Place Value and Operations with Whole Numbers

Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends

Space Shuttle launching from Kennedy Space Center ▶

Project

Food in Space

The United States is planning a manned mission to Mars. The crew must take all of its food along on the journey, because there is no food available on Mars.

Get Started

Work with a partner. You are in charge of planning the amount of food needed for the Mars mission. Decide how much food will be needed for the entire trip. Use the Important Facts to help you plan. **Explain** your thinking.

Important Facts

- Length of trip to Mars: 6 months
- Length of stay on Mars: 6 months
- Length of return trip to Earth: 6 months
- Number of astronauts: 6
- 2 cups of water weigh 1 pound.
- 1 month = 30 days (on average).
- Each astronaut needs 10 cups of water and 4 pounds of food each day.

Completed by _____

Chapter 1

Place Value, Addition, and Subtraction to One Million

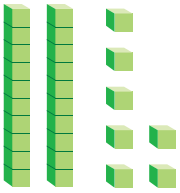
Show What You Know

Check your understanding of important skills.

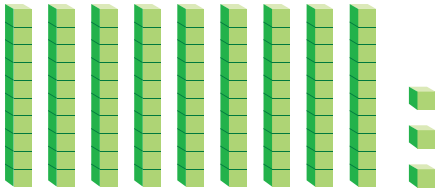
Name _____

▶ Tens and Ones Write the missing numbers.

1. 27 = _____ tens _____ ones



2. 93 = _____ tens _____ ones



▶ Regroup Hundreds as Tens Regroup. Write the missing numbers.

3. 5 hundreds 4 tens = _____ tens

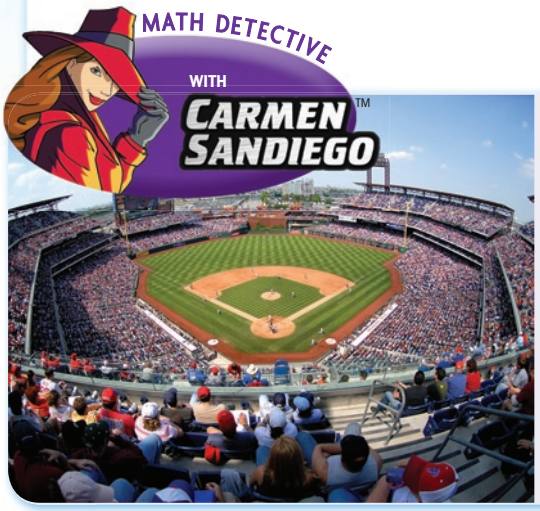
4. 8 hundreds 9 tens = _____ tens

▶ Two-Digit Addition and Subtraction Add or subtract.

5. $\begin{array}{r} 27 \\ +\ 34 \\ \hline \end{array}$

6. $\begin{array}{r} 95 \\ +\ 46 \\ \hline \end{array}$

7. $\begin{array}{r} 84 \\ -\ 27 \\ \hline \end{array}$



The home stadium of the Philadelphia Phillies is a large baseball park in Philadelphia, PA. Be a Math Detective. Use the following clues to find the stadium's maximum capacity.

- The 5-digit number has a 4 in the greatest place-value position and a 1 in the least place-value position.
- The digit in the thousands place has a value of 3,000.
- The digit in the hundreds place is twice the digit in the thousands place.
- There is a 5 in the tens place.

Vocabulary Builder

Visualize It

Write the review words with a ✓ on the Word Line, from greatest to least place value.

Place Value

greatest _____

_____

_____

_____

least _____

Review Words

- ✓ hundreds
- inverse operations
- ✓ ones
- ✓ tens
- ✓ ten thousands
- ✓ thousands

Preview Words

- estimate
- expanded form
- period
- round
- standard form
- word form

Understand Vocabulary

Read the definition. Which word does it describe?

1. To replace a number with another number that tells about how many or how much _____
2. A way to write numbers by showing the value of each digit _____
3. A number close to an exact amount _____
4. Each group of three digits separated by commas in a multi-digit number _____
5. A way to write numbers by using the digits 0–9, with each digit having a place value _____

Name _____

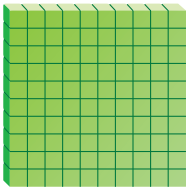
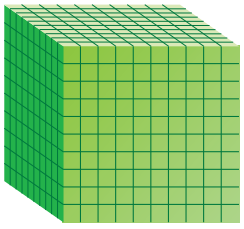
Model Place Value Relationships

Essential Question How can you describe the value of a digit?

UNLOCK the Problem

Activity Build numbers through 10,000.

Materials ■ base-ten blocks

1	10	100	1,000	10,000
				?
cube	long	flat	cube	_____
1	10 ones	_____ tens	_____ hundreds	_____ thousands

A small cube represents 1.

_____ small cubes make a long. The long represents _____.

_____ longs make a flat. The flat represents _____.

_____ flats make a large cube. The large cube represents _____.

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can use ten thousands longs to model 100,000.

1. **Describe** the pattern in the shapes of the models. What will be the shape of the model for 10,000?

_____

_____

_____

2. **Describe** the pattern you see in the sizes of the models. How will the size of the model for 100,000 compare to the size of the model for 10,000?

_____

_____

_____

Value of a Digit The value of a digit depends on its place-value position in the number. A place-value chart can help you understand the value of each digit in a number. The value of each place is 10 times the value of the place to the right.

Write 894,613 in the chart. Find the value of the digit 9.

MILLIONS			THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
			8 hundred thousands	9 ten thousands	4 thousands	6 hundreds	1 ten	3 ones
			800,000	90,000	4,000	600	10	3

The value of the digit 9 is 9 ten thousands, or _____.

Compare the values of the underlined digits.

2,304 16,135

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can compare the values of the digits without drawing a model.

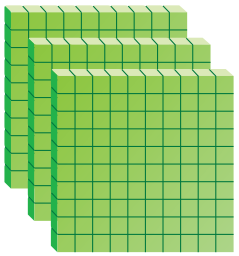
STEP 1 Find the value of 3 in 2,304.

Show 2,304 in a place-value chart.

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

Think: The value of the digit 3 is _____.

Model the value of the digit 3.



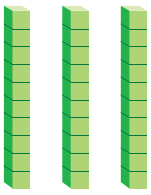
STEP 2 Find the value of 3 in 16,135.

Show 16,135 in a place-value chart.

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

Think: The value of the digit 3 is _____.

Model the value of the digit 3.



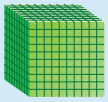
Each hundred is 10 times as many as 10, so 3 hundreds is ten times as many as 3 tens.

So, the value of 3 in 2,304 is _____ times the value of 3 in 16,135.

Name _____

Share and Show MATH BOARD

1. Complete the table below.

Number	1,000,000	100,000	10,000	1,000	100	10	1
Model	?	?	?				
Shape				cube	flat	long	cube
Group				10 hundreds	10 tens	10 ones	1 one

Find the value of the underlined digit.

2. $\underline{7}03{,}890$ _____

3. $63{,}\underline{5}40$ _____

4. $1\underline{8}2{,}034$ _____

5. $34\underline{5}{,}890$ _____

Compare the values of the underlined digits.

6. $\underline{2}{,}000$ and $\underline{2}00$

The value of 2 in _____ is _____ times the value of 2 in _____.

7. $\underline{4}0$ and $\underline{4}00$

The value of 4 in _____ is _____ times the value of 4 in _____.

On Your Own

Find the value of the underlined digit.

8. $2\underline{3}0{,}001$ _____

9. $80\underline{3}{,}040$ _____

10. $46{,}84\underline{2}$ _____

11. $\underline{9}80{,}650$ _____

Compare the values of the underlined digits.

12. $6\underline{7}{,}908$ and $\underline{7}6{,}908$

The value of 7 in _____ is _____ times the value of 7 in _____.

13. $546{,}\underline{3}00$ and $\underline{3}{,}456$

The value of 3 in _____ is _____ times the value of 3 in _____.

Problem Solving REAL WORLD

Use the table for 14–15.

14. What is the value of the digit 7 in the population of Memphis?

_____

15. Which city's population has a 4 in the hundred thousands place?

_____

16. H.O.T. How many models of 100 do you need to model 3,200? Explain.

_____

_____

_____

17. Write Math Sid wrote 541,309 on his paper. Using numbers and words, **explain** how the number would change if he switched the digits in the hundred thousands and tens places.

_____

_____

_____

_____

18. **Test Prep** There are 686,147 books at the Greenville Library. What is the value of the digit 8 in this number?

Ⓐ 80 Ⓒ 80,000

Ⓑ 8,000 Ⓓ 800,000

City Populations

City	Population*
Cleveland	431,369
Denver	610,345
Memphis	676,640

*2009 U. S. Census Bureau Estimation

SHOW YOUR WORK

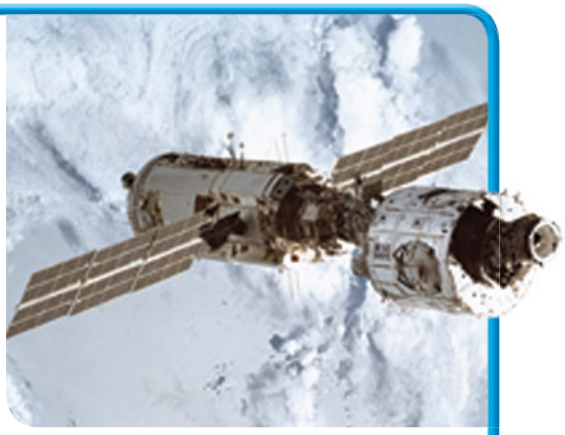
FOR MORE PRACTICE:
Standards Practice Book, pp. P3–P4

Name _____

Read and Write Numbers

Essential Question How can you read and write numbers through hundred thousands?

UNLOCK the Problem REAL WORLD



The International Space Station uses 262,400 solar cells to convert sunlight to electricity.

Write 262,400 in standard form, word form, and expanded form.

Use a place-value chart.

Each group of three digits separated by a comma is called a **period**. Each period has hundreds, tens, and ones. The greatest place-value position in the thousands period is hundred thousands.

Write 262,400 in the place-value chart below.

PERIOD			PERIOD		
THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

The number 262,400 has two periods, thousands and ones.

Standard Form: 262,400

Word Form: two hundred sixty-two thousand, four hundred

Expanded Form: 200,000 + 60,000 + 2,000 + 400

MATHEMATICAL PRACTICES

Math Talk Which digit has the greatest value in 262,400? **Explain.**

Try This! Use place value to read and write numbers.

A **Standard Form:** _____

Word Form: ninety-two thousand, one hundred seventy

Expanded Form:

90,000 + 2,000 + _____ + 70

B **Standard Form:** 200,007

Word Form:
two hundred _____, _____

Expanded Form:

_____ + 7

Share and Show

1. How can you use place value and period names to read and write 324,904 in word form?

Read and write the number in two other forms.

2. four hundred eight thousand, seventeen

3. 65,058

Math Talk MATHEMATICAL PRACTICES

Explain how you can use the expanded form of a number to write the number in standard form.

On Your Own

Read and write the number in two other forms.

4. five hundred eight thousand

5. forty thousand, six hundred nineteen

6. 570,020

7. 400,000 + 60,000 + 5,000 + 100

Use the number 145,973.

8. Write the name of the period that has the digits 145.

9. Write the name of the period that has the digits 973.

10. Write the digit in the ten thousands place.

11. Write the value of the digit 1.

Name _____

H.O.T. Find the sum. Then write the answer in standard form.

12. 5 thousands 2 tens 4 ones
+ 4 thousands 3 hundreds 2 ones

13. 6 thousands 5 hundreds
+ 1 thousand 3 hundreds 4 tens

14. 4 ten thousands + 3 ten thousands
4 hundreds 8 tens

15. 4 ten thousands 3 ones + 1 ten thousand
9 hundreds 5 ones

Problem Solving REAL WORLD

Use the table for 16–17.

16. Which city has a population of two hundred fifty-five thousand, one hundred twenty-four?

17. Write the population of Raleigh in expanded form and word form.

18. H.O.T. **What's the Error?** Sophia said that the expanded form for 605,970 is 600,000 + 50,000 + 900 + 70. **Describe** Sophia's error and give the correct answer.

Major Cities in North Carolina

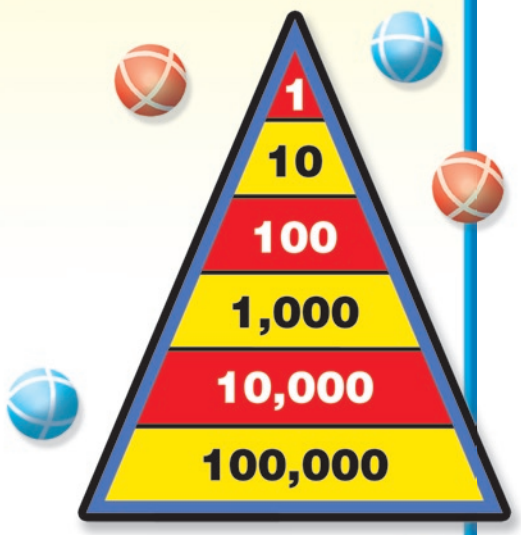
City	Population*
Durham	229,171
Greensboro	255,124
Raleigh	405,612

*U.S. Census Bureau 2008 Estimated Population

▲ NC General Assembly/Legislative Building, Raleigh, North Carolina

UNLOCK the Problem REAL WORLD

19. Mark tossed six balls while playing a number game. Three balls landed in one section, and three balls landed in another section. His score is greater than one hundred thousand. What could his score be?



a. What do you know? _____

_____

_____

b. How can you use what you know about place value to find what Mark's score could be? _____

_____

_____

_____

_____

_____

_____

c. Draw a diagram to show one way to solve the problem.

d. Complete the sentences.

Three balls could have landed in the _____ section.

Three balls could have landed in the _____ section.

Mark's score could be _____ _____.

20. There are 2,750 sheep on a farm. Write the number of sheep in word form and expanded form.

_____

_____

21. **Test Prep** The new football stadium was filled to capacity with 105,840 fans. What is the value of the digit 5 in 105,840?

Ⓐ 500 Ⓒ 50,000

Ⓑ 5,000 Ⓓ 500,000

FOR MORE PRACTICE:
Standards Practice Book, pp. P5–P6

Name _____

Compare and Order Numbers

Essential Question How can you compare and order numbers?

UNLOCK the Problem REAL WORLD

Grand Canyon National Park in Arizona had 651,028 visitors in July 2008 and 665,188 visitors in July 2009. In which year did the park have more visitors during the month of July?

- How many visitors were there in July 2008?

_____

- How many visitors were there in July 2009?

_____

Example 1 Use a place-value chart.

You can use a place-value chart to line up the digits by place value. Line up the ones with the ones, the tens with the tens, and so on. Compare 651,028 and 665,188.

Write 651,028 and 665,188 in the place-value chart below.

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

Start at the left. Compare the digits in each place-value position until the digits differ.

STEP 1 Compare the hundred thousands.

651,028

665,188

6 hundred thousands ◯ 6 hundred thousands

Write <, >, or =.

The digits in the hundred thousands place are the same.

STEP 2 Compare the ten thousands.

651,028

665,188

5 ten thousands ◯ 6 ten thousands

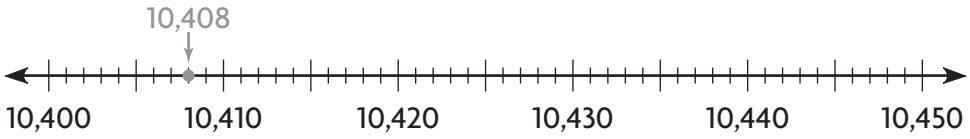
Write <, >, or =.

5 ten thousands is less than 6 ten thousands so, 651,028 < 665,188.

Since 651,028 < 665,188, there were more visitors in July 2009 than in July 2008.

Example 2 Use a number line to order 10,408; 10,433; and 10,416 from least to greatest.

Locate and label each point on the number line. The first one is done for you.

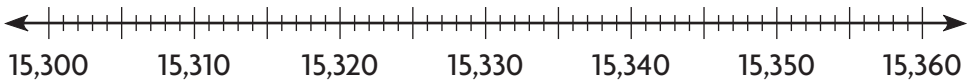


Think: Numbers to the left are closer to 0.

So, the numbers from least to greatest are 10,408; 10,416; and 10,433. $10{,}408 < 10{,}416 < 10{,}433$

Share and Show MATH BOARD

1. Compare 15,327 and 15,341.
Write <, >, or =. Use the number line to help.



15,327 ◯ 15,341

Compare. Write <, >, or =.

2. $631,328 ◯ $640,009

3. 56,991 ◯ 52,880

4. 708,561 ◯ 629,672

5. 143,062 ◯ 98,643

Order from greatest to least.

6. 20,650; 21,150; 20,890

_____

MATHEMATICAL PRACTICES

Math Talk **Explain** how you ordered the numbers from greatest to least in Exercise 6.

Name _____

On Your Own

Compare. Write <, >, or =.

7. $2,212 ◯ $2,600

8. 88,304 ◯ 88,304

9. $524,116 ◯ $61,090

10. 751,272 ◯ 851,001

Order from least to greatest.

11. 41,090; 41,190; 40,009

_____

12. 63,803; 65,014; 6,409

_____

13. 440,000; 439,064; 436,783

_____

14. 910,763; 912,005; 95,408

_____

H.O.T. **Algebra** Write all of the digits that can replace each ▢.

15. 567 < 5▢5 < 582

_____

16. 3,408 < 3,▢30 < 3,540

_____

17. 52,780 > 5▢,790 > 50,120

_____

18. 464,545 > 4▢3,535 > 443,550

_____

19. H.O.T. **What's the Error?** Max said that 36,594 is less than 5,980 because 3 is less than 5. **Describe** Max's error and give the correct answer.

_____

_____

Problem Solving REAL WORLD

Use the pictograph for 20–22.

Grand Canyon National Park Tent Campers

Month (2008)	Estimated Number of Campers
June	⛺ ⛺
July	⛺ ⛺ ⛺
August	⛺ ⛺ ⛺
September	⛺ ⛺

Key: Each ⛺ = 5,000.

20. In which month shown did the Grand Canyon National Park have about 7,500 tent campers?

21. Which months had more than 10,000 tent campers?

22. **What if** during the month of October, the park had 22,500 tent campers? How many symbols would be placed on the pictograph for October?

23. H.O.T. **What's the Question?** Compare: 643,251; 633,512; and 633,893. The answer is 633,512.

SHOW YOUR WORK

24. **Test Prep** Zachary's school set a goal of collecting 12,155 cans of food each day. In the first 3 days they collected 12,250 cans; 10,505 cans; and 12,434 cans. Which total was less than their daily goal?

Ⓐ 12,434 cans

Ⓑ 12,250 cans

Ⓒ 12,155 cans

Ⓓ 10,505 cans

FOR MORE PRACTICE:
Standards Practice Book, pp. P7–P8

Name _____

Round Numbers

Essential Question How can you round numbers?

UNLOCK the Problem REAL WORLD

During May 2008, the Mount Rushmore National Monument in South Dakota welcomed 138,202 visitors. A website reported that about 1 hundred thousand people visited the park during that month. Was the estimate reasonable?

- Underline what you are asked to find.
- Circle the information you will use.

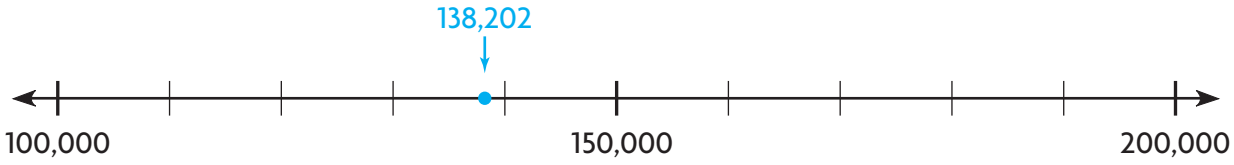
An **estimate** tells you about how many or about how much. It is close to an exact amount. You can **round** a number to find an estimate.

One Way Use a number line.

To round a number to the nearest hundred thousand, find the hundred thousands it is between.

_____ < 138,202 < _____

Use a number line to see which hundred thousand 138,202 is closest to.



138,202 is closer to _____ than _____.

So, 1 hundred thousand is a reasonable estimate for 138,202.

MATHEMATICAL PRACTICES

Math Talk Is 155,000 closer to 100,000 or 200,000? **Explain.**

1. What number is halfway between 100,000 and 200,000?

_____

2. How does knowing where the halfway point is help you find which hundred thousand 138,202 is closest to? **Explain.**

_____

_____

_____

Another Way Use place value.

Mount Rushmore is located 5,725 feet above sea level. About how high is Mount Rushmore above sea level, to the nearest thousand feet?

To round a number to the nearest thousand, find the thousands it is between.

_____ < 5,725 < _____

Look at the digit in the place-value position to the right.

5,725

Think: The digit in the hundreds place is 7.
So, 5,725 is closer to 6,000 than 5,000.

So, Mount Rushmore is about _____ feet above sea level.

MATHEMATICAL PRACTICES

Math Talk **Explain** how you know that 5,700 is closer to 6,000 than to 5,000.

3. What number is halfway between 70,000 and 80,000?

_____

4. What is 75,000 rounded to the nearest ten thousand? **Explain.**

_____

_____

_____

Math Idea

When a number is exactly half way between two rounding numbers, round to the greater number.

Try This! Round to the place value of the underlined digit.

A 6**4**,999

_____

B 8**5**0,000

_____

C 30**1**,587

_____

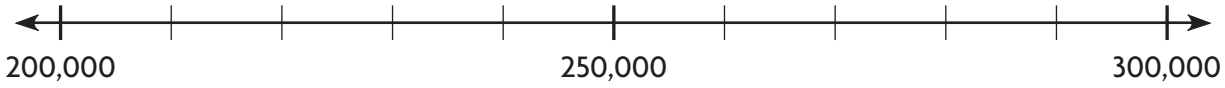
D 1**0**,832

_____

Name _____

Share and Show

1. Suppose 255,113 people live in a city. Is it reasonable to say that about 300,000 people live in the city? Use the number line to help you solve the problem. **Explain**.



Round to the place value of the underlined digit.

2. 93<u>4</u>,567

3. 64<u>1</u>,267

4. <u>2</u>34,890

5. 34<u>7</u>,456

On Your Own

Round to the place value of the underlined digit.

6. <u>5</u>62,408

7. 2<u>8</u>4,792

8. 19<u>9</u>,814

9. 923,7<u>1</u>8

Problem Solving

10. H.O.T. The number 2,▢00 is missing a digit. The number rounded to the nearest thousand is 3,000. List all of the possibilities for the missing digit. **Explain** your answer.

11. **Write Math** The 2008 population of Wyoming was counted as 532,668 people. What is a reasonable estimate of the 2008 population of Wyoming? **Explain**.

12. What is the greatest whole number that rounds to the number 277,300? What is the least whole number?

13. **Test Prep** About 300,000 people attended a festival. Which number could be the exact number of people that attended the festival?

Ⓐ 389,001 Ⓒ 252,348

Ⓑ 351,213 Ⓓ 249,899

Connect to Science

Data Gathering

Some scientists count and measure groups of things. Benchmarks can be used to estimate the size of a group or a population. A *benchmark* is a known number of things that helps you understand the size or amount of a different number of things.

Use the benchmark to find a reasonable estimate for the number of coquina shells it would take to fill a jar.

It would take about 5 times the benchmark to fill the jar.
$100 + 100 + 100 + 100 + 100 = 500$

The most reasonable estimate for the number of coquina shells it would take to fill the jar is 500 shells.

Benchmark
100 shells

200; 500;
or 5,000

Use the benchmark to find a reasonable estimate. Circle the reasonable estimate.

14.

500 beads

1,000; 2,000;
or 3,000

15.

10,000 blades
of grass

1,000; 10,000;
or 100,000

FOR MORE PRACTICE:
Standards Practice Book, pp. P9–P10

Name _____

Mid-Chapter Checkpoint

Check Vocabulary

Choose the best term from the box.

Vocabulary
expanded form
period
round
standard form

1. The _____ of 23,850 is 20,000 + 3,000 + 800 + 50. (p. 9)

2. You can _____ to find *about* how much or how many. (p. 17)

3. In 192,860 the digits 1, 9, and 2 are in the same _____. (p. 9)

Concepts and Skills

Find the value of the underlined digit.

4. 3<u>8</u>0,671 _____

5. 10,6<u>9</u>8 _____

6. <u>6</u>50,234 _____

Write the number in two other forms.

7. 293,805

_____

_____

_____

8. 300,000 + 5,000 + 20 + 6

_____

_____

_____

Compare. Write <, >, or =.

9. 457,380 ◯ 458,590

10. 390,040 ◯ 39,040

11. 11,809 ◯ 11,980

Round to the place of the underlined digit.

12. <u>1</u>40,250 _____

13. 10,<u>4</u>50 _____

14. 12<u>6</u>,234 _____

Fill the bubble in completely to show your answer.

15. Last year, three hundred twenty-three thousand people visited the museum. What is this number in standard form?

Ⓐ 323,000

Ⓑ 323,300

Ⓒ 232,300

Ⓓ 232,000

16. Which number, rounded to the nearest hundred, is zero?

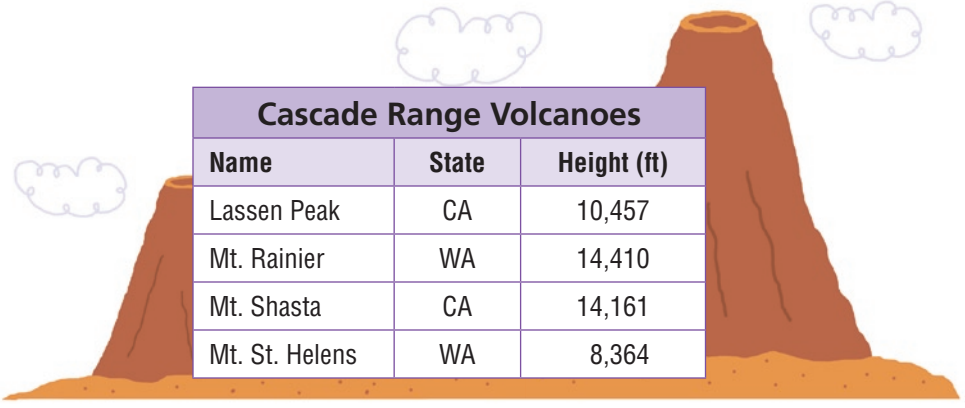
Ⓐ 94

Ⓑ 68

Ⓒ 52

Ⓓ 31

17. What is the highest volcano in the Cascade Range?



Cascade Range Volcanoes

Name	State	Height (ft)
Lassen Peak	CA	10,457
Mt. Rainier	WA	14,410
Mt. Shasta	CA	14,161
Mt. St. Helens	WA	8,364

Ⓐ Lassen Peak

Ⓑ Mt. Rainier

Ⓒ Mt. Shasta

Ⓓ Mt. St. Helens

Name _____

Rename Numbers

Essential Question How can you rename a whole number?

Investigate

Materials ■ base-ten blocks

You can regroup numbers to rename them.

A. Use large cubes and flats to model 1,200. Draw a quick picture to record your model.

The model shows _____ large cube and _____ flats.

Another name for 1,200 is _____ thousand _____ hundreds.

B. Use only flats to model 1,200.
Draw a quick picture to record your model.

The model shows _____ flats.

Another name for 1,200 is _____ hundreds.

Draw Conclusions

1. How is the number of large cubes and flats in the first model related to the number of flats in the second model?

_____

_____

2. Can you model 1,200 using only longs? **Explain**.

3. You renamed 1,200 as hundreds. How can you rename 1,200 as tens? **Explain**.

4. H.O.T. **Apply** What would the models in Step A and Step B look like for 5,200? How can you rename 5,200 as hundreds?

Make Connections

You can also use a place-value chart to help rename numbers.

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
5	0	0,	0	0	0

5 hundred thousands
50 ten thousands
500 thousands
5,000 hundreds
50,000 tens
500,000 ones

Write 32 hundreds on the place-value chart below. What is 32 hundreds written in standard form?

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

32 hundreds

32 hundreds written in standard form is _____.

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can rename 4 ten thousands 3 thousands as thousands.

Name _____

Share and Show MATH BOARD

Rename the number. Draw a quick picture to help.

1. 150

_____ tens

2. 1,400

_____ hundreds

3. 2 thousands 3 hundreds

_____ hundreds

4. 13 hundreds

_____ thousand _____ hundreds

Rename the number. Use the place-value chart to help.

5. 18 thousands = _____

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

6. 570,000 = 57 _____

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

Rename the number.

7. 580 = _____ tens

8. 740,000 = _____ ten thousands

9. 8 hundreds 4 tens = 84 _____

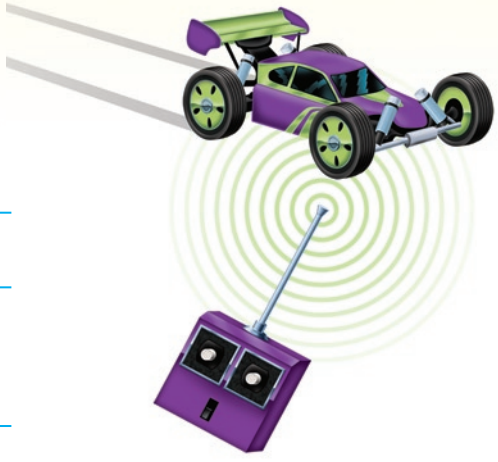
10. 29 thousands = _____

UNLOCK the Problem REAL WORLD

11. A toy store is ordering 3,000 remote control cars. The store can order the cars in sets of 10. How many sets of 10 does the store need to order?

Ⓐ 30 Ⓒ 3,000

Ⓑ 300 Ⓓ 30,000



a. What information do you need to use?

b. What do you need to find?

c. How can renaming numbers help you solve this problem?

d. Describe a strategy you can use to solve the problem.

e. How many sets of 10 remote control cars does the store need to buy?

f. Fill in the bubble for the correct answer choice above.

12. Adam sold 53 boxes of oranges during a citrus sale. There were 10 oranges in each box. How many oranges did he sell in all?

Ⓐ 53 Ⓒ 5,300

Ⓑ 530 Ⓓ 53,000

13. A store sold a total of 15,000 boxes of buttons last month. If the store sold 150,000 buttons, how many buttons were in each box?

Ⓐ 10 Ⓒ 1,000

Ⓑ 100 Ⓓ 10,000

FOR MORE PRACTICE:
Standards Practice Book, pp. P11–P12

Name _____

Add Whole Numbers

Essential Question How can you add whole numbers?

UNLOCK the Problem REAL WORLD

Alaska is the largest state in the United States by area. Its land area is 570,374 square miles and its water surface area is 86,051 square miles. Find the total area of Alaska.

- Underline what you are asked to find.
- Circle the information you will use.

▲ The area of Alaska is outlined in the photo above.

Find the sum.

Add. 570,374 + 86,051

Think: It is important to line up the addends by place value when adding two numbers.

STEP 1 Add the ones.

Add the tens. Regroup.

12 tens = 1 hundred _____ tens

$$\begin{array}{r} {\scriptstyle 1} \\ 570,374 \\ +\ 86,051 \\ \hline \square \end{array}$$

STEP 2 Add the hundreds.

Add the thousands.

$$\begin{array}{r} {\scriptstyle 1} \\ 570,374 \\ +\ 86,051 \\ \hline \square 25 \end{array}$$

STEP 3 Add the ten thousands.

Regroup.

15 ten thousands =

1 hundred thousand _____ ten thousands

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 570,374 \\ +\ 86,051 \\ \hline \square 6,425 \end{array}$$

STEP 4 Add the hundred thousands.

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 570,374 \\ +\ 86,051 \\ \hline \square 56,425 \end{array}$$

So, the total area of Alaska is _____ square miles.

MATHEMATICAL PRACTICES

Math Talk **Explain** how you know when to regroup when adding.

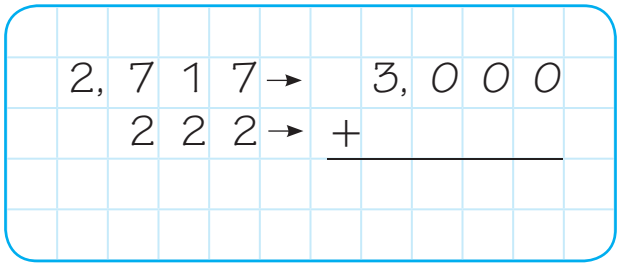
Estimate You can estimate to tell whether an answer is reasonable. To estimate a sum, round each addend before you add.

Example

Estimate. Then find the sum.

Juneau has an area of 2,717 square miles. Valdez has an area of 222 square miles. What is their combined area?

A Estimate. Use the grid to help you align the addends by place value.



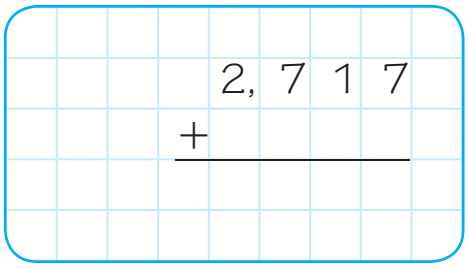
Round to the nearest thousand.

Round to the nearest hundred.

So, the combined area of Juneau and Valdez is about _____ square miles.

ERROR Alert
Remember to align the addends by place value.

B Find the sum.



Think: Begin by adding the ones.

So, the combined area of Juneau and Valdez is _____ square miles.

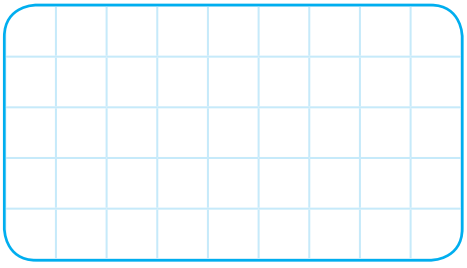
- Is the sum reasonable? **Explain**.

_____

Share and Show

MATH BOARD

1. Use the grid to find 738,901 + 162,389.



Use the grid to align the addends by place value.

Name _____

Estimate. Then find the sum.

2. Estimate: _____

72,931
+18,563

3. Estimate: _____

432,068
+239,576

4. Estimate: _____

64,505
+38,972

MATHEMATICAL PRACTICES

Math Talk **Explain** how you know your answer for Exercise 2 is reasonable.

On Your Own

Estimate. Then find the sum.

5. Estimate: _____

839,136
+120,193

6. Estimate: _____

186,231
+ 88,941

7. Estimate: _____

744,201
+168,900

8. Estimate: _____

374,096
+187,543

9. Estimate: _____

100,738
+19,553

10. Estimate: _____

512,335
+297,866

H.O.T. **Algebra** **Find the missing number and name the property you used to find it. Write *Commutative* or *Associative*.**

11. $(4{,}580 + 5{,}008) + 2{,}351 = 4{,}580 + (\quad + 2{,}351)$

_____

12. $7{,}801 + \quad = 4{,}890 + 7{,}801$ _____

13. $2{,}592 + 3{,}385 = 3{,}385 +$ _____

Remember

Commutative Property

$4 + 5 = 5 + 4$

Associative Property

$4 + (7 + 3) = (4 + 7) + 3$

Problem Solving REAL WORLD

Major Cities of Alaska

City	Population*
Anchorage	286, 174
Fairbanks	35,252
Juneau	30,796

*2009 U.S. Census Bureau estimates

Use the table for 14–17.

14. What is the combined population of Fairbanks and Juneau?

15. **Pose a Problem** Look at Problem 14. Write and solve a similar problem.

16. H.O.T. What is the combined population of the three major Alaskan cities? Estimate to verify your answer.

SHOW YOUR WORK

17. Write Math The digit 5 occurs two times in the population of Fairbanks. What is the value of each 5? **Explain** your answer.

18. **Test Prep** Alaska's Glacier Bay National Park had 418,911 visitors in 2008. The park had 444,653 visitors in 2009. How many people visited the park in 2008 and 2009?

Ⓐ 852,564 Ⓒ 863,564

Ⓑ 862,564 Ⓓ 963,564

FOR MORE PRACTICE:
Standards Practice Book, pp. P13–P14

Name _____

Subtract Whole Numbers

Essential Question How can you subtract whole numbers?

UNLOCK the Problem REAL WORLD

Mt. Bear and Mt. Bona are two mountains in Alaska. Mt. Bear is 14,831 feet tall and Mt. Bona is 16,421 feet tall. How much taller is Mt. Bona than Mt. Bear?

Estimate. 16,000 − 15,000 = _____

Subtract. 16,421 − 14,831

▲ Mt. Bear and Mt. Bona are in the St. Elias Mountain Range located in the Wrangell-St. Elias National Park and Preserve in Alaska.

STEP 1 Subtract the ones.

Regroup to subtract the tens.

4 hundreds 2 tens =

3 hundreds _____ tens

$$\begin{array}{r} {\scriptstyle 3\,12} \\ 16,\not{4}\not{2}1 \\ -\,14,831 \\ \hline \end{array}$$

STEP 2 Regroup to subtract the hundreds.

6 thousands 3 hundreds =

5 thousands _____ hundreds

$$\begin{array}{r} {\scriptstyle 13} \\ {\scriptstyle 5\ \not{3}12} \\ 1\not{6},\not{4}21 \\ -\,14,831 \\ \hline 90 \end{array}$$

STEP 3 Subtract the thousands.

Subtract the ten thousands.

$$\begin{array}{r} {\scriptstyle 13} \\ {\scriptstyle 5\ \not{3}12} \\ 16,\not{4}21 \\ -\,14,831 \\ \hline ,590 \end{array}$$

So, Mt. Bona is _____ feet taller than Mt. Bear. Since _____ is close to the estimate of _____, the answer is reasonable.

Try This! Use addition to check your answer.

$\begin{array}{r} 16{,}421 \\ -14{,}831 \\ \hline 1{,}590 \end{array}$	$\begin{array}{r} 1{,}590 \\ +14{,}831 \\ \hline \end{array}$

(Regrouping marks above 16,421: 5, 13, 3 12; carry marks above 1,590: 1 1)

Math Idea

Inverse operations undo each other. Addition and subtraction are inverse operations, so you can use addition to check a subtraction problem.

So, the answer checks.

Share and Show MATH BOARD

1. Subtract. Use the grid to record the problem.

637,350 − 43,832

MATHEMATICAL PRACTICES **Math Talk** **Explain** how you know which places to regroup to subtract.

Estimate. Then find the difference.

2. Estimate: ______

$\begin{array}{r} 14{,}659 \\ -11{,}584 \\ \hline \end{array}$

3. Estimate: ______

$\begin{array}{r} 456{,}912 \\ -\ \ 37{,}800 \\ \hline \end{array}$

4. Estimate: ______

$\begin{array}{r} 407{,}001 \\ -184{,}652 \\ \hline \end{array}$

On Your Own

Estimate. Then find the difference.

5. Estimate: ______

$\begin{array}{r} 942{,}385 \\ -461{,}803 \\ \hline \end{array}$

6. Estimate: ______

$\begin{array}{r} 798{,}300 \\ -348{,}659 \\ \hline \end{array}$

7. Estimate: ______

$\begin{array}{r} 300{,}980 \\ -159{,}000 \\ \hline \end{array}$

Name _____

Practice: Copy and Solve Subtract. Add to check.

8. 653,809 − 256,034

9. 258,197 − 64,500

10. 496,004 − 398,450

11. 500,000 − 145,609

H.O.T. **Algebra** Find the missing digit.

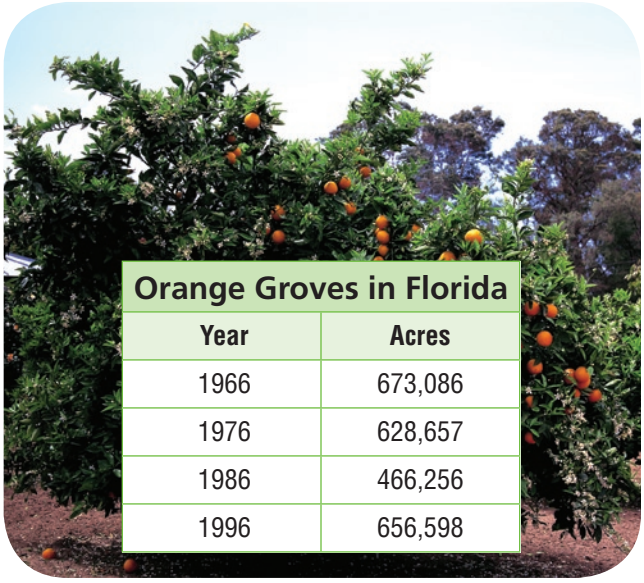
12.
$$\begin{array}{r} 6{,}532 \\ -\,4{,}1\square 5 \\ \hline 2{,}407 \end{array}$$

13.
$$\begin{array}{r} \square 08{,}665 \\ -\,659{,}420 \\ \hline 149{,}245 \end{array}$$

14.
$$\begin{array}{r} 697{,}320 \\ -\,432{,}\square 08 \\ \hline 264{,}712 \end{array}$$

Problem Solving REAL WORLD

Use the table for 15–17.



Orange Groves in Florida

Year	Acres
1966	673,086
1976	628,657
1986	466,256
1996	656,598

15. How many more acres were grown in 1996 than in 1986?

_____

16. What is the difference between the greatest number of acres and the least number of acres used for growing oranges?

_____

17. Grapefruit was grown on 144,416 acres in 1996. What is the total number of acres for oranges and grapefruit in 1996?

_____

18. **Test Prep** There are 135,663 kilometers of U.S. coastline that border the Pacific Ocean. There are 111,866 kilometers of U.S. coastline that border the Atlantic Ocean. How many more kilometers of U.S. coastline border the Pacific Ocean?

Ⓐ 23,797 kilometers

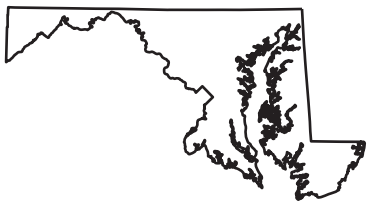
Ⓑ 24,203 kilometers

Ⓒ 24,807 kilometers

Ⓓ 247,539 kilometers

What's the Error?

19. Maryland has an area of 12,407 square miles. Texas has an area of 268,601 square miles. How much larger is Texas than Maryland?



Read how Janice solved the problem. Find her error.

Texas: 268,601 square miles
Maryland: 12,407 square miles
I can subtract to find the difference.

$$\begin{array}{r} 268{,}601 \\ -\ 12{,}407 \\ \hline 144{,}531 \end{array}$$

Solve the problem and correct her error.

So, Texas is _____ square miles larger than Maryland.

- Describe Janice's error.

_____

_____

FOR MORE PRACTICE:
Standards Practice Book, pp. P15–P16

Name _____

Problem Solving • Comparison Problems with Addition and Subtraction

Essential Question How can you use the strategy *draw a diagram* to solve comparison problems with addition and subtraction?

UNLOCK the Problem REAL WORLD

Hot air balloon festivals draw large crowds of people. The attendance on the first day of one festival was 17,350. On the second day the attendance was 18,925. How many more people attended the hot air balloon festival on the second day?

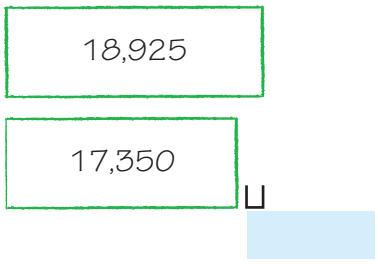
Use the graphic organizer to help you solve the problem.

Read the Problem

What do I need to find?	What information do I need to use?	How will I use the information?
Write what you need to find.	_____ people attended on the first day, _____ people attended on the second day.	What strategy can you use?

Solve the Problem

I can draw a bar model and write an equation to represent the problem.



18,925 − 17,350 = _____

So, _____ more people attended the festival on the second day.

Try Another Problem

During an event, a hot air balloon traveled a distance of 5,110 feet during the first trip and 850 feet more during the second trip. How far did it travel during the second trip?

Read the Problem

What do I need to find?	What information do I need to use?	How will I use the information?

Solve the Problem

- Is your answer reasonable? **Explain** how you know.

MATHEMATICAL PRACTICES

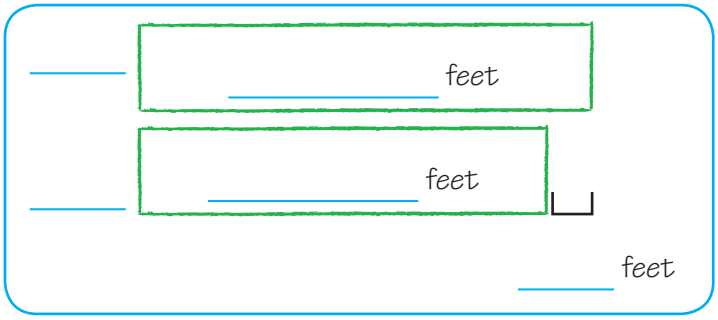
Math Talk **Explain** how inverse operations can be used to check your answer.

Name _____

Share and Show MATH BOARD

1. Hot air balloons are able to fly at very high altitudes. A world record height of 64,997 feet was set in 1988. In 2005, a new record of 68,986 feet was set. How many feet higher was the 2005 record than the 1988 record?

   First, draw a diagram to show the parts of the problem.



   Next, write the problem you need to solve.

   _____

   Last, solve the problem to find how many feet higher the 2005 record was than the 1988 record.

   So, the 2005 record was _____ feet higher.

2. **What if** a new world altitude record of 70,000 feet was set? How many feet higher would the new record be than the 2005 record?

   _____

3. Last year, the ticket sales for a commercial hot air balloon ride were $109,076. This year, the ticket sales were $125,805. How much more were the ticket sales this year?

   _____

4. There were 665 hot air balloon pilots at a hot air balloon race. There were 1,550 more ground crew members than there were pilots. How many ground crew members were there?

   _____

Tips

UNLOCK the Problem

- Use the Problem Solving MathBoard
- Underline important facts.
- Choose a strategy you know.

▲ **Dr. Vijaypat Singhania flew the world's largest hot-air balloon when he made his record-breaking flight. The balloon he flew was over 20 stories tall.**

On Your Own

Use the information in the table for 5–7.

5. Steve Fossett attempted to fly around the world in a balloon several times before he succeeded in 2002. How many more miles did he fly during the 2002 flight than during the August 1998 flight?

6. H.O.T. Is the combined distance for the 1998 flights more or less than the distance for the 2002 flight? **Explain.**

7. Write Math Estimate the total number of miles Fossett flew during the six hot air balloon flights. **Explain** how you estimated.

8. **Test Prep** Rusty wants to buy a small hot air balloon that costs $23,950. The cost of training for a license is $2,750. How much will Rusty pay for the balloon and the training?

Ⓐ $21,200 Ⓒ $26,700

Ⓑ $26,600 Ⓓ $36,700

Choose a STRATEGY

- Act It Out
- Draw a Diagram
- Find a Pattern
- Make a Table or List
- Solve a Simpler Problem

Steve Fossett's Balloon Flights

Year	Distance in Miles
1996	2,200
1997	10,360
1998 (January)	5,803
1998 (August)	14,235
2001	3,187
2002	20,482

SHOW YOUR WORK

FOR MORE PRACTICE:
Standards Practice Book, pp. P17–P18

Name _____

Chapter Review/Test

Vocabulary

Choose the best term from the box.

Vocabulary
estimate
expanded form
round

1. An _____ is close to an exact amount. (p. 17)
2. You can _____ to find an estimate. (p. 17)

Concepts and Skills

Compare the values of the underlined digits.

3. 2,$\underline{4}$02 and 6$\underline{4}$,513

   The value of 4 in _____ is _____ times the value of 4 in _____.

Write the number in two other forms.

4. two hundred thirty-four thousand, one hundred sixty-four

   _____

   _____

5. 791,030

   _____

   _____

Compare. Write <, >, or =.

6. 600,849 _____ 398,989
7. 36,954 _____ 112,365

Round to the place of the underlined digit.

8. 62$\underline{4}$,531

   _____

9. 4$\underline{6}$3,356

   _____

10. $\underline{4}$23,906

    _____

11. $\underline{5}$83,342

    _____

Rename the number.

12. 650 = _____ tens
13. 780,000 = 78 _____

Estimate. Then find the sum or difference.

14. Estimate: _____

$$\begin{array}{r} 185{,}239 \\ +\ 491{,}056 \\ \hline \end{array}$$

15. Estimate: _____

$$\begin{array}{r} 709{,}032 \\ -\ 249{,}136 \\ \hline \end{array}$$

GO Online Assessment Options Chapter Test

Fill in the bubble completely to show your answer.

16. Pike National Forest located in California has a total area of 871,495 acres. What is the area to the nearest thousand?

Ⓐ 800,000

Ⓑ 870,000

Ⓒ 871,000

Ⓓ 900,000

17. Micah is playing a card game. To play, each person chooses six cards from a stack.

The player who makes the greatest six-digit number from the cards is the winner. What is the greatest number that can be made from the six cards shown?

Ⓐ 654,321

Ⓑ 365,124

Ⓒ 451,236

Ⓓ 563,412

18. Mr. Rodriguez bought 420 pencils for the school. If there are 10 pencils in a box, how many boxes of pencils did he buy?

Ⓐ 42

Ⓑ 420

Ⓒ 4,200

Ⓓ 42,000

19. Chan's website had 12,014 visitors and Pamela's website had 11,987 visitors. Kim's website had more visitors than Pamela's website, but fewer than Chan's website. Which of the following could be the number of visitors Kim's website had?

Ⓐ 13,001

Ⓑ 12,104

Ⓒ 12,001

Ⓓ 11,790

Name _____

Fill in the bubble completely to show your answer.

20. During the summer, the population of Spring Lake is 30,155. During the winter, the population drops down to 13,876. How many people spend only the summer months in Spring Lake?

Ⓐ 16,279

Ⓑ 24,207

Ⓒ 26,279

Ⓓ 44,031

21. The total attendance for the 2008 World Series of Baseball was 219,369. Which number below is greater than 219,369?

Ⓐ 209,369

Ⓑ 210,369

Ⓒ 218,369

Ⓓ 220,369

22. Which number rounded to the nearest hundred thousand is 800,000? Use the number line to help.

Ⓐ 164,328

Ⓑ 693,023

Ⓒ 750,012

Ⓓ 871,486

23. Theater attendance last year was 885,607 people. Which estimate is closest to the total number of people who attended performances last year?

Ⓐ 900,000

Ⓑ 800,000

Ⓒ 100,000

Ⓓ 90,000

Constructed Response

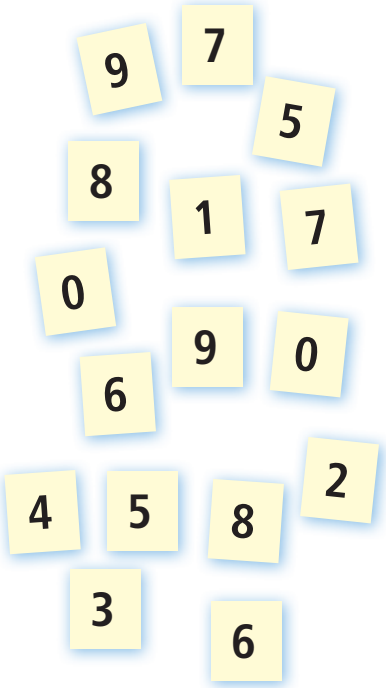
24. Mt. Hunter has a height of 14,573 feet, Mt. McKinley has a height of 20,320 feet, and Mt. Whitney has a height of 14,505 feet. Name the mountains in order from least height to greatest height. Use pictures, words, or numbers to show how you know.

25. During September and October of 2008, the Grand Canyon National Park recorded a total of 792,426 visitors. If there were 359,396 visitors in October, how many people visited the park in September? Use pictures, words, or numbers to show how you know.

Performance Task

26. Inez and Roy made three numbers with their number cards. Then their table got bumped and mixed up the cards. Look at the cards and help Inez and Roy make the three numbers again.

A One number was the greatest six-digit number they could make. **Explain** how you found the greatest six-digit number.



B Another number was the least five-digit number they could make.

C They had a four-digit number with a 5 in the thousands place and the ones place, a six in the tens place, and a 4 in the hundreds place.