Unit 4

From Hundredths to Hundred Thousands

Essential Questions

- How does place value extend to numbers less than 1?
- How does place value extend to numbers greater than 1,000?

Unit Story: Myles and the Loggerheads

You can read the Unit Story with your student by visiting the Unit Story page on the Caregiver Hub.

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Unit Investigation

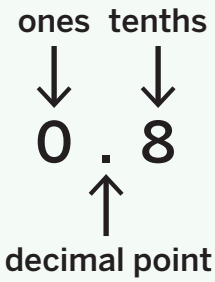
Lesson 1 is the Unit Investigation. Students determine the value of base-ten blocks when the value of one of the blocks is changed and notice patterns to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

Caregiver Connection

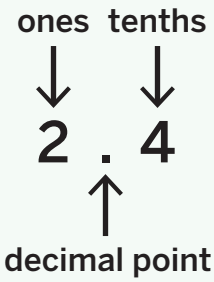
Students may enjoy looking for numerical patterns in their home or community. Encourage them to discuss how the numbers in the patterns relate to one another.

Summary | Lesson 2

Decimals are another way to represent fractions and mixed numbers with a denominator of 10. Fractions, mixed numbers, and decimals that represent the same value are read aloud the same way. In a decimal, the tenths place is to the right of the **decimal point**.



zero and eight tenths

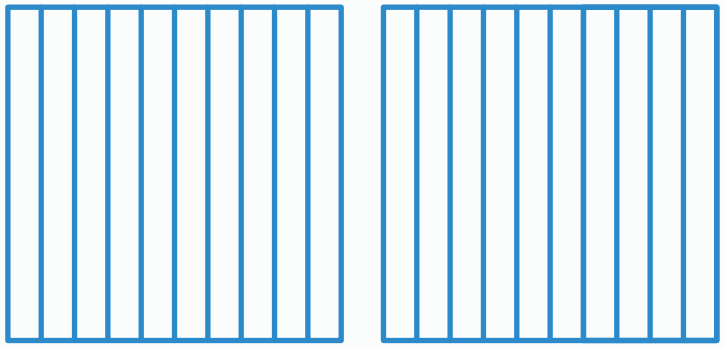


two and four tenths

Try This

1 Each large square represents 1. Use the given information to fill in the missing diagram and decimal.

diagram:

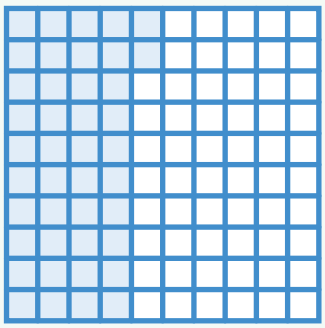


mixed number: $1\frac{6}{10}$

decimal: _____

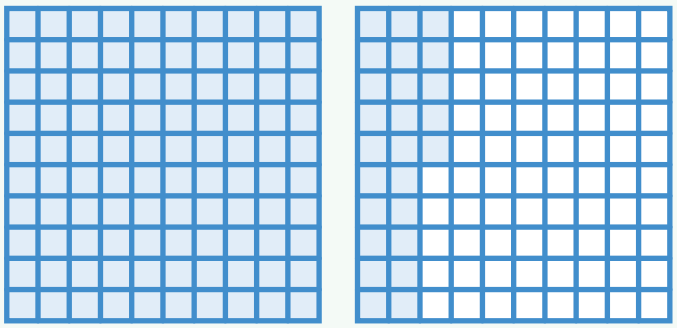
Summary | Lesson 3

The hundredths place of a decimal is to the right of the tenths place. A fraction or mixed number can be written as an equivalent decimal, and both can be represented on the same diagram.



fraction: $\frac{42}{100}$

decimal: 0.42



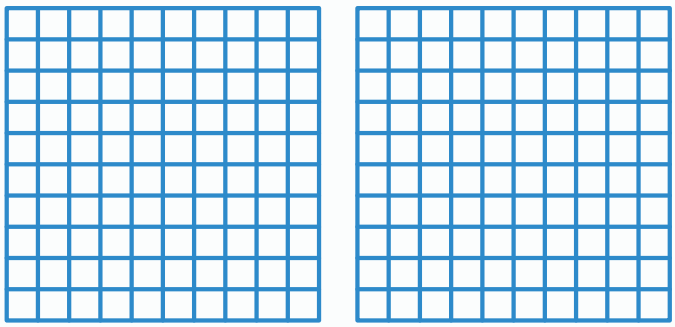
mixed number: $1\frac{25}{100}$

decimal: 1.25

Try This

1 Each large square represents 1. Use the given information to fill in the missing diagram and decimal.

diagram:

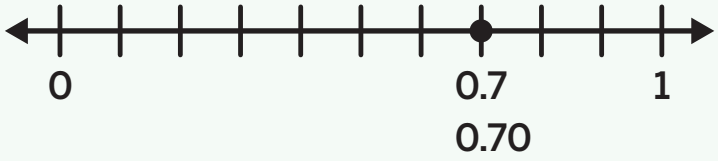


mixed number: $1\frac{24}{100}$

decimal: _____

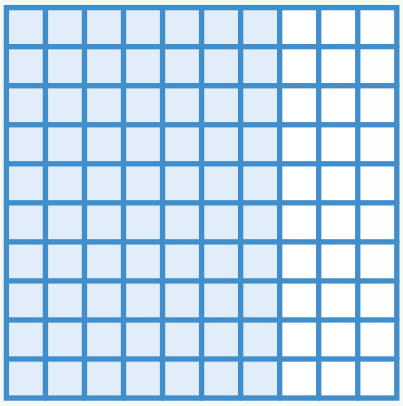
Summary | Lesson 4

Diagrams, number lines, and fractions or mixed numbers can be used to show that 2 decimals represent the same value.



$$\frac{7}{10} = \frac{70}{100}$$

$$0.7 = 0.70$$



Try This

1 Select *all* the numbers that are equivalent to $\frac{2}{10}$.

- (A) 0.5
- (B) 0.2
- (C) $\frac{25}{100}$
- (D) 0.20

2 Select *all* the numbers that are equivalent to $\frac{60}{100}$.

- (A) 0.06
- (B) $\frac{60}{10}$
- (C) $\frac{6}{10}$
- (D) 0.6

Summary | Lesson 5

When comparing decimals, you can represent the decimal as a fraction or mixed number and use what you know about equivalent fractions to compare. The fraction with the greater value represents the greater decimal.

$$0.56 > 0.34$$

$$\frac{56}{100} > \frac{34}{100}$$

$$0.7 < 0.85$$

$$0.7 = \frac{7}{10} = \frac{70}{100}$$

$$\frac{70}{100} < \frac{85}{100}$$

Try This

For Problems 1–3, complete the comparison statement using < or >.

1. 0.6 _____ 0.35

2. 0.19 _____ 0.91

3. 2.05 _____ 2.50

Summary | Lesson 6

One strategy for filling in digits to compare or order decimals is to compare the whole numbers first. Then, if necessary, you can compare the digits representing the fractional amounts.

0.7, 2._, 2.63

The middle number and the greatest number both have 2 ones.

The missing tenths digit has to be 6 or less because there are 0 hundredths. The missing digit can be 0, 1, 2, 3, 4, 5, or 6.

Try This

For Problems 1–4, order the decimals from *least* to *greatest*.

1 1.95, 0.59, 1.59 _____

2 0.3, 0.03, 0.33 _____

3 1.82, 1.08, 1.8 _____

4 0.7, 1.7, 0.1 _____

Summary | Lesson 7

Decimals with tenths or hundredths can be put in order by comparing the values of the decimals as fractions or mixed numbers.

Decimal	1.45	0.05	0.8	0.74
Fraction or mixed number	$1\frac{45}{100}$	$\frac{5}{100}$	$\frac{8}{10} = \frac{80}{100}$	$\frac{74}{100}$

Decimals from least to greatest:

0.05, 0.74, 0.8, 1.45

Try This

For Problems 1–4, determine whether the comparison statement is *true* or *false*.

1 $\frac{55}{100} > 0.45$ _____

2 $0.3 = \frac{30}{100}$ _____

3 $0.62 > \frac{8}{10}$ _____

4 $\frac{8}{10} < 1.08$ _____

Sub-Unit 1 | Summary

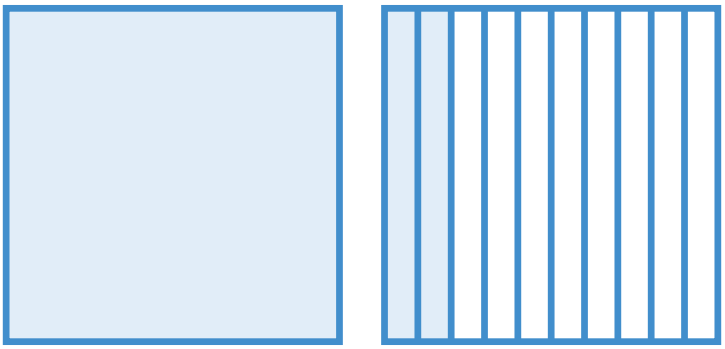
In this sub-unit . . .

- We saw how fractions or mixed numbers with denominators of 10 and 100 relate to decimals in tenths and hundredths.

$$\frac{2}{10} = 0.2 \qquad \frac{2}{100} = 0.02 \qquad \frac{20}{10} = 2.0$$

Math tip: Any fraction with a denominator of 10 can be rewritten as a decimal in tenths.

- We shaded diagrams to help identify equivalent fractions or mixed numbers and decimals.



$$1\frac{2}{10} = 1.2$$

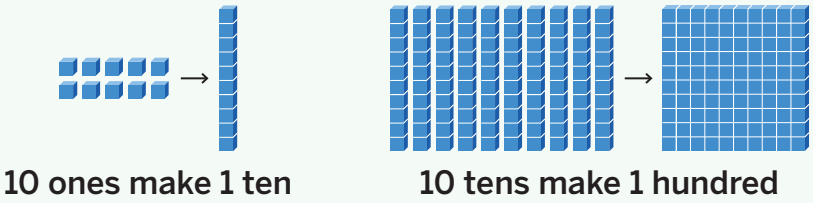
- We used what we know about the sizes of numbers to compare and order decimals.

$$0.4 > 0.2 \qquad 1.15 > 1.1 \qquad 0.08 < 0.8$$

In order from *least* to *greatest*: 0.08, 0.2, 0.4, 0.8, 1.1, 1.15

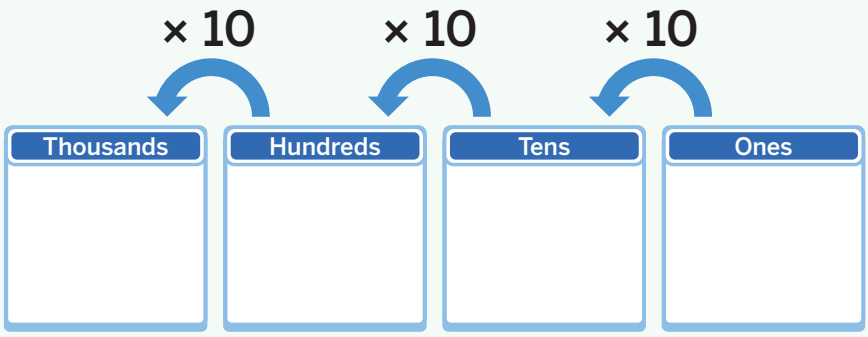
Summary | Lesson 8

In the base-ten place value system, 10 of the same unit make 1 of the next largest unit. 10 **ten thousands** make 1 **hundred thousand**, and 10 hundred thousands make 1 **million**.



10 ones make 1 ten

10 tens make 1 hundred



Try This

1 How many hundreds are in 2,000? _____

2 Draw a diagram to represent 5,400.

Draw

Summary | Lesson 9

The expanded form of numbers shows the value of each non-zero digit in the number when written in standard form.

24,350 = 20,000 + 4,000 + 300 + 50

302,765 = 300,000 + 2,000 + 700 + 60 + 5

Try This

1 Write the digits in the number 470,286 in the place value chart.

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

2 Write the digits in the number 63,512 in the place value chart.

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones

Summary | Lesson 10

The same digit can have different values depending on its place. Multi-digit numbers can be written in expanded form and used to describe the relationship between the values of digits.

35,687	**41,509**
30,000 + 5,000 + 600 + 80 + 7	40,000 + 1,000 + 500 + 9
The value of the 5 in 35,687 is 5,000. The value of the 5 in 41,509 is 500. 5,000 is 10 times 500.	

Try This

For Problems 1–3, write the number in expanded form.

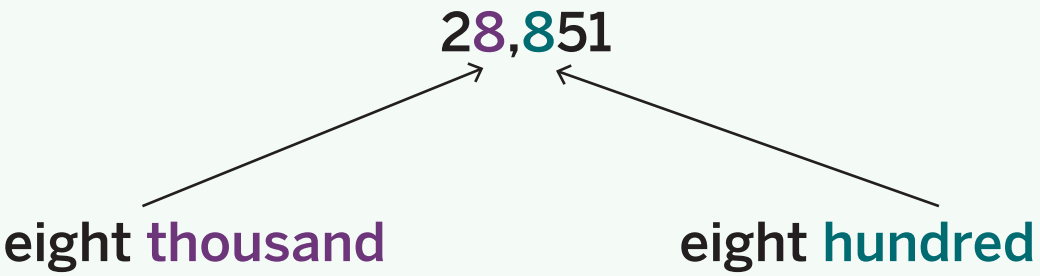
1. 929,348

2. 430,752

3. 81,502

Summary | Lesson 11

In a multi-digit number, a digit in 1 place represents 10 times what it represents in the place to its right and can be related by a multiplication expression.



$$8{,}000 = 10 \times 800$$

Try This

1 Which numbers have a 5 that is worth 10 times as much as the 5 in 82,534? Select *all* that apply.

- (A) 57,396
- (B) 5,208
- (C) 65,741
- (D) 26,457
- (E) 524,862
- (F) 325,671

2 The value of the 4 in 642,387 is 10 times the value of the 4 in which number?

- (A) 74,205
- (B) 26,452
- (C) 459,317
- (D) 41,305

Sub-Unit 2 | Summary

In this sub-unit . . .

- We created 1,000,000 in many ways. We used grids to show that 100,000 is a large number.

10 hundred thousands make 1,000,000.

1,000 thousands make 1,000,000.

- We saw numbers written in standard form, expanded form, and in words.

913,428

900,000 + 10,000 + 3,000 + 400 + 20 + 8

nine hundred thirteen thousand, four hundred twenty-eight

Math tip: Using place value helps you write numbers in different forms.

- We used multiplication expressions to show that in a multi-digit number, a digit in one place represents 10 times what the same digit represents in the place to the right.

444,444

$4 \times 10 = 40$

$40 \times 10 = 400$

$400 \times 10 = 4{,}000$

$4{,}000 \times 10 = 40{,}000$

$40{,}000 \times 10 = 400{,}000$

Summary | Lesson 12

When comparing multi-digit numbers, you have to consider the place values of the digits and compare the digits in the greatest place values.

$$2{,}718 > 1{,}872$$

$$320{,}097 > 58{,}978$$

$$64{,}830 < 72{,}050$$

Try This

For Problems 1–4, complete the comparison statement using < or >.

1 1,572 _____ 1,585

2 8,316 _____ 5,832

3 27,005 _____ 9,498

4 14,440 _____ 14,199

Summary | Lesson 13

When determining the least and greatest numbers from a set of multi-digit numbers, not all the digits have to be compared. The digits with the greatest place values affect the value of the number the most. You may have to look at more than 1 place to determine the least and greatest numbers.

380,251	74,637	25,263	74,719	389,024

least: 25,263 greatest: 389,024

Try This

1 Order the numbers from *least* to *greatest*.

98,107	102,356	752,031	88,207	99,653

_____, _____, _____, _____, _____

least **greatest**

2 Order the numbers from *greatest* to *least*.

94,942	9,042	279,104	9,420	59,000	279,099

_____, _____, _____, _____, _____, _____

greatest **least**

Summary | Lesson 14

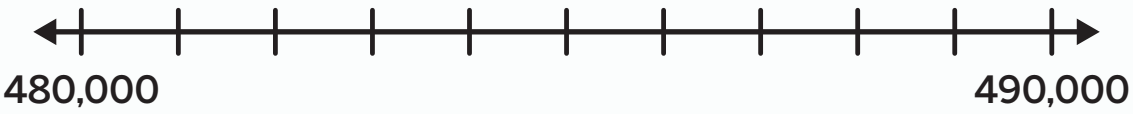
When rounding a multi-digit number to any place value, you are determining the nearest multiple of that place value unit. If the number falls exactly in the middle of 2 multiples, round up to the greater multiple.

	Nearest 1,000	Nearest 10,000	Nearest 100,000
248,640	249,000	250,000	200,000
255,000	255,000	260,000	300,000

Try This

For Problems 1 and 2, use the number line if it is helpful.

1 Is 484,300 closer to 480,000 or 490,000? _____



2 Round 591,258 to the nearest 1,000. _____

Summary | Lesson 15

Rounding is a way to estimate large numbers. To decide what place value to round to, consider how the estimate will be used.

	Nearest 100,000	Nearest 10,000	Nearest 1,000	Nearest 100
53,487	100,000	50,000	53,000	53,500
4,896	0	0	5,000	4,900
370,130	400,000	370,000	370,000	370,100
96,500	100,000	100,000	97,000	96,500
985,411	1,000,000	990,000	985,000	985,400

Try This

For Problems 1–3, round the number to the given place values.

1 267,485

1,000: _____ **10,000:** _____

2 895,274

10,000: _____ **100,000:** _____

3 872,163

100: _____ **1,000:** _____

Sub-Unit 3 | Summary

In this sub-unit . . .

- We compared multi-digit numbers to determine which was greater.

  38,259 > 35,986 97,578 < 234,509 568,917 > 568,432

  Math tip: Identify the *greatest* place value in each number and compare their values. You may have to look at more than 1 place value if the digits are the same.

- We rounded multi-digit numbers to different place values.

Multi-digit number	Rounded to nearest 1,000	Rounded to nearest 10,000	Rounded to nearest 100,000
583,642	584,000	580,000	600,000
136,850	137,000	140,000	100,000
72,681	73,000	70,000	100,000
26,443	26,000	30,000	0

- We analyzed data about sea turtle populations and asked questions about the use of rounded estimates.
  - Which place value do you think would be best for rounding with this data? Why?
  - In what situations would rounded numbers be appropriate?
  - In what situations might you want to use exact values?

Summary | Lesson 16

There are different strategies you can use to estimate sums. To create reasonable estimates, it can be helpful to choose estimation strategies based on the addends.

19,987 + 11,712	**15,987 + 16,712**
20,000 + 12,000 = 32,000	16,000 + 17,000 = 33,000
19,000 is only 1,000 away from 20,000, and 11,000 is 1,000 away from 10,000. So, I chose to round to the nearest ten thousand.	15,000 is 5,000 away from 20,000, and 16,000 is 4,000 away from 20,000. So, I chose to round to the nearest thousand to be more precise.

Try This

Estimate the sum.

1 4,502 + 6,612

Show or explain your thinking.

answer: _____

Summary | Lesson 17

The standard algorithm is a useful way to add multi-digit numbers. When a new unit is composed, it is shown with a 1 above the place to the left of the digits that had a sum of 10 or more.

$$\begin{array}{r} {\scriptstyle 1\,1} \\ 56,479 \\ +\,13,231 \\ \hline 69,710 \end{array}$$

Try This

Determine the sum using the standard algorithm.

Show your thinking.

1 32,216 + 8,492

answer: _____

Summary | Lesson 18

The standard algorithm is a useful way to subtract multi-digit numbers. When you do not have enough to subtract from in any place, you can decompose 1 unit in the place to the left to make 10 of the units you need.

$$\begin{array}{r} 5\ \ 15 \\ 7\cancel{6},\cancel{5}36 \\ -\,34,824 \\ \hline 41,712 \end{array}$$

Try This

Determine the difference using the standard algorithm.

Show your thinking.

1 264,813 – 158,302

answer: _____

Summary | Lesson 19

When subtracting multi-digit numbers, you will sometimes need to decompose units in more than 1 place before you have enough to subtract in every place.

$$\begin{array}{r} {\scriptstyle 12}{\scriptstyle 13} \\ 0\,\cancel{2}\,\cancel{3}\,{\scriptstyle 10} \\ \cancel{1}\,\cancel{3}\,\cancel{4},\cancel{0}\,7\,8 \\ -\;\;5\,9,6\,2\,4 \\ \hline 7\,4,4\,5\,4 \end{array}$$

Try This

1 Use the standard algorithm to determine the difference.

430,516 – 207,309

Show your thinking.

answer: _____

Summary | Lesson 20

Standard algorithms for addition and subtraction can be used to solve multi-step problems involving larger numbers. To determine an estimate or check whether answers are reasonable, it is helpful to round and add or subtract.

$$\begin{array}{r} 5,632 \\ +\ 3,347 \\ \hline 8,979 \end{array} \qquad \begin{array}{r} 6,000 \\ +\ 3,000 \\ \hline 9,000 \end{array}$$

Try This

1 In 2018, the estimated population of Boston was 694,583, and the estimated population of Seattle was 744,995. Determine the difference between the populations of the 2 cities.

Show your thinking.

answer: _____

Summary | Lesson 21

Using an understanding of place value and multi-digit numbers can help you solve addition and subtraction problems using the standard algorithm.

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ \ \ } \\ 69,725 \\ +\ 28,542 \\ \hline 98,267 \end{array} \qquad \begin{array}{r} {\scriptstyle \ \ 12\ \ \ \ } \\ {\scriptstyle 7\not{2}\ 15\,8\,14} \\ \not{8}\not{3},\not{5}\not{9}\not{4} \\ -\ 37,627 \\ \hline 46,167 \end{array}$$

Try This

For Problems 1 and 2, determine the value of the expression.

Show your thinking.

1 35,891 + 19,342

answer: _____

2 35,891 – 19,342

answer: _____

Sub-Unit 4 | Summary

In this sub-unit . . .

- We added and subtracted multi-digit numbers using the standard algorithm.

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ \ } \\ 27{,}652 \\ +\ 23{,}624 \\ \hline 51{,}276 \end{array} \qquad \begin{array}{r} {\scriptstyle \ 5\ 14} \\ 2\not{6}\not{4}{,}813 \\ -\ 158{,}302 \\ \hline 106{,}511 \end{array}$$

- We determined that when you subtract multi-digit numbers, you need to decompose any time you cannot subtract the 2 digits in the same place, such as when there are zeros.

$$\begin{array}{r} {\scriptstyle 6\ 12} \\ \not{7}\not{2}{,}681 \\ -\ 54{,}601 \\ \hline 18{,}080 \end{array}$$

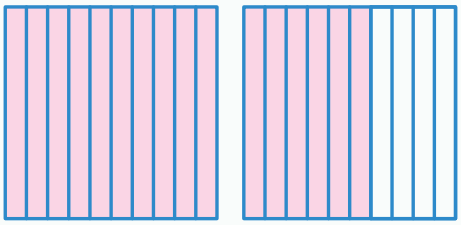
Math tip: Decomposing means you take 1 unit from a greater place value to make 10 units of the next lesser place value.

- We used what we know about adding and subtracting multi-digit numbers to solve contextual problems that involved multiple steps.

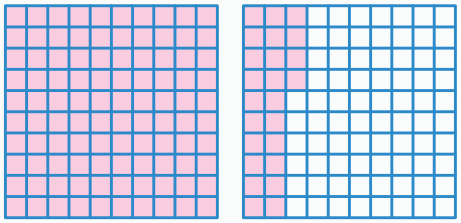
$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ 21{,}240 \\ +\ 17{,}389 \\ \hline 38{,}629 \end{array} \qquad \begin{array}{r} {\scriptstyle 1\ 1\ \ 1\ 1} \\ 38{,}629 \\ +\ 15{,}972 \\ \hline 54{,}601 \end{array} \qquad \begin{array}{r} {\scriptstyle 6\ 12} \\ \not{7}\not{2}{,}681 \\ -\ 54{,}601 \\ \hline 18{,}080 \end{array}$$

Try This | Answer Key

Lesson 2

1 diagram:  decimal: 1.6

Lesson 3

1 diagram:  decimal: 1.24

Lesson 4

1 B, D 2 C, D

Lesson 5

1 > 2 < 3 <

Lesson 6

1 0.59, 1.59, 1.95 2 0.03, 0.3, 0.33

3 1.08, 1.8, 1.82 4 0.1, 0.7, 1.7

Lesson 7

1 true 2 true 3 false 4 true

Lesson 8

1 20 2 Sample response:

5,000 400

Lesson 9

1

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
4	7	0	2	8	6

2

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
	6	3	5	1	2

Lesson 10

1 900,000 + 20,000 + 9,000 + 300 + 40 + 8

2 400,000 + 30,000 + 700 + 50 + 2

3 80,000 + 1,000 + 500 + 2

Lesson 11

1 B, C, F 2 A

Lesson 12

1 < 2 > 3 > 4 >

Lesson 13

1 88,207, 98,107, 99,653, 102,356, 752,031

2 279,104, 279,099, 94,942, 59,000, 9,420, 9,042

Lesson 14

1 480,000

2 591,000

Lesson 15

1 1,000: 267,000 10,000: 270,000

2 10,000: 900,000 100,000: 900,000

3 100: 872,200 1,000: 872,000

Lesson 16

1 Sample response:

4,500 + 6,600 = 11,100

answer: 11,100

Lesson 17

1

$$\begin{array}{r} {\scriptstyle 1\quad 1} \\ 32,216 \\ +\ \ 8,492 \\ \hline 40,708 \end{array}$$

answer: 40,708

Lesson 18

1

$$\begin{array}{r} {\scriptstyle 5\,14} \\ 264,813 \\ -\ 158,302 \\ \hline 106,511 \end{array}$$

answer: 106,511

Lesson 19

1

$$\begin{array}{r} {\scriptstyle 210\quad 016} \\ 430,516 \\ -\ 207,309 \\ \hline 223,207 \end{array}$$

answer: 223,207

Lesson 20

Sample work:

1

$$\begin{array}{r} {\scriptstyle 6\,14} \\ 714,995 \\ -\ 694,583 \\ \hline 50,412 \end{array}$$

answer: 50,412

Lesson 21

Sample work:

1

$$\begin{array}{r} {\scriptstyle 1\,1\ \ 1} \\ 35,891 \\ +\ 19,342 \\ \hline 55,233 \end{array}$$

answer: 55,233

2

$$\begin{array}{r} {\scriptstyle 215\quad 811} \\ 35,891 \\ -\ 19,342 \\ \hline 16,549 \end{array}$$

answer: 16,549