

Reveal

MATH[®]

Reveal the Full Potential
in Every Student

Generalize Place-Value Structure

Focus Question

How can I use place value to work with multi-digit numbers?

Hi, I'm Poppy.

I want to be a park ranger. Park rangers keep track of animals in the parks, and also the number of visitors. Some parks have hundreds of thousands or even millions of visitors each year.



STEM
video

GO
ONLINE

Name

Fewest Coins

Table 1

Use the fewest pennies, nickels, and quarters to make each amount.

Cents	Quarters	Nickles	Pennies
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

Table 2

Use the fewest pennies, dimes, and dollars to make each amount.

Cents	Dollars	Dimes	Pennies
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
97			
98			
99			
100			
101			

Understand the Structure of Multi-Digit Numbers



Be Curious

Which doesn't belong?

180

1,389

2,382

11,808

Math is... **Mindset**

How can you explain your thinking?

Learn

Akira says that the digits in the number shown are all the same, so they all have the same value.

8,888

Do you agree with Akira's thinking?

Explain your reasoning.

Math is... Explaining

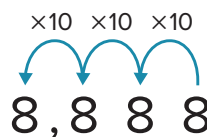
What do you need to construct a good argument?

Write the number in expanded form. Then look at the value of each part of the expanded form.

$$8,888 = 8,000 + 800 + 80 + 8$$

$80 = 8 \times 10$
 $800 = 80 \times 10$
 $8,000 = 800 \times 10$

The value of each 8 is different. Each 8 is ten times the value of the 8 to the right.



Akira's thinking is not correct.

The value of a digit is determined by its place-value position.

A digit in one place represents ten times what it represents in the place to its right.

Work Together

How can you describe the relationship between the values of the digits 3 in this number? Explain.

3,830

Name _____

What is the value of the digits in the number?

1. 1,489

1: _____

4: _____

8: _____

9: _____

2. 98,124

1: _____

2: _____

4: _____

8: _____

9: _____

How can you describe the relationship between the values of the underlined digits?

3. 258 and 2,180

4. 16,852 and 14,674

5. 12,184 and 541,247

6. 453 and 1,333

What is the greatest number and the least number you can create using the given digits? Use each digit only once. Do not use 0 as the first digit.

7. 3, 5, 8, and 9

8. 7, 1, 0, 6, 4

9. Is the value of the digit in the hundreds place ten times the value of the digit in the tens place in the number 3,735? Explain.

10. Karma created a number using the digits 4, 2, and 7. Use the following clues to determine Karma's number.

The number is between 7,000 and 8,000.

The digit 4 has a value of 40.

The value of the digit in the thousands place is 10 times the value of the digit to its right.

11. **Extend Your Thinking** Sienna wants to rearrange the digits in the number 1,258,072 so that the value of one of the digits is 10 times the value of another digit in her number. What number could she write? Justify your answer.

12. **Error Analysis** Rahul says the relationship between the 3s in the number 45,339 is different than the relationship between the 6s in the number 66,084. How would you respond to Rahul?

Reflect

How can place-value help you determine the value of a digit?

Math is... Mindset

How has explaining your thinking helped you learn?

Read and Write Numbers to One Million



Be Curious

What do you notice? What do you wonder?



Copyright © McGraw-Hill Education Molina86/Shutterstock

Math is... Mindset

Why is active listening important?

Learn

How can you read the population of Philadelphia, PA?

Math is... Choosing Tools

What will the tool tell me about the number?

Welcome to
Philadelphia, PA
POP. 1,576,596

You can use a place-value chart to make sense of a multi-digit number.

This place-value chart shows nine positions. It has three groupings. Each grouping is a **period**.

Each period has the same three places.

Millions Period			Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
		1	5	7	6	5	9	6

Word Form

One million, five hundred seventy-six thousand, five hundred ninety-six

Standard Form 1,576,596

A comma separates the periods.

Expanded Form $1,000,000 + 500,000 + 70,000 + 6,000 + 500 + 90 + 6$

You can use the values of the digits and the names of place-value positions to read and write multi-digit numbers. Commas are used to separate the periods when writing numbers in standard form.

Work Together

How can you write *seven hundred thirty-six thousand, nine hundred two* in standard form and expanded form?

On My Own

Name _____

How can you write the number in standard form?

1. Four hundred thousand, nine hundred thirty _____
2. Thirty-four thousand, nine hundred eighty-nine _____

How can you write the number in expanded form?

3. 530,879

4. 6,216

How can you write the number in word form?

5. 205,782

6. 1,108,308

7. **STEM Connection** Poppy found a sticker on the sign showing the size of Olympic National Park. She knows the size is between one million and nine hundred thousand acres. She also knows that the value of the digit in the ten thousands place is 10 times greater than the value of the digit in the thousands place. What is the size of the park?

Olympic National Park

Established 1938
Size: 😊 2,651 acres

What are other ways to write the number? Complete the table.

	Standard Form	Expanded Form	Word Form
8.	405,832		
9.		500,000 + 30,000 + 9,000 + 10 + 5	
10.			six hundred ten thousand, four hundred sixteen

11. **Extend Your Thinking** How is the word form of 245,007 similar to the word form of 700,245? Explain why these similarities exist.

12. What are the missing words or digits in each form of the number?

Word form: _____ thousand, _____ eight

Expanded form: _____ + 400 + _____

Standard form: 6 _____, _____

Reflect

How can place value help you make sense of multi-digit numbers?

Math is... Mindset

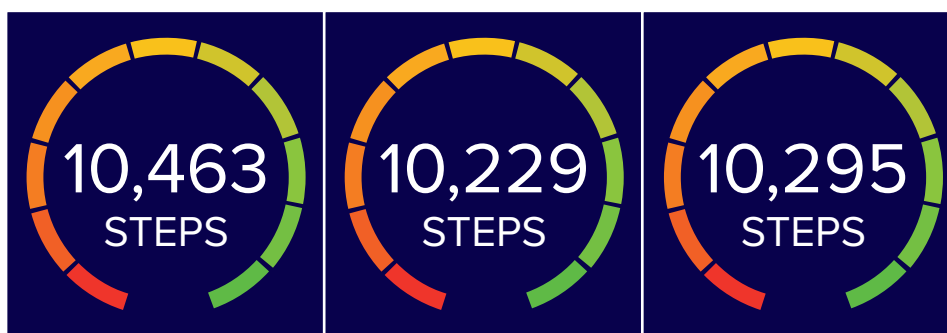
What have you done to be an active listener today?

Compare Multi-Digit Numbers



Be Curious

What question could you ask?



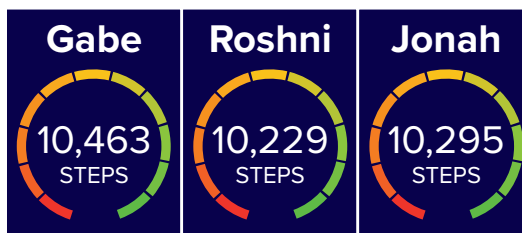
Math is... Mindset

What are some ways you can give positive feedback to your classmates?

Learn

Jonah says that he has walked more steps than Roshni.

How can Jonah support his statement?



Math is... Thinking

What are some mathematical representations you can use to compare numbers?

Jonah can use place value to compare the two numbers.

► **One Way** Use a Place-Value Chart

The digits in the tens place are different.

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
	1	0	2	9	5
	1	0	2	2	9



9 tens are greater than 2 tens, so $10,295 > 10,229$.

► **Another Way** Use Expanded Form

$$10,295 = 10,000 + 200 + \mathbf{90} + 5$$

$$10,229 = 10,000 + 200 + \mathbf{20} + 9$$

90 is greater than 20, so $10,295 > 10,229$.

To compare multi-digit numbers, compare the digits in each place. Start with the digits in the greatest place-value position.

Work Together

Who walked more steps in May?
Justify your answer.

Name	Steps in May
Roshni	245,821
Jonah	43,068

On My Own

Name

How can you compare the numbers? Complete with $>$, $<$, or $=$.

1. 5,598 ○ 55,889

2. 123,710 ○ 123,711

3. 628,910 ○ 628,800

4. 709,103 ○ 709,130

5. 6,217 ○ 6,241

6. 43,829 ○ 43,598

Is the comparison true or false? Explain your reasoning.

7. $1,780 < 11,780$

8. $720,301 < 720,031$

9. $34,646 > 321,446$

10. $24,747 < 24,774$

11. Rebecca knows her number is greater than 15,724 by looking at the digits in the tens place. What could be Rebecca's number? Justify your answer.

12. Error Analysis Jamar says 9,280 is greater than 12,621 because the digit 9 is greater than the digit 1. How can you respond to Jamar's statement? Justify your thinking.

13. Maddie's mother is buying a new vehicle. The table shows the cost of vehicles she is considering. Which vehicle is the most expensive? Justify your answer.

Vehicle	Cost
Minivan	\$ 24,990
Pickup Truck	\$ 31,990
Sports Car	\$ 22,990

14. Extend Your Thinking Write a number less than 4,850 by only switching two digits in this number. Explain your thinking.

 **Reflect**

How can you justify a comparison of two numbers?

Math is... Mindset

How did you give positive feedback to your classmates?

Round Multi-Digit Numbers



Be Curious

What do you notice? What do you wonder?

One director said there were about 40,000 visitors at the museum in one month.

Another director said there were about 35,000 visitors at the museum in one month.

Math is... Mindset

How can behaving flexibly help you work with and learn from others?

Learn

A museum will give a free T-shirt to each visitor in August. The director expects that the number of visitors in August will be about the same as it was in June.

NUMBER OF VISITORS
IN JUNE

63,723

How many T-shirts should the museum director order?

You can round numbers to get a good estimate

▶ **One Way** Use place value

Round to the nearest
ten thousands

63,723



60,000

Round to the nearest
thousands

63,723

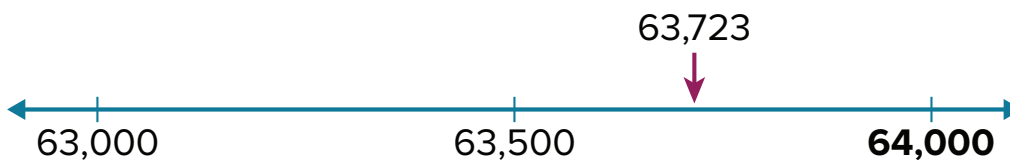


64,000

Math is... Precision

To which place should the director round to get a good estimate?

▶ **Another Way** Use a number line



The director should order 64,000 T-shirts.

You can round numbers to make estimates. Think about how precise the estimate needs to be when deciding to which place you will round.

Work Together

Each student who participates in field day will get a water bottle, but not all 1,528 students are expected to participate. What is a reasonable estimate of the number of water bottles to order?

Name _____

How can you use place value to round the number as indicated?

1. 478,309 to the nearest thousand
2. 105,201 to the nearest hundred thousand
3. 95,550 to the nearest ten thousand
4. 132,847 to the nearest thousand

-
- 5. STEM Connection** Denali National Park in Alaska has about 650,000 visitors each year. What could be the actual number of visitors in one year? Explain your reasoning.



-
- 6.** Some astronauts will travel to the moon, which is 238,855 miles from the earth.
- a. About how many miles will the astronauts travel there and back? Explain the reasoning for your estimate.
 - b. How accurate does the estimate need to be?

7. About 15,000 people live in a small town. What could be the actual number of people living in the town?
8. Mae rounds a number to the thousands place and gets 13,000. Eli rounds the same number to the hundreds place and gets 12,600. What is the greatest number that can be rounded as described?
9. Anna and her family will fly 4,387 miles to visit family. What's a reasonable estimate of the distance Anna will fly?
10. A sports stadium has seats for about 100,000 visitors. What could be the actual number of seats?
11. Leon is ordering water bottles for a sports event at which 1,255 people are expected. He plans to round to the nearest thousand to estimate the number of water bottles needed. How would you respond to Leon?
12. **Extend Your Thinking** Students have collected 1,475 cans for a food drive. Their goal is to collect 2,000 cans. About how many more cans do they need to collect?

Reflect

How did you apply what you already know about rounding during this lesson?

Math is... Mindset

How have you behaved flexibly while working with others?

Rounding Numbers

Name _____

1. If you round to the nearest hundred, which numbers round to 2,700? Choose all that apply.

- | | |
|----------|----------|
| a. 2,752 | e. 2,682 |
| b. 2,735 | f. 2,650 |
| c. 2,749 | g. 2,789 |
| d. 2,599 | h. 2,649 |

Explain your choices.

-
2. If you round to the nearest hundred, which numbers round to 26,500? Choose all that apply.

- | | |
|-----------|-----------|
| a. 26,449 | e. 26,498 |
| b. 26,385 | f. 26,451 |
| c. 26,589 | g. 25,513 |
| d. 25,389 | h. 25,499 |

Explain your choices.

3. If you round to the nearest thousand, which numbers round to 26,000? Choose all that apply.

- a. 25,329
- b. 25,781
- c. 25,503
- d. 25,899
- e. 26,329
- f. 26,585
- g. 26,289
- h. 24,792

Explain your choices.

Reflect On Your Learning

I am confused.



I'm still learning.



I understand.



I can teach someone else.



Unit Review

Name _____

Vocabulary Review

Match the word to the phrase that best describes it.

- | | |
|----------------------------------|--|
| 1. round
(Lesson 2-4) | A. a way to write a number as a sum that shows the value of each digit |
| 2. period
(Lesson 2-2) | B. the form of a number that uses written words |
| 3. expanded form
(Lesson 2-1) | C. exactly half the distance between two given numbers |
| 4. standard form
(Lesson 2-2) | D. one way to determine a reasonable estimate |
| 5. digit
(Lesson 2-1) | E. the usual way of writing a number that shows only its digits |
| 6. word form
(Lesson 2-2) | F. a grouping of three digits in greater numbers |
| 7. halfway point
(Lesson 2-4) | G. a symbol used to write numbers |

Review

8. What is the relationship between the two 4 digits in the number 904,467? (Lesson 2-1)
9. Which number represents sixty-two thousand, four hundred ninety-five? Choose the correct answer. (Lesson 2-2)
- A. 620,495
B. 624,95
C. 62,495
D. 62,400,095
10. A school raised \$8,875. Which shows a reasonable estimate of the amount the school raised? Choose the correct answer. (Lesson 2-4)
- A. \$9,500 B. \$9,000
C. \$7,000 D. \$8,000
11. What is the value of the digit 2 in 143,287? (Lesson 2-1)
12. What is the word form of 9,284? (Lesson 2-2)
13. In which number does the digit 2 have a value that is ten times the value of the digit 2 in 12,738? Choose the correct answer. (Lesson 2-1)
- A. 26 B. 215
C. 2,387 D. 23,901
14. Which of the following are different ways to represent the number 40,381? Choose all that apply. (Lesson 2-2)
- A. $4,000 + 300 + 80 + 1$
B. Forty thousand, three hundred eighty-one
C. $40,000 + 300 + 80 + 1$
D. Four thousand, three hundred eighty-one
E. $40,000 + 3,000 + 80 + 1$
F. Forty, three hundred eighty-one
15. What is the value of each digit in the number shown? (Lesson 2-1)

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
	3	4	4	5	6

- 16.** Michael was playing a video game with his friends. Each person recorded their score in a different form. Who had the highest score? Tell how you know. (Lesson 2-3)

Name	High Score
Paul	three thousand, two hundred fifty-eight
Susan	$2,000 + 900 + 50 + 8$
Michael	3,302

- 17.** Which statements are true? Choose all that apply. (Lesson 2-3)

- A.** $2,315 > 1,319$
- B.** $2,315 < 1,319$
- C.** $1,319 > 2,315$
- D.** $2,315 = 1,319$
- E.** $1,319 < 2,315$

- 18.** Keisha has about \$3,000 in her saving account. What could be the exact amount in her savings account? Justify your answer. (Lesson 2-4)

- 19.** Which statements are true? Choose all that apply. (Lesson 2-3)

- A.** $3,100 = 3,000 + 100$
- B.** $432,238 < 324,239$
- C.** two thousand, six = 2,006
- D.** $31,840 > 31,440$

- 20.** In the number 3,665, how does the value of the digit 6 in the hundreds place compare to the value of the digit 6 in the tens place? (Lesson 2-1)

- 21.** What is 392,483 rounded to the nearest thousand? (Lesson 2-4)

- 22.** What is 392,483 rounded to the nearest hundred thousand? (Lesson 2-4)

- 23.** What is the relationship between the two 7 digits in the number 328,277? (Lesson 2-1)

Performance Task

National Park Visitors

There were 642,809 visitors to Denali National Park in Alaska in 2017. In 2015, there were 589,450 visitors to the park.

Part A: What is a reasonable estimate of the number of visitors to Denali National Park in 2017? Explain why it is a reasonable estimate.

Part B: How does the number of visitors to Denali in 2015 compare to the number of visitors in 2017? Write a math statement to represent the comparison. Justify your statement.

Part C: The number of visitors to Everglades National Park in Florida in 2017 was about 600,000. What could be the actual number of visitors to Everglades National Park in 2017? Defend your number.

Reflect

How does knowing the structure of multi-digit numbers help you work with these numbers?

Unit 2

Fluency Practice

Name _____

Fluency Strategy

You can decompose by place value to find the difference.

Decompose

$$653 - 212 = ?$$

$$212 = 200 + 10 + 2$$

$$\text{So, } 653 - 200 = 453$$

$$453 - 10 = 443$$

$$443 - 2 = 441$$

$$653 - 212 = 441$$

1. How can you decompose by place value to find the difference?

$$697 - 324 = ?$$

$$324 = \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$697 - \underline{\quad} = 397$$

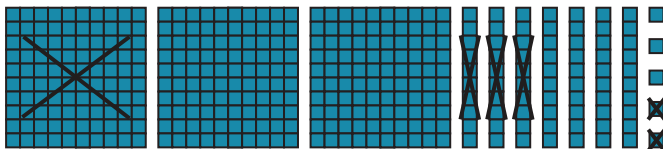
$$397 - \underline{\quad} = 377$$

$$377 - \underline{\quad} = \underline{\quad}$$

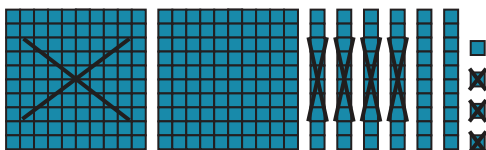
Fluency Flash

Use the base-ten blocks to write a matching equation.

2.



3.



Fluency Check

What is the sum or difference?

4. $739 - 428 = ?$ _____

5. $238 + 684 = ?$ _____

6. $723 + 246 = ?$ _____

7. $736 + 125 = ?$ _____

8. $858 - 615 = ?$ _____

9. $958 - 230 = ?$ _____

10. $684 - 152 = ?$ _____

11. $549 + 287 = ?$ _____

12. $164 + 528 = ?$ _____

13. $356 - 145 = ?$ _____

14. $674 - 213 = ?$ _____

15. $464 + 103 = ?$ _____

Fluency Talk

How would you explain to a friend how to decompose a number by place value to make subtraction easier?

How is using partial sums to add like decomposing a number by place value to subtract?