lessons in each Student Edition. Your Teacher Wraparound Edition for each text also includes references for when review of each skill would be appropriate. In *Pre-Algebra*, some of the skills are taught in the Student Edition and are not included in the correlation as a prerequisite skill for those student lessons.

HOW DO I USE THE WORKBOOKS? This workbook can be used to assess a student's knowledge of the skill before beginning a chapter in which the skill is essential. You may use the skill lesson for homework or as an in-class assessment.

The workbook can also be used as a tool when tutoring students who seem to be having difficulty with the skill as you present algebra topics that use that skill.

You may find that students entering your classroom mid-year have different backgrounds from your other students. These worksheets can be used to assess their prior knowledge or refresh concepts you have already reviewed in earlier lessons.

Correlation of Prerequisite Skills

for use with

Glencoe Pre-Algebra
Glencoe Algebra: Concepts and Applications (C & A)
Glencoe: Algebra 1

	Prerequisite Skill	Page(s)	Pre-Algebra (LESSONS)	Algebra: C&A (LESSONS)	Algebra 1 (LESSONS)
1	Comparing and Ordering Whole Numbers	1–2	1-1, 2-1, 5-10, 7-3, 7-4, 7-5, 7-6, 8-10	2-1, 8-6	1-3, 2-1, 13-4
2	Rounding Whole Numbers	3–4	1-1	2-6, 9-1	2-1
3	Adding Whole Numbers	5–6	1-1, 1-2, 1-3, 1-4, 1-5, 2-1, 2-2, 2-3, 3-3	2-3, 3-5	1-2, 1-3, 1-4, 4-7
4	Subtracting Whole Numbers	7–8	1-1, 1-2, 1-3, 1-4, 1-5, 2-1, 2-2, 2-3, 3-3	2-4, 7-1	1-2, 1-3, 1-4, 4-7
5	Multiplying Whole Numbers	9–10	1-2, 1-3, 1-4, 1-5, 2-4, 3-1, 3-4	1-2, 3-4	1-1, 1-2, 1-3, 3-3, 10-7
6	Dividing Whole Numbers	11–12	1-2, 1-3, 2-5, 3-4	4-5, 4-7	1-2, 1-3, 1-4, 3-3, 10-7
7	Divisibility Rules	13–14	4-1, 4-3	8-5, 10-1	9-1, 9-2, 9-4, 9-5
8	Decimals and Place Value	15–16	5-1, 6-4	9-2	2-1, 2-2, 2-3, 2-4, 2-5
9	Rounding Decimals	17–18	5-1 , 6-4	8-7, 10-5	2-6, 3-7, 12-7
10	Comparing and Ordering Decimals	19–20	5-8	14-1, 14-2	2-1, 2-2, 2-3, 2-4, 13-4
11	Adding Decimals	21–22	3-5, 5-8, 5-9, 7-4	3-3, 12-4	1-2, 1-4, 2-2, 3-2
12	Subtracting Decimals	23–24	3-5, 5-9, 7-4	4-6, 12-5	1-2, 2-2, 3-5
13	Multiplying Decimals by Whole Numbers	25–26	3-5	5-4, 8-1	1-3, 1-4, 2-3
14	Multiplying Decimals by Decimals	27–28	5-9, 7-5	9-5, 11-7	2-3, 3-6, 7-2
15	Dividing Decimals by Whole Numbers	29–30	5-8	12-6, 13-5	2-4, 5-2
16	Dividing Decimals by Decimals	31–32	5-9, 7-5	6-2	2-4
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18	Dividing Decimals by Powers of Ten	35–36	4-8	12-3	8-3
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20	Simplifying Fractions	39–40	5-5, 5-7, 6-1, 6-2, 6-6	7-7, 13-4	2-2, 2-3, 2-4, 5-1
21	Writing Improper Fractions as Mixed Numbers	41–42	5-5, 5-7	9-3	3-7
22	Writing Mixed Numbers as Improper Fractions	43–44	5-5, 5-7	PST 1*	3-7
23	Comparing and Ordering Fractions	45–46	5-10	8-3, 12-1	2-1,
24	Multiplying Fractions	47–48	5-9, 5-10, 7-5	5-7, 11-6	1-3, 2-3, 2-4, 10-7, 14-3

	Prerequisite Skill	Page(s)	Pre-Algebra (LESSONS)	Algebra: C&A (LESSONS)	Algebra 1 (LESSONS)
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26	Dividing Fractions	51–52	5-9, 7-5	15-2, PST 3*	2-4, 3-3
27	Dividing Fractions and Mixed Numbers	53–54	5-9, 7-5	4-3, 6-6	2-4
28	Adding Fractions	55–56	5-9, 7-4	4-2, 15-5	1-3, 1-4, 1-5, 2-1, 2-2, 14-3
29	Adding Fractions and Mixed Numbers	57–58	5-9, 7-4	3-2	1-3, 2-2
30	Subtracting Fractions	59–60	5-9, 7-4	3-6, 15-4	2-2, 3-2
31	Subtracting Fractions and Mixed Numbers	61–62	5-9, 7-4	PST 5*	1-3, 2-2, 11-6
32	Writing Fractions as Decimals	63–64		6-5, 14-5	2-1, 2-4, 5-1
33	Writing Decimals as Fractions	65–66		7-2	2-1, 2-2, 2-3, 2-4
34	Writing Decimals as Percents	67–68		5-7, PST 9*	2-6, 3-6, 14-3
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40	Capacity in the Customary System	79–80		5-1, 12-2	6-5
41	Weight in the Customary System	81–82		1-4, 2-5	3-8
42	Length in the Metric System	83–84		8-2, 13-2	6-5
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50	Probability	99–100		6-1, 11-2	2-6, 14-3

* PST entries refer to the Preparing for Standardized Tests lessons in *Algebra: Concepts and Applications.* The number following PST is the chapter number, so that PST 9 means Chapter 9 Preparing for Standardized Tests.

Skill 1 *(pp. 1-2)*

1. 9 > 7
2. 38 < 83
3. 480 > 48
4. 500 > 498
5. 832 = 832
6. 365 < 375
7. <
8. >
9. >
10. <
11. <
12. <
13. >
14. =
15. >
16. <
17. =
18. >
19. <
20. >
21. 46, 48, 52, 67
22. 102, 112, 120, 201
23. 897, 978, 987, 990
24. 2058, 2060, 2063
25. 99, 809, 989
26. 4007, 4070, 4700
27. 402, 615, 635, 865
28. 2143, 2341, 2413
29. 206, 260, 602, 620
30. 6003, 6030, 6300
31. Indiana, Ohio, Wisconsin, Illinois, Michigan
32. Michigan

Skill 2 *(pp. 3-4)*

1. 680
2. 680
3. 700
4. 660
5. 800
6. 900
7. 800
8. 900
9. 1000
10. 1000
11. 3000
12. 3000
13. 2000
14. 5000
15. 6000
16. 4000
17. 4000
18. 4000
19. 6000
20. 270
21. 4090
22. 400,000
23. 570,000
24. 43,700
25. 308,000
26. 14,000
27. 10,000
28. 3,000,000
29. 18,000,000
30. 530,000
31. 800,000
32. 6,000,000
33. 24,000,000
34. 128,000,000
35. 347,000,000
36. Arctic, Indian, Atlantic, Pacific
37. Arctic, 9,000,000; Atlantic, 87,000,000; Indian, 73,000,000; Pacific, 166,000,000

Skill 3 *(pp. 5-6)*

1. 137
2. 145
3. 76
4. 151
5. 835
6. 543
7. $1053
8. 816
9. 4393
10. 8025
11. 5662
12. 4979
13. 5337
14. 2797
15. 9105
16. 16,211
17. 21,061
18. 30,791
19. 24,347
20. 40,811
21. 111
22. 177
23. 699
24. 648
25. 381
26. 590
27. 746
28. 925
29. 200
30. 2314
31. $219
32. 6040
33. $331
34. 312 copies

Skill 4 *(pp. 7-8)*

1. 34
2. 16
3. 224
4. 563
5. 26
6. 42
7. $19
8. 417
9. 268
10. 469
11. 168
12. 195
13. 217
14. 139
15. 175
16. 108
17. 1075
18. 399
19. 1679
20. 4898
21. 681
22. 2369
23. 6388
24. 4879
25. 15,890
26. 18,587
27. 32,309
28. 12,997
29. $42
30. 320 mi

Skill 5 (pp. 9-10)
1. 17,500
2. 2408
3. 13,734
4. $7938
5. $1375
6. 10,560
7. 235,080
8. 565,786
9. 249,665
10. 23,709
11. 1,280,720
12. 1,406,594
13. 33,728
14. 265,500
15. 128,320
16. 490,850
17. 6552
18. 2628
19. 256,800
20. 275,614
21. $40,265
22. 13,500
23. $9075
24. 4,820,525
25. 1512 seats
26. 12,510 lb

Skill 6 (pp. 11-12)
1. 651
2. 5 R9
3. 11
4. 50 R1
5. 20
6. 50
7. 64
8. 51 R14
9. 84
10. 85 R4
11. 874 R2
12. 98
13. 53 R4
14. 16
15. 27 R1
16. 67 R3
17. $36
18. 59 R2
19. 40
20. 29 R60
21. 607
22. 450
23. 289
24. 873
25. 9378 R1
26. 287 R7
27. 16 tents
28. 7 backpacks

Skill 7 (pp. 13-14)
1. no
2. yes
3. yes
4. no
5. yes
6. yes
7. no
8. no
9. no
10. yes
11. yes
12. yes
13. 2, 4, 5, 8, 10
14. none
15. 2, 3, 4, 5, 6, 9, 10
16. 3, 9
17. 2, 4, 8
18. 2, 3, 5, 6, 10
19. no
20. yes
21. yes
22. yes
23. no
24. yes
25. no
26. yes
27. yes
28. yes
29. no
30. yes
31. yes
32. yes
33. yes
34. no
35. any multiple of 15
36. Sample answer: 3333
37. Sample answer: 1001
38. Sample answer: 1804

Skill 8 (pp. 15-16)
1. four tenths
2. nine thousandths
3. one hundredth
4. six tenths
5. eight thousandths
6. six ten-thousandths
7. nine hundredths
8. seven thousandths
9. four ten-thousandths
10. eight hundredths
11. two hundredths
12. seven ten-thousandths
13. 0.12
14. 4.3
15. 0.005
16. 0.0051
17. 75.009
18. 104.034
19. 20.0445
20. 16.045
21. 56.34
22. six and four hundredths
23. seventeen thousandths
24. five and one thousand six hundred forty-eight ten-thousandths
25. eighteen and four hundred fifty-six thousandths
26. one hundred forty-five and seven thousandths
27. twenty-eight and seven hundred ninety-six thousandths

(continued)

28. seven hundred eighty-seven and four hundred sixty-two thousandths
29. nine and forty-five ten-thousandths
30. nineteen and thirty-two hundredths
31. 43.49

Skill 9 (pp. 17-18)
1. 7.8
2. 0.4
3. 5.1
4. 6.3
5. 0.47
6. 26.4
7. 1.2
8. 362.085
9. 15.55
10. 151.39
11. 0.6
12. 631.001
13. 17.33
14. 3.1
15. 1.6
16. 1.73
17. 54
18. 0.6
19. 0.91
20. 80.7
21. 232
22. 1.1
23. 0.6
24. 0.8
25. 0.50
26. 3.018
27. 71.4
28. 10
29. 32.7
30. 2.67
31. 4.051
32. 90.0
33. 0.13
34. 5.9
35. 521
36. 0.710
37. 1.85
38. 34.6
39. 29.3
40. 56.092
41. 1200
42. 0.5
43. 0.4

Skill 10 (pp. 19-20)
1. true
2. false
3. false
4. true
5. true
6. false
7. <
8. <
9. =
10. >
11. =
12. >
13. <
14. <
15. =
16. =
17. <
18. >
19. 0.003, 0.03, 0.3, 3.0
20. 5.203, 5.21, 5.23, 5.3
21. 0.866, 0.87, 0.9, 0.91
22. 2.03, 2.033, 2.13, 2.3
23. 16.001, 16.04, 16.4, 16.45
24. 8.01, 8.07, 8.17, 8.7
25. 114.002, 114.02, 114.2, 114.202
26. 0.306, 0.31, 0.36, 0.362
27. Maria
28. Lopez, Blalock, Higuchi

Skill 11 (pp. 21-22)
1. $34.12
2. 1.114
3. 77.11
4. 64.519
5. 118.55
6. 157.48
7. 25.057
8. 578.056
9. 23.06
10. 73.012
11. 266.356
12. 26.283
13. 517.05
14. 86.625
15. 10.822
16. 24.43
17. 1.7
18. 17.21
19. 1.223
20. $10.24
21. 11.145
22. $52.44
23. 3.64
24. 12.7
25. 22.252
26. 11.833
27. 5.417
28. 552.29
29. 38.52
30. $20.09

Skill 12 (pp. 23-24)

1. 7.065
2. 706.09
3. 12.047
4. $1.66
5. 11.741
6. 1.92
7. 0.171
8. 9.187
9. 5.574
10. 34.853
11. 10.761
12. 10.37
13. 56.68
14. 16.481
15. 41.55
16. 230.876
17. 474.39
18. 60.624
19. 5.852
20. 574.109
21. 2.5
22. 0.25
23. 30.87
24. $25.19
25. 0.63
26. 6.639
27. $63.31
28. 4.912
29. 5.71
30. 3.988
31. 1.465
32. $76.17
33. 153.235
34. 16.618
35. $59.68
36. 18.4 mL

Skill 13 (pp. 25-26)

1. 18.4
2. 40.5
3. 43.2
4. 5.81
5. $62.40
6. 16.2
7. 2.52
8. $79.10
9. 94.71
10. 6.82
11. $193.44
12. 117.72
13. 67.8
14. 59.52
15. 294.12
16. 7947.6
17. 372.3
18. 1038.85
19. 69.6
20. 158.08
21. 3.75
22. $100.94
23. $3.45
24. 16.45
25. 3.61
26. 963.7
27. 70.05
28. 78.306
29. $198
30. 78.65
31. $12.46
32. 6500 yd

Skill 14 (pp. 27-28)

1. 8.82
2. 2.43
3. 15.552
4. 5.6
5. 0.012
6. 4.16
7. 0.0126
8. 0.732
9. 0.000225
10. 4.18
11. 0.0718
12. 0.0854
13. 2.177
14. 0.42
15. 32.13
16. 9.282
17. 0.0156
18. 8.439
19. 0.03294
20. 2.652
21. 0.3213
22. 31.248
23. 0.016
24. 24.96
25. 0.207
26. 3.6
27. 0.00069
28. 6.8016
29. 0.387
30. 0.0124
31. 15.66
32. 0.192
33. 80.04
34. 0.0012
35. 8.12
36. 1.44
37. 9.8

Skill 15(pp. 29-30)

1. 1.4
2. $0.46
3. $5.91
4. 0.02
5. 1.6
6. $0.09
7. 3.06
8. $2.90
9. 0.25
10. 1.4
11. 1.58
12. 2.7
13. 3.6
14. 0.38
15. 1.7
16. 0.36
17. 25.15
18. 2.7
19. 1.95
20. $4.16
21. 0.025
22. 0.215
23. 0.31
24. 1.7275
25. 0.87
26. 1.47
27. 0.76
28. 5.72
29. $0.09
30. 5.675 min

Skill 16 (pp. 31-32)

1. 34 ÷ 11
2. 76,440 ÷ 6
3. 5.6 ÷ 4
4. 89,450 ÷ 908
5. 56.75 ÷ 68
6. 8.64 ÷ 12
7. 8.4 ÷ 2
8. 10.2 ÷ 3
9. 39 ÷ 13
10. 13,600 ÷ 3
11. 16.22 ÷ 14
12. 0.25 ÷ 35
13. 7
14. 0.9
15. 430
16. 0.08
17. 12
18. 1.6
19. 19
20. 0.06
21. 205
22. 0.68
23. 968
24. 4
25. 87
26. 0.00115
27. 2001
28. 600
29. 0.015
30. 8.5
31. 3
32. 49
33. 651
34. 1550
35. 180
36. 982
37. 36
38. 72.72
39. 10.02
40. 22
41. 20
42. 24
43. 0.88
44. 42.1
45. 4.1

Skill 17 (pp. 33-34)

1. 0.08
2. 5580
3. 590,000
4. 1.4
5. 0.00013
6. 1800
7. 1700
8. 0.00146
9. 1.2
10. 77,000
11. 14,300
12. 150
13. 15
14. 1360
15. 0.184
16. 0.017
17. 0.0008
18. 14,320,000
19. 430
20. 0.135
21. 0.55
22. 13,700
23. 43,000
24. 28,100
25. 780
26. 654
27. 0.198
28. 87,600
29. 0.15
30. 0.125
31. 1400
32. 0.385
33. 88
34. 1400
35. 1340
36. 1.48
37. 12.3
38. 4326
39. 0.08118
40. 4,800,000
41. 68,200
42. 0.02813

Skill 18 (pp. 35-36)

1. 600
2. 0.357
3. 0.0764
4. 180
5. 145
6. 0.24
7. 0.47
8. 1530
9. 610
10. 0.088
11. 2.34
12. 3.4
13. 19
14. 0.00127
15. 765,000
16. 110
17. 4
18. 0.1561
19. 5.4
20. 1520
21. 6600
22. 1.28
23. 55.510
24. 4.26
25. 8.7
26. 737
27. 891,000
28. 6.78
29. 2400
30. 1640
31. 0.0013
32. 573
33. 0.99
34. 1.48
35. 0.00128
36. 165
37. 1540
38. 3546
39. 41,140
40. 0.036
41. 761
42. 253.2

Skill 19 (pp. 37-38)

1. 9
2. 8
3. 16
4. 15
5. 25
6. 14
7. 27
8. 16
9. 16
10. 1
11. 1
12. 1
13. 5
14. 8
15. 8
16. 9
17. 9
18. 24
19. 18
20. 60
21-28. Sample answers are given.
21. $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}$
22. $\frac{8}{10}, \frac{12}{15}, \frac{20}{25}$
23. $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}$
24. $\frac{10}{12}, \frac{15}{18}, \frac{20}{24}$
25. $\frac{14}{16}, \frac{21}{24}, \frac{28}{32}$
26. $\frac{18}{20}, \frac{27}{30}, \frac{36}{40}$
27. $\frac{10}{12}, \frac{5}{6}$
28. $\frac{5}{10}, \frac{1}{2}$

Skill 20 (pp. 39-40)

1. $\frac{2}{3}$
2. $\frac{1}{2}$
3. $\frac{1}{2}$
4. $\frac{4}{5}$
5. $\frac{3}{7}$
6. $\frac{2}{3}$
7. $\frac{1}{4}$
8. $\frac{1}{4}$
9. $\frac{1}{2}$
10. $\frac{2}{3}$
11. $\frac{2}{3}$
12. $\frac{3}{4}$
13. $\frac{1}{3}$
14. $\frac{3}{5}$
15. $\frac{1}{5}$
16. $\frac{1}{3}$
17. $\frac{3}{7}$
18. $\frac{7}{15}$
19. $\frac{5}{9}$
20. $\frac{1}{4}$
21. 3
22. $\frac{1}{10}$
23. $\frac{5}{8}$
24. $\frac{1}{2}$
25. $\frac{2}{5}$
26. $\frac{1}{5}$
27. $\frac{2}{5}$
28. $\frac{4}{5}$
29. $\frac{1}{6}$
30. $\frac{1}{2}$
31. $\frac{3}{11}$
32. $\frac{5}{8}$
33. $\frac{2}{5}$ month
34. $\frac{1}{4}$ hour

Skill 21 (pp. 41-42)

1. $1\frac{2}{5}$
2. $1\frac{5}{8}$
3. $3\frac{1}{4}$
4. $3\frac{1}{7}$
5. $1\frac{1}{2}$
6. $1\frac{3}{4}$
7. $1\frac{1}{2}$
8. $1\frac{2}{5}$
9. $1\frac{3}{4}$
10. $2\frac{1}{2}$
11. $3\frac{2}{3}$
12. $2\frac{1}{2}$
13. $2\frac{3}{5}$
14. $4\frac{1}{2}$
15. 5
16. $2\frac{5}{8}$
17. $1\frac{5}{12}$
18. $2\frac{2}{5}$
19. $4\frac{1}{3}$
20. $1\frac{1}{2}$
21. $2\frac{1}{3}$
22. $4\frac{1}{5}$
23. $3\frac{1}{6}$
24. $3\frac{7}{8}$
25. $3\frac{1}{5}$
26. $1\frac{4}{5}$
27. $2\frac{2}{3}$
28. 2
29. $1\frac{1}{2}$
30. $1\frac{1}{4}$
31. $2\frac{1}{2}$
32. $2\frac{2}{5}$
33. $7\frac{1}{3}$ mi
34. $1\frac{3}{4}$ yr

Skill 22 (pp. 43-44)

1. $\frac{19}{3}$
2. $\frac{23}{4}$
3. $\frac{43}{6}$
4. $\frac{73}{8}$
5. $\frac{35}{16}$
6. $\frac{43}{10}$
7. $\frac{14}{3}$
8. $\frac{18}{5}$
9. $\frac{41}{7}$
10. $\frac{34}{9}$
11. $\frac{35}{12}$
12. $\frac{39}{8}$
13. $\frac{11}{8}$
14. $\frac{27}{5}$
15. $\frac{11}{4}$
16. $\frac{15}{8}$
17. $\frac{19}{12}$
18. $\frac{9}{2}$
19. $\frac{29}{10}$
20. $\frac{29}{8}$
21. $\frac{11}{3}$
22. $\frac{19}{4}$
23. $\frac{17}{3}$
24. $\frac{41}{8}$
25. $\frac{59}{10}$
26. $\frac{55}{8}$
27. $\frac{43}{10}$
28. $\frac{32}{3}$
29. $\frac{115}{12}$
30. $\frac{93}{11}$
31. $\frac{107}{7}$
32. $\frac{88}{7}$
33. $\frac{59}{5}$
34. $\frac{56}{3}$
35. $\frac{81}{4}$
36. $\frac{148}{9}$
37. $\frac{77}{13}$
38. $\frac{210}{13}$
39. $\frac{73}{3}$
40. $\frac{152}{17}$
41. $\frac{158}{17}$
42. $\frac{139}{19}$
43. $\frac{53}{9}$
44. $\frac{218}{13}$

Skill 23 (pp. 45-46)

1. 15
2. 12
3. 14
4. 15
5. 24
6. 14
7. 30
8. 36
9. 48
10. <
11. =
12. >
13. <
14. >
15. =
16. <
17. >
18. =
19. >
20. >
21. <
22. <
23. =
24. >
25. <
26. >
27. =
28. >
29. >
30. <
31. =
32. <
33. >
34. $\frac{2}{5}, \frac{1}{2}, \frac{5}{8}, \frac{3}{4}$
35. $\frac{4}{9}, \frac{7}{12}, \frac{2}{3}, \frac{5}{6}$
36. $\frac{1}{6}, \frac{3}{14}, \frac{2}{7}, \frac{1}{3}$
37. $\frac{5}{12}, \frac{7}{15}, \frac{1}{2}, \frac{3}{5}$
38. $\frac{9}{16}, \frac{3}{4}, \frac{5}{6}, \frac{11}{12}$
39. $\frac{11}{35}, \frac{2}{3}, \frac{7}{9}, \frac{4}{5}$
40. $\frac{3}{4}, \frac{4}{5}, \frac{7}{8}, \frac{9}{10}$
41. $\frac{3}{12}, \frac{3}{10}, \frac{1}{3}, \frac{2}{5}$
42. $\frac{2}{7}, \frac{1}{2}, \frac{5}{9}, \frac{3}{5}$
43. $\frac{1}{12}, \frac{1}{10}, \frac{2}{3}, \frac{5}{6}$

Skill 24 (pp. 47-48)

1. $\frac{1}{6}$
2. $\frac{3}{14}$
3. $\frac{1}{5}$
4. $\frac{3}{7}$
5. $\frac{1}{2}$
6. $\frac{1}{16}$
7. $\frac{1}{15}$
8. $\frac{5}{16}$
9. $\frac{1}{3}$
10. $\frac{1}{4}$
11. $\frac{1}{49}$
12. $\frac{1}{9}$
13. $\frac{1}{2}$
14. $\frac{2}{21}$
15. $\frac{1}{12}$
16. $\frac{1}{10}$
17. $\frac{16}{35}$
18. $\frac{4}{5}$
19. $\frac{2}{7}$
20. $\frac{7}{18}$
21. $\frac{15}{32}$
22. $\frac{1}{16}$ tsp
23. $\frac{1}{9}$ c
24. $\frac{1}{3}$ tsp
25. $\frac{1}{6}$ c
26. $\frac{2}{15}$ of Earth
27. $\frac{1}{5}$ of the students

Skill 25 (pp. 49-50)

1. $\frac{1}{6}$
2. $\frac{3}{14}$
3. $\frac{1}{5}$
4. $\frac{3}{7}$
5. $1\frac{1}{2}$
6. $\frac{1}{2}$
7. $\frac{4}{3}$ or $1\frac{1}{3}$
8. $\frac{1}{16}$
9. 9
10. $\frac{5}{4}$ or $1\frac{1}{4}$
11. $\frac{25}{3}$ or $8\frac{1}{3}$
12. $\frac{3}{5}$
13. $\frac{2}{3}$
14. $\frac{11}{2}$ or $5\frac{1}{2}$
15. $\frac{4}{3}$ or $1\frac{1}{3}$
16. $\frac{1}{3}$
17. $\frac{1}{12}$
18. $\frac{4}{3}$ or $1\frac{1}{3}$
19. $\frac{1}{20}$
20. $\frac{1}{5}$
21. $\frac{1}{3}$
22. $\frac{1}{3}$
23. $\frac{7}{18}$
24. $\frac{1}{2}$
25. $\frac{2}{7}$
26. $\frac{5}{32}$
27. $\frac{10}{27}$
28. $\frac{28}{5}$ or $5\frac{3}{5}$
29. $\frac{24}{7}$ or $3\frac{3}{7}$
30. 4
31. $\frac{15}{8}$ or $1\frac{7}{8}$
32. 4
33. $\frac{13}{6}$ or $2\frac{1}{6}$

Skill 26 (pp. 51-52)

1. $\frac{3}{2}$ or $1\frac{1}{2}$

2. $\frac{12}{5}$ or $2\frac{2}{5}$

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

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

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

6. 6

7. 2

8. $\frac{7}{2}$ or $3\frac{1}{2}$

9. $\frac{16}{25}$

10. 2

11. $\frac{3}{2}$ or $1\frac{1}{2}$

12. $\frac{14}{5}$ or $2\frac{4}{5}$

13. $\frac{4}{3}$ or $1\frac{1}{3}$

14. $\frac{20}{21}$

15. $\frac{3}{2}$ or $1\frac{1}{2}$

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

17. $\frac{15}{2}$ or $7\frac{1}{2}$

18. $\frac{6}{5}$ or $1\frac{1}{5}$

19. about $\frac{4}{7}$

20. 6 pieces

21. 2 yd

22. $\frac{9}{8}$ or $1\frac{1}{8}$ ft

23. $\frac{1}{2}$ m

24. 2 m

Skill 27 (pp. 53-54)

1. $\frac{11}{6}$

2. $\frac{5}{14}$

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

4. 5

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

6. $\frac{16}{25}$

7. 2

8. 24

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

10. $\frac{1}{3}$

11. $\frac{1}{2}$

12. 15

13. $\frac{1}{4}$

14. $\frac{8}{15}$

15. $\frac{50}{21}$ or $2\frac{8}{21}$

16. $\frac{1}{6}$

17. $\frac{21}{16}$ or $1\frac{5}{16}$

18. $\frac{25}{3}$ or $8\frac{1}{3}$

19. $\frac{39}{28}$ or $1\frac{11}{28}$

20. $\frac{3}{2}$ or $1\frac{1}{2}$

21. $\frac{12}{5}$ or $2\frac{2}{5}$

22. $\frac{4}{5}$

23. 12

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

25. $\frac{1}{2}$

26. $\frac{36}{49}$

27. 2

28. $\frac{4}{3}$ or $1\frac{1}{3}$

29. $\frac{1}{6}$

30. $\frac{11}{6}$ or $1\frac{5}{6}$

31. $\frac{13}{9}$ or $1\frac{4}{9}$

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

33. 4

34. $\frac{45}{17}$ or $2\frac{11}{17}$

Skill 28 (pp. 55-56)

1. $\frac{6}{7}$

2. 1

3. $\frac{13}{15}$

4. $\frac{6}{5}$ or $1\frac{1}{5}$

5. $\frac{12}{7}$ or $1\frac{5}{7}$

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

7. 1

8. 2

9. $\frac{5}{4}$ or $1\frac{1}{4}$

10. $\frac{17}{72}$

11. $\frac{1}{2}$

12. $\frac{31}{35}$

13. $\frac{13}{16}$

14. $\frac{11}{10}$ or $1\frac{1}{10}$

15. $\frac{5}{14}$

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

17. $\frac{7}{24}$

18. $\frac{11}{18}$

19. $\frac{9}{8}$ or $1\frac{1}{8}$

20. $\frac{13}{12}$ or $1\frac{1}{12}$

21. $\frac{19}{12}$ or $1\frac{7}{12}$

22. $\frac{5}{4}$ or $1\frac{1}{4}$ mi

23. $\frac{17}{35}$ of the crude oil

24. $\frac{1}{2}$ of the petroleum

Skill 29
(pp. 57-58)

1. $22\frac{7}{8}$
2. 15
3. $12\frac{1}{2}$
4. $20\frac{5}{12}$
5. $31\frac{3}{14}$
6. $25\frac{3}{10}$
7. $34\frac{1}{2}$
8. $19\frac{14}{15}$
9. $31\frac{7}{8}$
10. $14\frac{5}{9}$
11. $13\frac{2}{9}$
12. $13\frac{1}{5}$
13. $21\frac{1}{6}$
14. $21\frac{11}{24}$
15. $30\frac{3}{20}$
16. $25\frac{13}{15}$
17. $24\frac{1}{2}$
18. $23\frac{1}{8}$
19. $9\frac{31}{36}$
20. $31\frac{5}{9}$
21. $16\frac{9}{35}$
22. $24\frac{3}{8}$
23. $37\frac{1}{4}$
24. $28\frac{11}{36}$
25. $14\frac{15}{22}$
26. $19\frac{35}{36}$
27. $14\frac{41}{45}$
28. $17\frac{17}{20}$
29. $25\frac{1}{9}$
30. $31\frac{11}{21}$

Skill 30
(pp. 59-60)

1. $\frac{1}{6}$
2. $\frac{3}{5}$
3. $\frac{3}{8}$
4. $\frac{2}{3}$
5. $\frac{3}{7}$
6. $\frac{2}{3}$
7. $\frac{1}{2}$
8. $\frac{1}{6}$
9. $\frac{1}{2}$
10. $\frac{1}{2}$
11. $\frac{25}{42}$
12. $\frac{1}{7}$
13. $\frac{13}{30}$
14. $\frac{3}{4}$
15. $\frac{2}{9}$
16. $\frac{13}{40}$
17. $\frac{13}{36}$
18. $\frac{11}{36}$
19. $\frac{19}{48}$
20. $\frac{49}{120}$

Skill 31
(pp. 61-62)

1. $2\frac{2}{3}$
2. $5\frac{1}{4}$
3. $4\frac{1}{3}$
4. $3\frac{2}{3}$
5. $9\frac{3}{4}$
6. $13\frac{13}{24}$
7. $3\frac{13}{14}$
8. $10\frac{1}{2}$
9. $2\frac{2}{3}$
10. $5\frac{1}{4}$
11. $4\frac{1}{3}$
12. $3\frac{2}{3}$
13. $9\frac{3}{4}$
14. $13\frac{13}{24}$
15. $3\frac{13}{14}$
16. $10\frac{1}{2}$
17. $8\frac{1}{6}$
18. $4\frac{3}{7}$
19. $10\frac{5}{6}$
20. $1\frac{7}{12}$
21. $10\frac{13}{20}$
22. $5\frac{4}{9}$
23. $8\frac{7}{8}$
24. $8\frac{5}{8}$
25. $\frac{31}{33}$
26. $6\frac{3}{14}$
27. $6\frac{23}{36}$
28. $7\frac{1}{2}$
29. $2\frac{1}{6}$
30. $2\frac{14}{15}$

Skill 32
(pp. 63-64)

1. 0.16
2. 0.6%
3. 0.35
4. 0.06
5. 0.9
6. 0.875
7. $0.\overline{3}$
8. 0.875
9. $0.\overline{6}$
10. $0.\overline{5}$
11. 0.95
12. 0.025
13. 0.2
14. 0.65
15. $0.8\overline{3}$
16. 0.8
17. 0.7
18. 0.325
19. 0.78
20. 0.08
21. 0.4375
22. 0.272
23. 0.64
24. 0.99
25. 0.85
26. 0.02
27. 0.375
28. $0.\overline{6}$
29. 0.1¢ or $0.001
30. 37.5¢ or $0.375
31. 77.5¢ or $0.775
32. 100¢ or $1.00

Skill 33
(65-66)

1. $\frac{21}{40}$
2. $\frac{9}{20}$
3. $\frac{1}{3}$
4. $\frac{43}{100}$
5. $\frac{4}{5}$
6. $\frac{4}{33}$
7. $\frac{69}{200}$
8. $\frac{931}{5000}$
9. $\frac{41}{99}$
10. $\frac{57}{125}$
11. $\frac{8}{25}$
12. $\frac{2}{9}$
13. $\frac{7}{20}$
14. $\frac{12}{25}$
15. $\frac{191}{200}$
16. $\frac{8}{9}$
17. $\frac{5}{11}$
18. $\frac{4}{9}$
19. $\frac{113}{200}$
20. $\frac{87}{200}$
21. $\frac{69}{125}$
22. $\frac{171}{200}$
23. $\frac{421}{500}$
24. $\frac{118}{125}$
25. $\frac{183}{250}$
26. $\frac{49}{200}$
27. $\frac{97}{200}$
28. $\frac{2}{3}$
29. $\frac{85}{99}$
30. $\frac{1931}{2000}$

Skill 34
(pp. 67-68)

1. 66%
2. 8%
3. 75%
4. 0.1%
5. 119%
6. 72%
7. 13.6%
8. 402%
9. 18%
10. 36%
11. 9%
12. 20%
13. 62.5%
14. 0.7%
15. 140%
16. 9.3%
17. 80%
18. 54%
19. 375%
20. 2%
21. 25.8%
22. 1.6%
23. 49%
24. 0.3%
25. 96%
26. 52%
27. 15%
28. 0.8%
29. 362%
30. 62.3%
31. 3.5%
32. 708%
33. 50%
34. 97%
35. 60%
36. 42.5%
37. 8%
38. 250%
39. 0.1%
40. 7.4%
41. 34.5%
42. 19%
43. 6.2%
44. 19%
45. 0.5%
46. 37%
47. 80%
48. 4%

Skill 35
(pp. 69-70)

1. 0.45
2. 0.91
3. 0.245
4. 0.0837
5. 0.13
6. 0.06
7. 0.765
8. 0.0122
9. 0.145
10. 0.26
11. 0.018
12. 0.8
13. 0.08
14. 0.32
15. 0.15
16. 0.157
17. 0.1623
18. 0.0201
19. 0.032
20. 0.8
21. 0.0132
22. 0.21
23. 0.25
24. 0.13
25. 0.04
26. 0.4
27. 0.625
28. 0.3
29. 0.603
30. 0.123
31. 0.1025
32. 0.086
33. 0.1215
34. 1.02
35. 4.505
36. 1.75
37. 0.0005
38. 0.0025
39. 0.00105
40. 0.1436
41. 0.0218
42. 0.3865

Skill 36
(pp. 71-72)

1. $\frac{2}{5}$, 40%
2. $\frac{3}{4}$, 75%
3. $\frac{3}{10}$, 30%
4. $\frac{2}{5}$, 40%
5. $\frac{4}{4}$, 100%
6. $\frac{5}{8}$, 62.5%
7. 17%
8. 80%
9. 25%
10. 40%
11. 2%
12. 70%
13. 24%
14. 10%
15. 4%
16. 20%
17. 12%
18. 80%
19. 240%
20. 75%
21. 300%
22. 95%
23. 10%
24. 5%
25. 2%
26. 47%
27. 32%
28. 75%
29. 26%
30. 55%
31. 140%
32. 3%
33. 84%
34. 30%
35. 15%
36. 62%
37. 125%
38. 60%
39. 300%
40. 24%
41. 5%
42. 85%
43. 304%
44. 400%
45. 120%
46. 90%
47. 98%
49. 200%
50. $33\frac{1}{3}$%
51. 60%
52. 180%
53. 1000%
54. 65%
55. 430%
56. 125%
57. 160%
58. 160%
59. 86%
60. 300%
61. 110%

Skill 37
(pp. 73-74)

1. $\frac{9}{20}$
2. $\frac{91}{100}$
3. $\frac{49}{200}$
4. $\frac{2}{25}$
5. $\frac{8}{25}$
6. $\frac{3}{20}$
7. $\frac{157}{1000}$
8. $\frac{1623}{10,000}$
9. $\frac{201}{10,000}$
10. $\frac{4}{125}$
11. $\frac{4}{5}$
12. $\frac{33}{2500}$
13. $\frac{21}{100}$
14. $\frac{1}{4}$
15. $\frac{13}{100}$
16. $\frac{1}{25}$
17. $\frac{2}{5}$
18. $\frac{5}{8}$
19. $\frac{3}{10}$
20. $\frac{603}{1000}$
21. $\frac{123}{1000}$
22. $\frac{3}{20}$
23. $\frac{8}{25}$
24. $\frac{67}{100}$
25. $\frac{157}{250}$
26. $\frac{9}{50}$
27. $\frac{23}{100}$
28. $\frac{7}{10}$
29. $\frac{3}{200}$
30. $\frac{4}{125}$
31. $\frac{91}{5000}$
32. $\frac{37}{250}$
33. $\frac{4}{25}$
34. $\frac{6}{5}$
35. $\frac{37}{200}$
36. $\frac{51}{20}$
37. $\frac{201}{200}$
38. $\frac{251}{20,000}$
39. $\frac{17}{250}$
40. $\frac{9}{10,000}$
41. $\frac{909}{2000}$
42. $\frac{3}{20}$

Skill 38
(pages 75-76)

1. <
2. >
3. <
4. =
5. >
6. <
7. <
8. <
9. <
10. >
11. <
12. <
13. >
14. >
15. <
16. $\frac{1}{2}, \frac{3}{5}, \frac{7}{9}, \frac{4}{5}$
17. $\frac{2}{7}, \frac{5}{16}, \frac{3}{8}, \frac{8}{11}$
18. $\frac{12}{19}, \frac{9}{14}, \frac{3}{4}, \frac{6}{7}$
19. $\frac{11}{23}, \frac{7}{10}, \frac{19}{27}, \frac{15}{17}$
20. Pittsburgh Pirates
21. New York Mets
22. yes; $\frac{21}{30} > \frac{14}{21}$
23. no; $\frac{16}{30} < \frac{15}{23}$
24. Yes; $\frac{5}{6} > \frac{3}{4}$, so he has more than enough material.

Skill 39
(pages 77-78)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13. 60
14. 10,560
15. 36
16. $\frac{2}{3}$
17. 4
18. 2
19. 2
20. $2\frac{1}{2}$
21. 21,120
22. $2\frac{1}{2}$
23. $1\frac{2}{3}$
24. 10,560
25. 78
26. 5
27. 324
28. 144
29. $1\frac{1}{2}$
30. 192

Skill 40
(pages 79-80)

1. 64
2. 2
3. 8
4. $2\frac{1}{2}$
5. 32
6. $4\frac{1}{2}$
7. 32
8. 64
9. 2
10. 32
11. 6
12. 20
13. $7\frac{1}{2}$
14. 24
15. 128
16. 5
17. 12
18. 96
19. 8
20. 64
21. 32
22. 40
23. $8\frac{1}{2}$
24. $1\frac{1}{2}$
25. 10
26. 14
27. 4
28. 5
29. 64
30. 2
31. 24 fl oz
32. 2 qt

Skill 41
(pages 81-82)

1. 4000
2. $4\frac{1}{4}$
3. $1\frac{1}{2}$
4. 64
5. 56
6. $1\frac{1}{4}$
7. 160
8. 32,000
9. 16
10. 256
11. 6000
12. 14,000
13. 6
14. $\frac{3}{4}$
15. 32,000
16. 320,000
17. 48
18. 192
19. 4
20. $\frac{1}{4}$
21. 5000
22. 80
23. $1\frac{1}{16}$
24. $\frac{3}{8}$
25. 400
26. 112,000
27. 13,000
28. $\frac{1}{4}$
29. 320
30. 4500
31. $\frac{3}{16}$ lb
32. 4 lb

Skill 42
(pages 83-84)

1. 30
2. 2
3. 0.6
4. 1.5
5. 6000
6. 800,000
7. 8
8. 1.6
9. 2
10. 200
11. 30
12. 70
13. 1600
14. 20,000
15. 30
16. 24
17. 2
18. 1120
19. 41
20. 87
21. 42
22. 4000
23. 800
24. 500
25. 1.63
26. 4100
27. 155
28. 160,000
29. 370 mm
30. 80 km

Skill 43
(pages 85-86)

1. 0.076
2. 1.8
3. 140,000
4. 7,500,000
5. 8200
6. 0.14
7. 6
8. 400,000
9. 5000
10. 2
11. 4000
12. 1.4
13. 3.25
14. 3400
15. 0.75
16. 0.94
17. 12,000
18. 3.4
19. 86,000
20. 8000
21. 36,000
22. 0.85
23. 2400
24. 3800
25. 5350
26. 10,600
27. 0.18
28. 1.4
29. 2000 mL
30. 2 L

Skill 44
(pages 87-88)
1. 0.18
2. 1.6
3. 1,500,000
4. 0.7
5. 8,000,000
6. 450,000
7. 0.82
8. 4.63
9. 5000
10. 2
11. 4000
12. 1.4
13. 3.25
14. 3400
15. 0.75
16. 0.94
17. 12,000
18. 3.4
19. 86,000
20. 8000
21. 36,000
22. 0.85
23. 2400
24. 3800
25. 5350
26. 10,600
27. 0.086
28. 140,000
29. 11,000 g
30. 20,000,000 mg

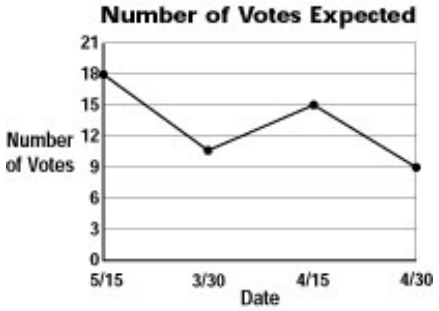
Skill 45
(pages 89-90)
1. 10.16
2. 198.45
3. 1.892
4. 9.654
5. 11.355
6. 453.6
7. 354.888
8. 2270
9. 2.742
10. 3.81
11. 1.2192
12. 4.73
13. 340.2
14. 4.54
15. 15.24
16. 1.6764
17. 9.4625
18. 3.62025
19. 5.7125
20. 8.172
21. 443.61
22. 5.028125
23. 53.34
24. 2.365
25. 295.74
26. 14.19
27. 353.98
28. 18.28
29. 9.2389
30. 18.92
31. 563.9545
32. 739.35
33. 2.043

Skill 46
(pages 91-92)
1. 1.97
2. 27.545
3. 4.228
4. 4.968
5. 0.528
6. 10.5
7. 5.27
8. 5.589
9. 4.372
10. 2.1735
11. 0.34
12. 1.188
13. 24.6075
14. 2.5139
15. 3.6995
16. 8.84
17. 30.87
18. 10.66325
19. 15.2145
20. 5.808
21. 1.575
22. 4.10125
23. 26.46
24. 3.696
25. 2.88765
26. 1.8912
27. 8.9845
28. 1.36
29. 2.8776
30. 173.88
31. 8.744
32. 33.84675
33. 11.0985
34. 2.364
35. 16.9415
36. 0.49
37. 3.43525
38. 110.25
39. 9.1868

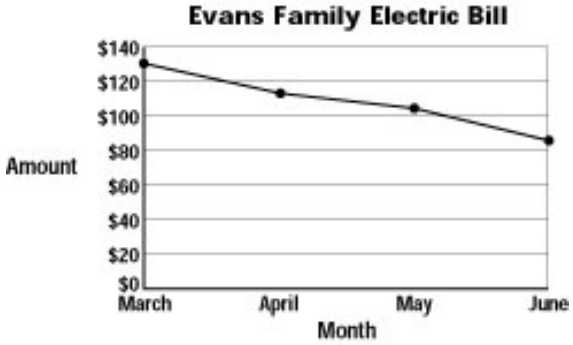
Skill 47
(pages 93-94)
1. 15
2. 5
3. 20
4. 7; 8
5. 8; 45
6. 5; 40; 20
7. 2; 17; 31
8. 8; 29; 0
9. 47 min 57 s
10. 10 h 7 min
11. 13 h 16 min
12. 5 h 20 min 46 s
13. 17 h 9 min 35 s
14. 9 h 2 min 15 s
15. 11 h 16 min 32 s
16. 13 h 6 min 15 s
17. 10 h 30 min
18. 9 h 25 min
19. 14 h 5 min
20. 5 h 59 min 19 s

Skill 48 (pages 95-96)

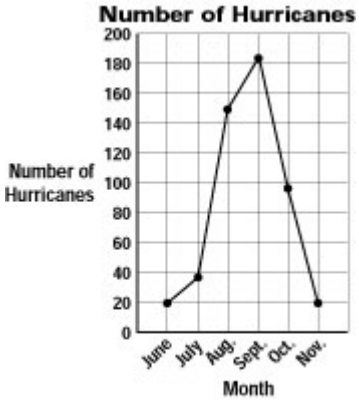
1.



2.

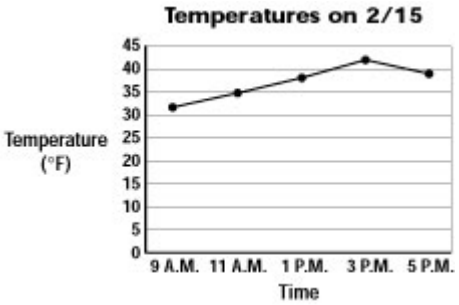


3.



4. September

5.



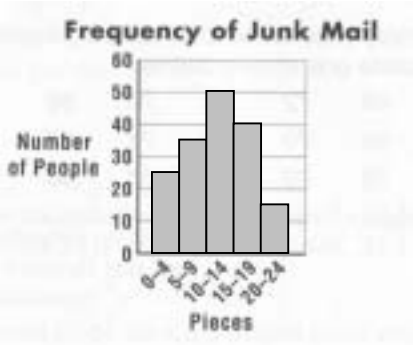
6. from 3 P.M. to 4 P.M.

7. $\frac{3}{4}$ in.

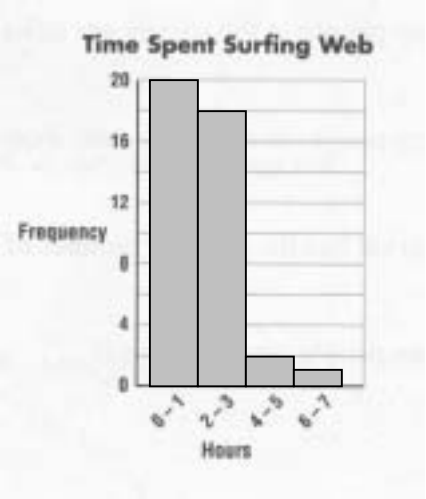
8. $1\frac{7}{8}$ in.

Skill 49 (pages 97-98)

1.



2.



3. 22
4. 85-89
5. 95-100 and 80-84; 90-94 and 75-79
6. 1

7.

Score	Frequency
95-100	5
90-94	3
85-89	6
80-84	5
75-79	3

8.

Height	Frequency
51-55	1
56-60	3
61-65	5
66-70	10
71-75	4
76-80	1

9. 10
10. 20
11. 4
12. 66-70
13. 24

Skill 50
(pages 99-100)

1. $\frac{1}{5}$
2. $\frac{3}{10}$
3. $\frac{1}{2}$
4. $\frac{7}{10}$
5. $\frac{4}{5}$
6. $\frac{1}{2}$
7. $\frac{1}{2}$
8. $\frac{1}{52}$
9. $\frac{1}{13}$
10. $\frac{1}{26}$
11. $\frac{1}{4}$
12. $\frac{3}{4}$
13. $\frac{1}{4}$
14. $\frac{7}{12}$
15. $\frac{1}{6}$
16. $\frac{3}{4}$
17. $\frac{5}{12}$
18. $\frac{5}{6}$
19. $\frac{7}{100}$
20. $\frac{23}{50}$
21. $\frac{27}{100}$