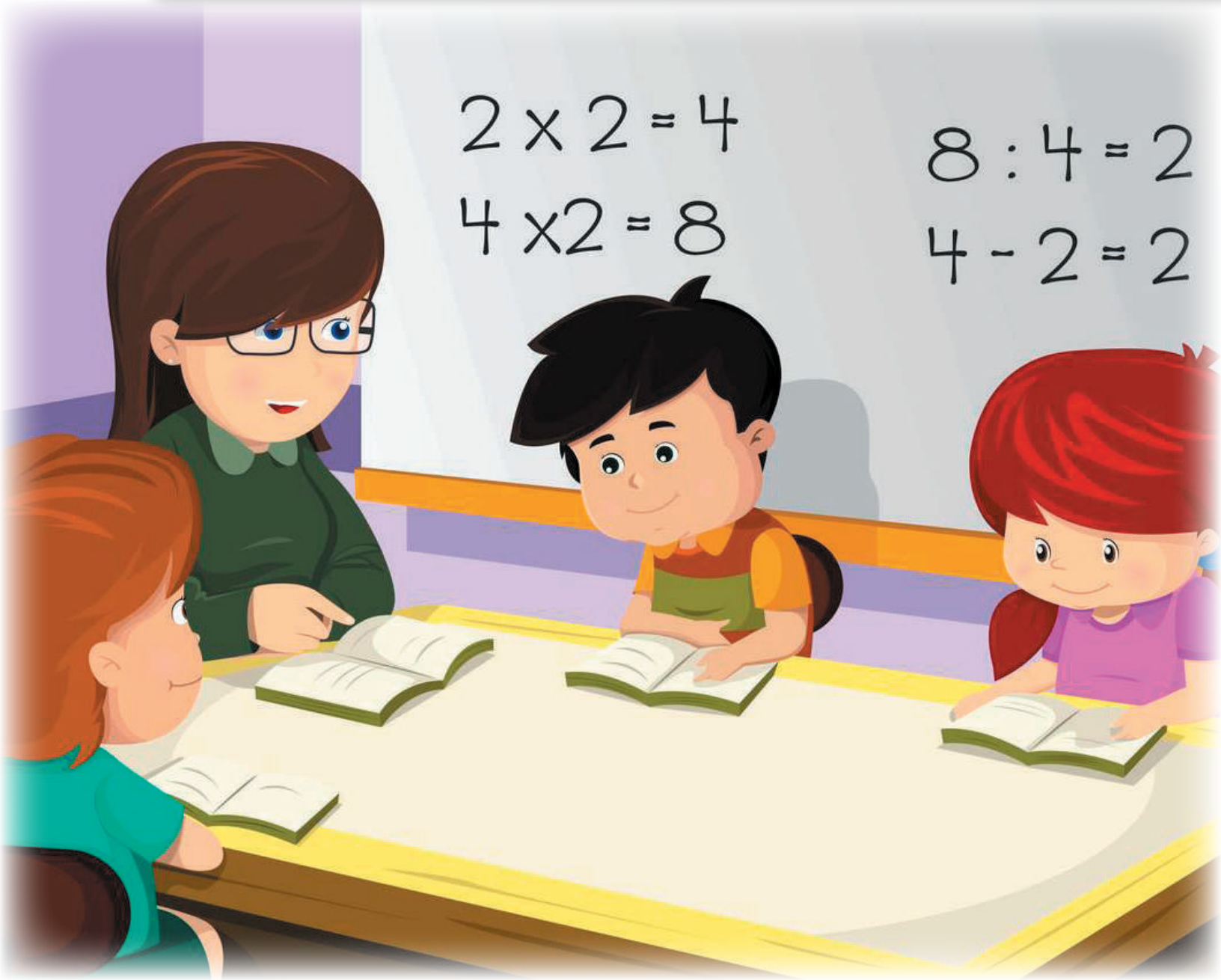
Core Knowledge® MATHEMATICS

From Hundredths to Hundred-thousands

1, ☐72
1, ☐85

Student Workbook



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From Hundredths to Hundred-thousands

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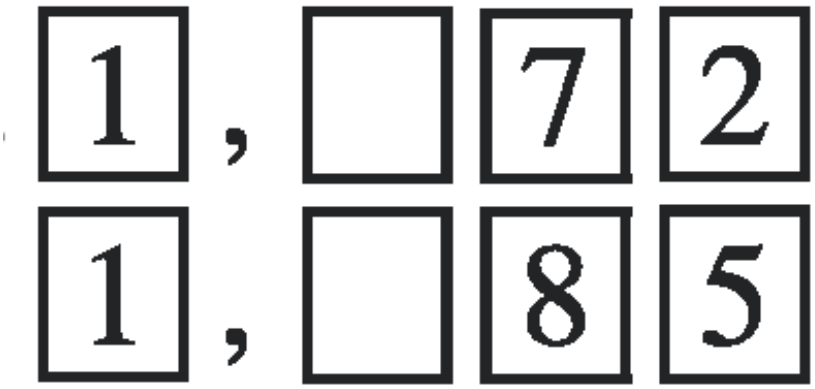


From Hundredths to Hundred-thousands

Student Workbook

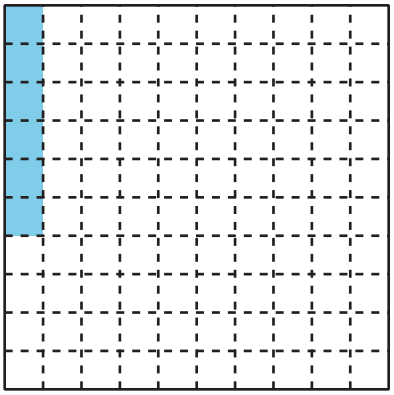
Core Knowledge Mathematics™

Lesson 1: Decimal Numbers

- Let's learn about decimals.

Warm-up: Notice and Wonder: Shaded Grid

What do you notice? What do you wonder?

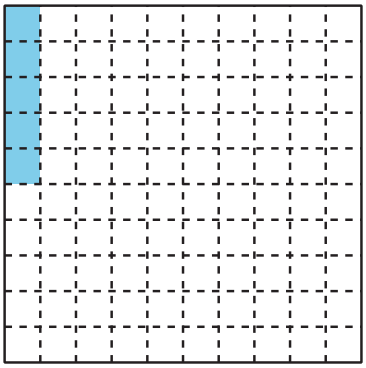


1.1: Shady Fractions

Each large square represents 1.

1. What fraction do the shaded parts of each diagram represent? For the last square, shade in some parts and name the fraction it represents.

a.



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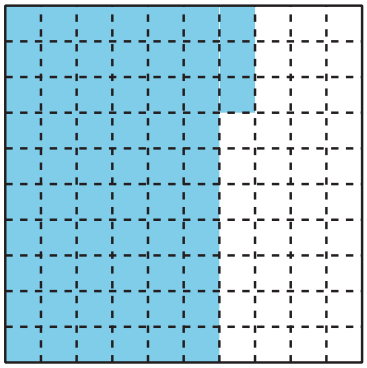

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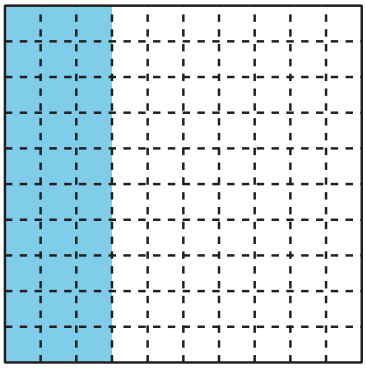

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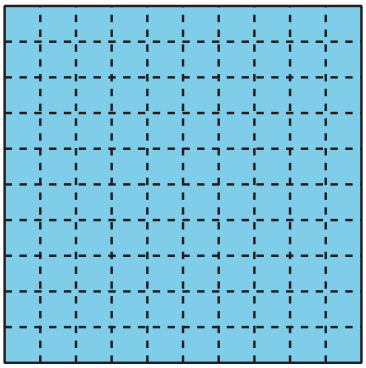

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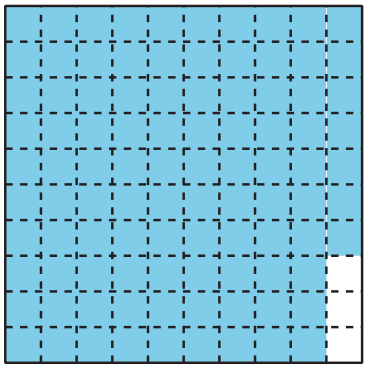

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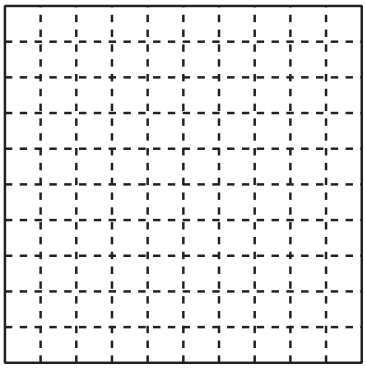
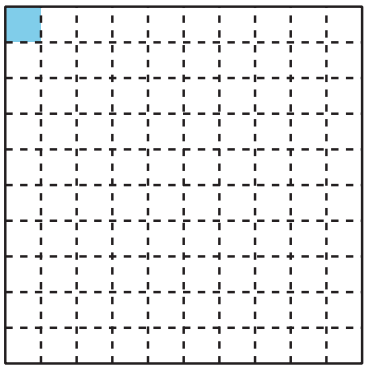
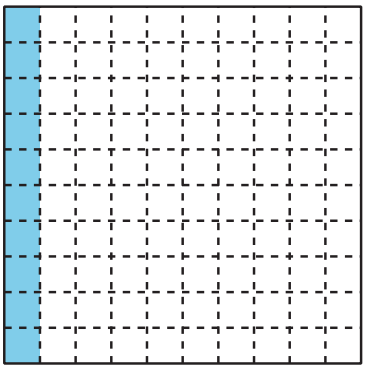


2. The shaded part of this diagram represents 0.01 or “1 hundredth.”



The shaded parts of this diagram represent 0.10 or “10 hundredths.” They also represent 0.1 or “1 tenth.”

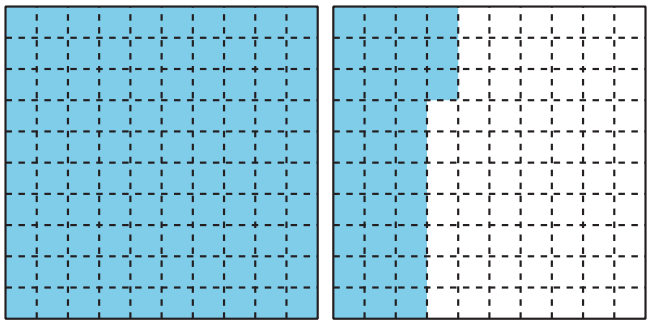


Numbers like 0.01, 0.10, and 0.1 are written as **decimals**.

Look at the shaded parts of each diagram in the first problem. Write the numbers they represent as decimals.

3. What fraction and decimal do the shaded parts of each diagram represent?

a.



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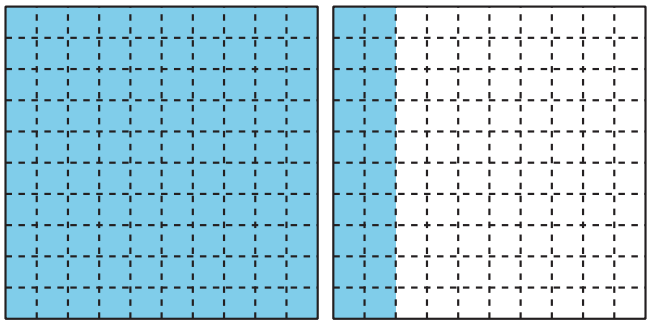
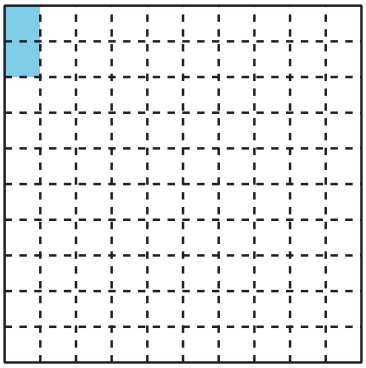


1.2: Ways to Express a Number

Each large square represents 1.

1. Write a fraction and a decimal that represent the shaded parts of each diagram. Then, write each amount in words.

a.



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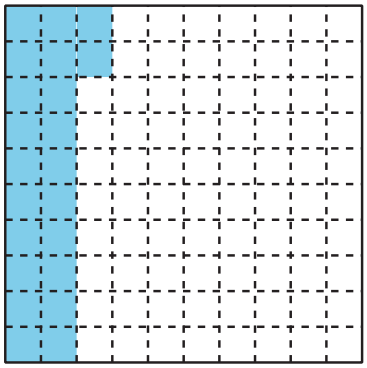
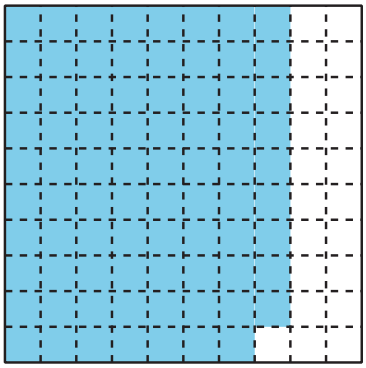
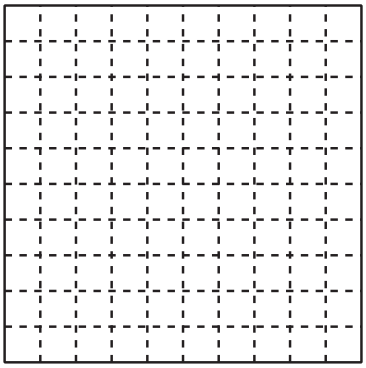


c.



2. Shade each diagram to represent each given fraction or decimal.

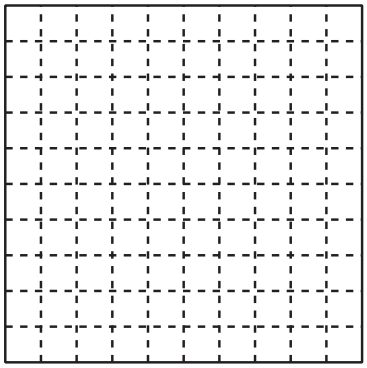
a.



Fraction: _____

Decimal: 0.78

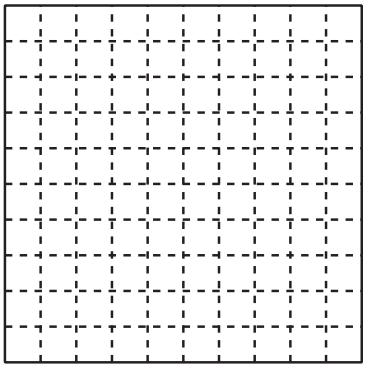
b.



Fraction: $\frac{8}{10}$

Decimal: _____

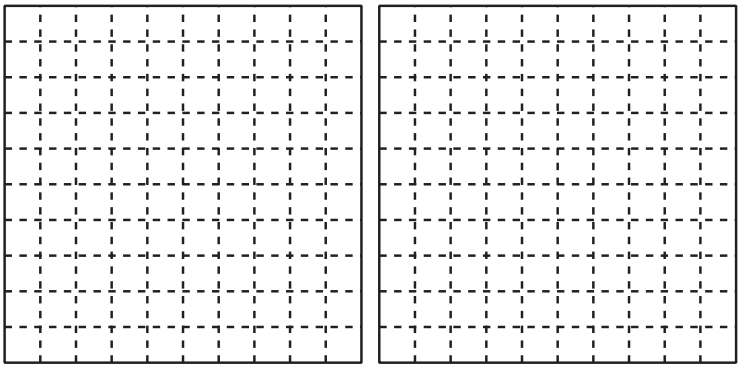
c.



Fraction: $\frac{55}{100}$

Decimal: _____

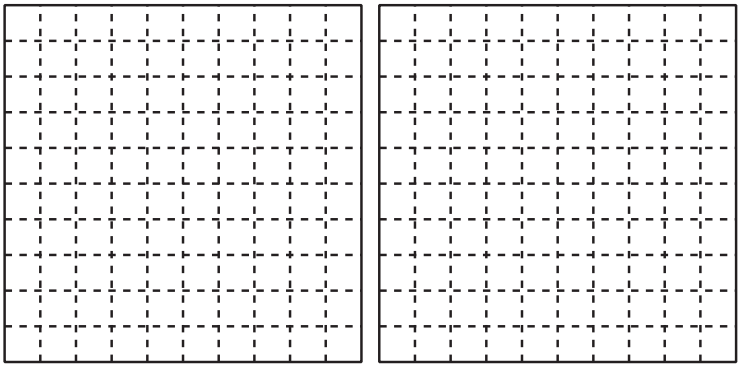
d.



Fraction: $\frac{107}{100}$

Decimal: _____

e.



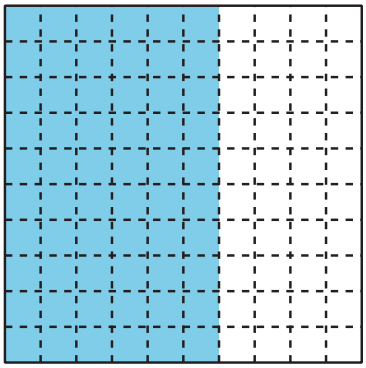
Fraction: _____

Decimal: 1.6

3. Han and Elena disagree about what number the shaded portion represents.

   Han says that it represents 0.60 and Elena says it represents 0.6.

   Explain why both Han and Elena are correct.



Lesson 2: Equivalent Decimals

- Let's think about equivalent decimals.

Warm-up: True or False: Equivalent Fractions

Decide whether each statement is true or false. Be prepared to explain your reasoning.

- $\frac{50}{100} = \frac{5}{10}$

- $\frac{20}{10} = \frac{20}{100}$

- $2 = 1 + \frac{90}{100}$

- $3\frac{1}{10} = \frac{31}{10}$

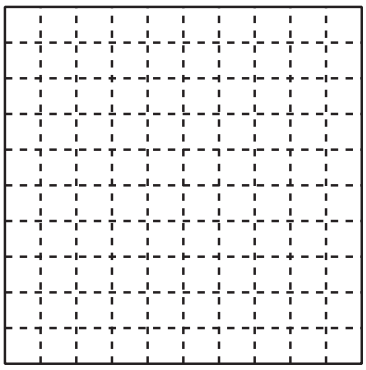
2.1: Card Sort: Diagrams of Fractions and Decimals

Your teacher will give you a set of cards. Each large square on the cards represents 1.

1. Sort the cards into groups so that the representations in each group have the same value. Record your sorting decisions. Be prepared to explain your reasoning.

2. One of the diagrams has no matching fraction or decimal. What fraction and decimal does it represent?

3. Are 0.20 and 0.2 equivalent? Use fractions and a diagram to explain your reasoning.



2.2: True or Not True?

1. Decide whether each statement is true or false. For each statement that is false, replace one of the numbers to make it true. (The numbers on the two sides of the equal sign should not be identical.) Be prepared to share your thinking.

   a. $\frac{50}{100} = 0.50$

   b. $0.05 = 0.5$

   c. $0.3 = \frac{3}{10}$

   d. $0.3 = \frac{30}{100}$

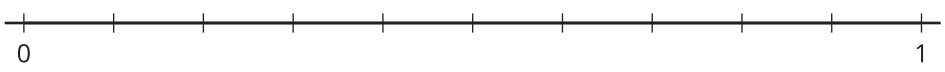
   e. $0.3 = 0.30$

   f. $1.1 = 1.10$

   g. $3.06 = 3.60$

   h. $2.70 = 0.27$

2. Jada says that if we locate the numbers 0.05, 0.5, and 0.50 on the number line, we would end up with only two points. Do you agree? Explain or show your reasoning.



Lesson 3: Decimals on Number Lines

- Let's compare some decimals.

Warm-up: Which One Doesn't Belong: Decimals and Fractions

Which one doesn't belong?

A

eight tenths

B

$\frac{80}{10}$

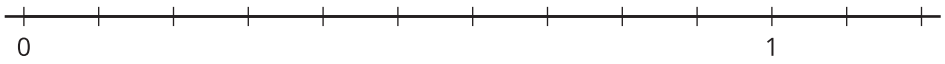
C

0.80

D

3.1: Points on Number Lines

1. Label each tick mark on the number line with the number it represents.



2. Here are eight numbers.

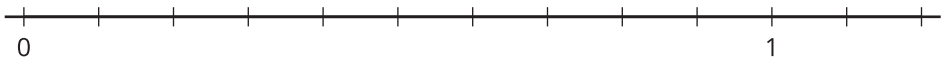
0.10 0.40 0.80 1.10 0.15 0.45 0.75 1.05

a. Locate and label each number on the number line.

b. Which number is greatest? Which is least? Explain how the number line can help determine the greatest and least numbers.

3. Locate and label these numbers on the number line.

0.24 0.96 0.61 1.12 0.08



4. Use two numbers from the previous questions to complete each comparison statement so that it is true.

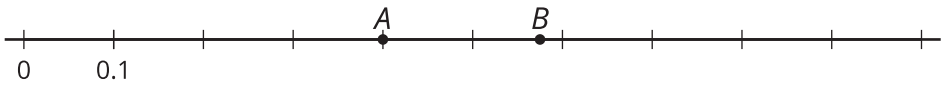
a. _____ is greater than _____.

b. _____ is less than _____.

c. _____ is the greatest number.

3.2: Decimals Compared

1. Here is a number line with two points on it.



a. Name the decimal located at point A.

b. Is the decimal at point A less than or greater than 0.50? Explain or show your reasoning.

c. Is the decimal at point B greater or less than 0.06? Explain your reasoning.

d. Estimate the decimal at point B.

2. Compare the numbers using $<$, $>$, or $=$. Can you think of a way to make comparisons without using a number line? Be prepared to explain your reasoning.

a. 0.51 _____ 0.09

b. 0.19 _____ 0.91

c. 0.45 _____ 0.54

d. 0.62 _____ 0.26

e. 1.02 _____ 0.95

f. 0.3 _____ 0.30

g. 4.01 _____ 4.10

Lesson 4: Compare and Order Decimals

- Let's put some decimals in order.

Warm-up: Estimation Exploration

The person in the image is 1.7 meters tall.

Estimate the wingspan of the eagle in meters.

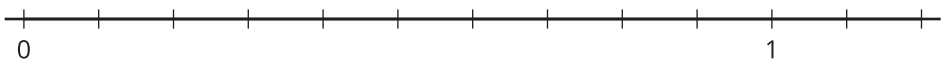
Record an estimate that is:

too low	about right	too high

4.1: All in Order

1. Order the numbers from least to greatest. Use the number line if it is helpful.

1.08	0.08	0.80	0.9	0.45	0.54

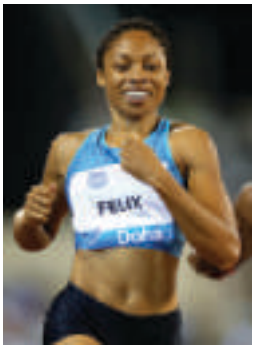


2. Order the numbers from greatest to least. Use the number line if it is helpful.

1.25	0.95	0.4	0.09	12.05	0.25

4.2: 400-Meter Dash in a Flash

The table shows eight of the top runners in the Women's 400-Meter event. Their best running times, listed here, put the runners in the world's top 25 for this event.



48.37	49.3	48.7	49.26
49.07	49.28	48.83	49.05

The names in the table are arranged by the runners' best time. The fastest runner is at the top.

runner	best time (seconds)	year achieved
Shaunea Miller-Uibo (Bahamas)		2019
Sanya Richards (U.S.A.)		2006
Valerie Brisco-Hooks (U.S.A.)		1984
Chandra Cheesborough (U.S.A.)		1984
Tonique Williams-Darling (Bahamas)		2004
Allyson Felix (U.S.A.)		2015
Pauline Davis (Bahamas)		1996
Lorraine Fenton (Jamaica)		2002

1. Put the times in order, from least to greatest, to match the times with the runners.

2. How many seconds did it take Sanya Richards to run 400 meters?

3. What is Allyson Felix's best time?

Lesson 5: Compare and Order Decimals and Fractions

- Let's put fractions and decimals in order.

Warm-up: Number Talk: Sums of Fractions

Find the value of each expression mentally.

- $\frac{5}{10} + \frac{50}{100}$
- $\frac{5}{10} + \frac{55}{100}$
- $\frac{6}{10} + \frac{50}{100}$
- $\frac{6}{10} + \frac{65}{100}$

5.1: Order Once, Order Twice

Your teacher will give you a set of cards with fractions and decimals.

1. Work with your group to order the numbers from least to greatest. Record your ordered numbers.

2. Find a group whose cards are different than yours. Combine your cards with theirs. Order the combined set from least to greatest. Record your sorted numbers.

3. Use the numbers from your sorted set and <, >, or = symbols to create true comparison statements:

   a. _____ < _____

   b. _____ > _____

   c. _____ < _____

   d. _____ > _____

5.2: Long Jumps

American athlete Carl Lewis won 10 Olympic medals and 10 World Championships in track and field—in 100-meter dash, 200-meter dash, and long jump.

Here are some of his long-jump records from his career:

year	distance (meters)
1979	8.13
1980	8.35
1982	8.7
1983	8.79
1984	8.24
1987	8.6
1991	8.87

1. On this list, which distance is his shortest jump? Which is his best (longest) jump?

2. Here are the top distances (in meters) of three other American long jumpers:
   - Bob Beamon: $8\frac{9}{10}$
   - Jarrion Lawson: $8\frac{58}{100}$
   - Mike Powell: $8\frac{95}{100}$

   Compare their records to Carl Lewis's best jump. Order the distances from greatest to least.

Section Summary

Section Summary
In this section, we learned to express tenths and hundredths as **decimals**, locate them on a number line, and compare them.

We learned that $\frac{1}{10}$ written as a decimal is 0.1, and that this number is also read "1 tenth." $\frac{1}{100}$ written as a decimal is 0.01 and is read "1 hundredth."

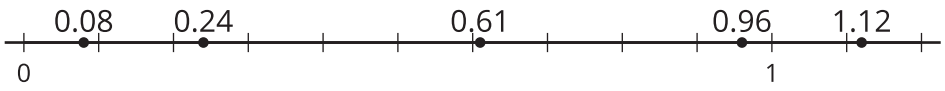
The table shows some more examples of tenths and hundredths in their decimal notation.

- Because $\frac{5}{10}$ and $\frac{50}{100}$ are equivalent, the decimals 0.5 and 0.50 are also equivalent.
- Likewise, $\frac{17}{10}$ and $\frac{170}{100}$ are equivalent, so 1.7 and 1.70 are also equivalent.

fraction	decimal
$\frac{4}{100}$	0.04
$\frac{23}{100}$	0.23
$\frac{5}{10}$	0.5
$\frac{50}{100}$	0.50
$\frac{17}{10}$	1.7
$\frac{170}{100}$	1.70

Just like fractions, decimals can be located on a number line. Doing so can help us compare them.

For instance, 0.24 is equivalent to $\frac{24}{100}$, which is between $\frac{20}{100}$ and $\frac{30}{100}$ (or between $\frac{2}{10}$ and $\frac{3}{10}$) on the number line. We can see that 0.24 is greater than 0.08 and less than 0.61.



Lesson 6: How Much is 10,000?

- Let’s represent 10,000.

Warm-up: What Do You Know about 1,000?

What do you know about 1,000?

6.1: Build Numbers

1. Use two cards to make a two-digit number. Name it and build the number with base-ten blocks.

2. Use a third card to make a three-digit number. Name it and build it with base-ten blocks.

3. Use a fourth card to make a four-digit number. Name it and build it.

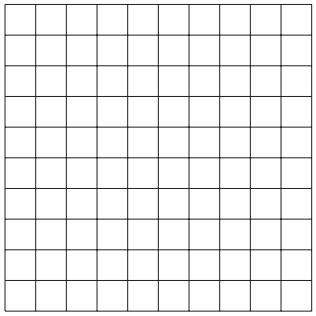
   If you don't have enough blocks, describe what you would need to build the number.

4. Your teacher will give you one more digit card. Use the last card from your teacher to make a five-digit number. Make the card the first digit. Name it and build it.

   If you don't have enough blocks, describe what blocks you would need to build the number.

6.2: What is 10,000?

Your teacher will give you a set of 10-by-10 grids.



1. Use the grids to represent each of the following numbers. Then, describe or draw a sketch of your representation here.

   a. 800

   b. 1,000

   c. 1,500

   d. 2,000

2. How many 10-by-10 grids would you need to represent each of the following numbers? Explain or draw a sketch to show your reasoning.

   a. 3,000

   b. 6,400

   c. 9,000

   d. 9,900

3. Draw a sketch to represent 10,000 using 10-by-10 grids. Be sure to clearly label each group of 1,000 in the sketch.

Lesson 7: Numbers Within 100,000

- Let’s read, write, and represent multi-digit numbers.

7.1: Count and Write Numbers

Record each count in the given spaces. The first number has been recorded for you.

1. Count by 1,000

   5,000 , _____, _____, _____, _____, _____

2. Count by 100

   9,500 , _____, _____, _____, _____, _____

3. Count by 10

   9,950 , _____, _____, _____, _____, _____

4. Count by 1

   9,995, _____, _____, _____, _____, _____

5. Complete each statement:

   a. Ten-thousand is 1 more than _____.

   b. Ten-thousand is 1,000 more than _____.

   c. Ten-thousand is 10 more than _____.

   d. Ten-thousand is 100 more than _____.

7.2: Many Thousands

1. Complete the table to show how many thousands are in each number. In the last row, write your own five-digit number.

number	number of thousands	name in words	
10,000	10	ten thousand	
20,000			
90,000			
11,000			
27,000			
98,000			

2. With your partner, name each number in words. (Leave the last column blank for now.)

3. In the top (header) row of the last column, write “number of ten-thousands”. Complete the table to show how many ten-thousands are in each number.

4. Here are four numbers:

   20,500 51,300 82,050 5,970

   a. Which number has a 5 in the thousands place?

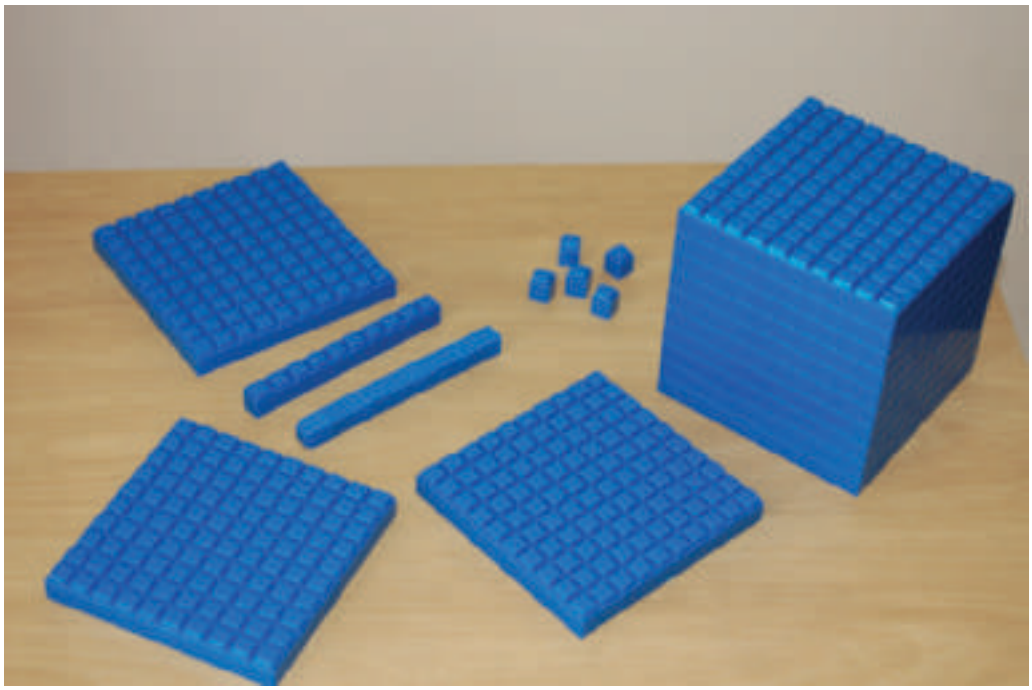
   b. Which number has a 5 in the ten-thousands place?

Lesson 8: Beyond 100,000

- Let's read, write, and represent numbers beyond 100,000.

Warm-up: How Many Do You See?

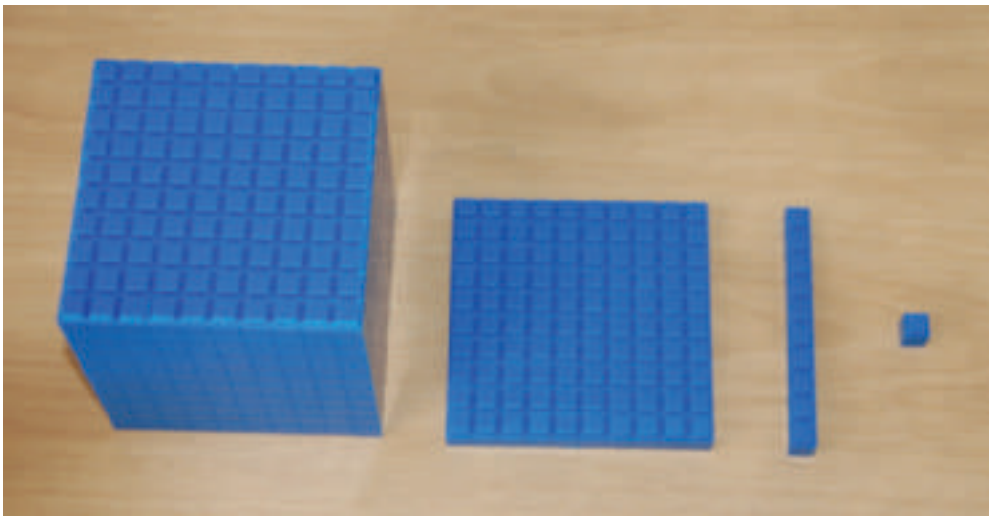
How many do you see? How do you see them?



8.1: Lin's Representation

1. Use base-ten blocks or draw a base-ten diagram to represent 15,710.

2. Lin is using blocks like these to represent 15,710. She decided to change the value of the small cube to represent 10.



What is the value of each block if the value of the small cube is 10?

a. Small cube: 10

b. Long rectangular block: _____

c. Large square block: _____

d. Large cube: _____

3. Use Lin's strategy to represent 15,710.

4. Use Lin's strategy to represent each number.

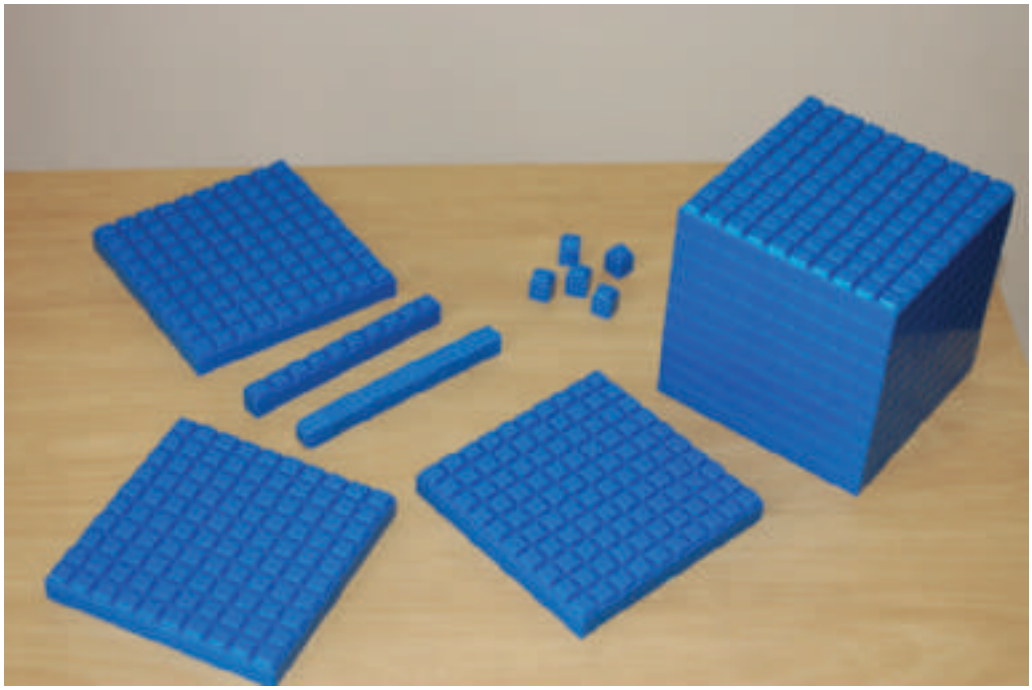
a. 23,000

b. 58,100

c. 69,470

5. Using her strategy, which base-ten blocks would be used to represent 100,000?

8.2: What Number is Represented?



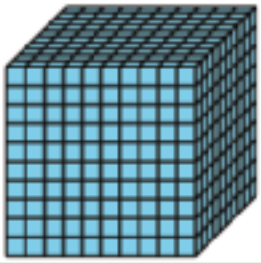
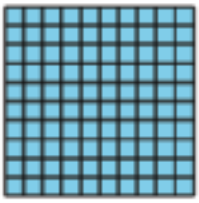
1. A small cube represents 1. What value do the blocks in the picture represent?

2. A small cube is now worth 10. What is the new value that the blocks in the picture represent?

3. Write two statements comparing the numbers in the previous problems.

8.3: Build Hundred-thousands

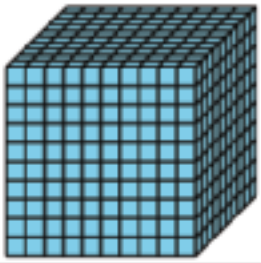
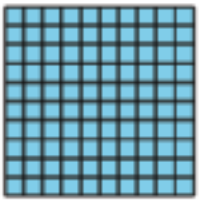
1. To represent large numbers, Lin changed the value of the small cube to 10. She used the following blocks to represent her first number.

type of block				
number of blocks used	4	9	8	3

a. What number did Lin represent? Show or explain your reasoning.

b. Write an equation to represent the value of the blocks.

2. She used more blocks to represent another number.

type of block				
number of blocks used	10	20	4	5

a. What number did Lin represent? Show or explain your reasoning.

b. Write an equation to represent the value of the blocks.

Lesson 9: Same Digit, Different Value

- Let's describe the relationship between the digits in multi-digit numbers.

Warm-up: True or False: Expanded Expressions

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $4{,}000 + 600 + 70{,}000 = 70{,}460$

- $900{,}000 + 20{,}000 + 3{,}000 = 920{,}000 + 3{,}000$

- $80{,}000 + 800 + 8{,}000 = 800{,}000 + 80 + 8$

9.1: Card Sort: Large Numbers

Your teacher will give you and your partner a set of cards with multi-digit numbers on them.

1. Sort the cards in a way that makes sense to you. Be prepared to explain your reasoning.

2. Join with another group and explain how you sorted your cards.

3. Write each number in expanded form.

   a. 4,620

   b. 46,200

   c. 462,000

4. Write the value of the 4 in each number.

5. Compare the value of the 4 in two of the numbers. Write two statements to describe what you notice about the values.

   _____

   _____

6. How is the value of the 2 in 46,200 related to the value of the 2 in 462,000?

9.2: Expand Large Numbers

1. Express each number in standard form, expanded form, and word form.

number	expanded form	word form
784,003		
	$50{,}000 + 9{,}000 + 300 + 60 + 1$	
		eight hundred three thousand, ninety-nine
310,060		
		nine hundred thirty-four thousand, nine hundred

2. Choose two numbers from the table to make this statement true:

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

3. Explain why you chose those numbers.

   _____

   _____

4. Find two classmates who chose different numbers than you did. Record their numbers. Take turns sharing your completed statements and explaining your reasoning.
   - The 3 in _____ is ten times the value of the 3 in _____.
   - The 3 in _____ is ten times the value of the 3 in _____.

Lesson 10: Ten Times As Much

- Let's write equations to show the relationship between the digits in multi-digit numbers.

Warm-up: Number Talk: Related Numbers

Find the value of each expression mentally.

- $650 + 75$
- $5{,}650 + 75$
- $50{,}650 + 75$
- $500{,}650 + 75$

10.1: Alike but Not the Same

1. Complete the table with the value of the 8 in each number.

number	value of the 8
180,000	
108,000	
100,800	
100,080	
100,008	

2. Describe the relationship between the value of the 8 in each number.

3. Write a multiplication or division equation to represent the relationship between the values of the 8 in two different numbers in the table.

10.2: More and More Money

Diego's class is counting collections of play money during a math class. There are four types of bills: tens, hundreds, thousands, and ten-thousands.

Diego found 9 of each type of bill. He organized each type into a stack, creating four stacks.

1. How much money is in each stack of bills?

   a. 9 tens

   b. 9 hundreds

   c. 9 thousands

   d. 9 ten-thousands

2. Describe the relationship between the values of each stack of bills.

3. How is the value of the stack of thousands related to the value of the stack of ten-thousands? Write an equation for that relationship.

4. Clare had 21 bills of each type. How much money is in each stack of bills Clare has?

   a. 21 tens

   b. 21 hundreds

   c. 21 thousands

   d. 21 ten-thousands

5. What is the value of the 2 in each stack of bills?

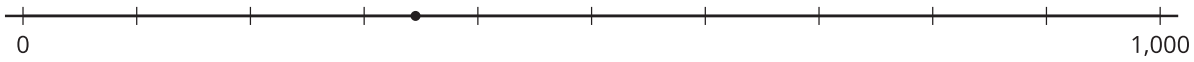
6. How is the value of the 2 in the stack of thousands related to the value of 2 in the stack of ten-thousands? Write an equation for that relationship.

Lesson 11: Large Numbers on a Number Line

- Let's locate multi-digit numbers on a number line.

Warm-up: Estimation Exploration: What Number Could This Be?

What number is represented by the point?



Record an estimate that is:

too low	about right	too high

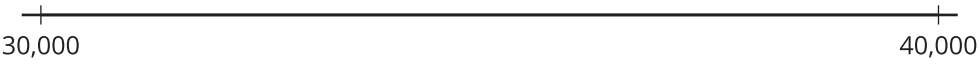
11.1: Locate Large Numbers

1. Locate and label each number on the number line.

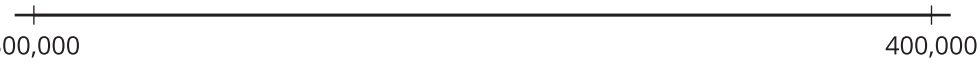
a. 347

b. 3,470

c. 34,700

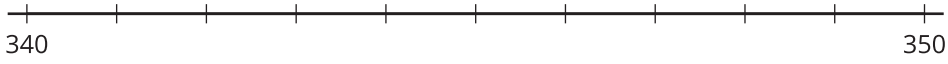


d. 347,000

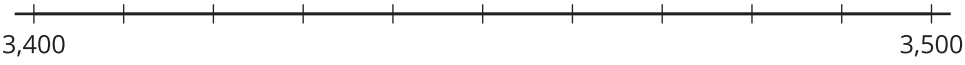


2. Locate and label each number on the number line.

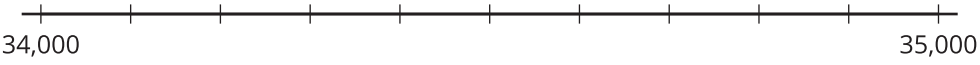
a. 347



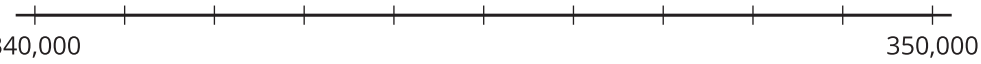
b. 3,470



c. 34,700



d. 347,000



3. What do you notice about the location of these numbers on the number lines? Make two observations and discuss them with your partner.

11.2: So Many Numbers, So Little Line

Your teacher will assign a number for you to locate on the given number line.

A. 347

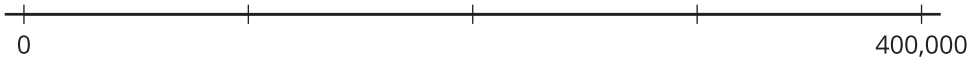
B. 3,470

C. 34,700

D. 347,000

1. Decide where your assigned number will fall on this number line. Explain your reasoning.

2. Work with your group to label the tick marks and agree on where each of the numbers should be placed.



Section Summary

Section Summary
In this section, we worked with numbers to the hundred-thousands.

First, we used base-ten blocks, 10-by-10 grids, and base-ten diagrams to name, write, and represent multi-digit numbers within 1,000,000. We wrote the numbers in **expanded form** so that we can see the value of each digit. For instance:

$$725{,}400 = 700{,}000 + 20{,}000 + 5{,}000 + 400$$

Next, we learned that the value of a digit in a multi-digit number is ten times the value of the same digit in the place to its right. For example:

- Both 14,800 and 148,000 have 4 in them.
- The 4 in 14,800 is in the thousands place. Its value is 4,000.
- The 4 in 148,000 is in the ten-thousands place. Its value is 40,000.
- The value of the 4 in 148,000 is ten times the value of the 4 in 14,800.

We used both multiplication and division equations to represent this relationship.

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

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

Finally, we analyzed the “ten times” relationships by locating numbers on number lines.

Lesson 12: Compare Multi-digit Numbers

- Let’s compare large numbers.

Warm-up: Which One Doesn’t Belong: Friendly Numbers

Which one doesn’t belong?

A. 1,395

B. 3,095

C. 9,530

D. 30,195

12.1: Which is Greater?

Your teacher will give you a set of cards, each with a single digit, 0–9.

1. Use the cards for 2, 7, and 8 to make two different three-digit numbers. Use < or > to compare them.

2. Now include the digit 1 to make two different four-digit numbers. Compare the numbers.

3. Shuffle the cards. Repeat what you did earlier with new cards.

   a. Four-digit numbers

   b. Five-digit numbers

   c. Six-digit numbers

4. For each pair you compared, how did you decide which number is greater?

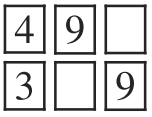
12.2: Incomplete Numbers

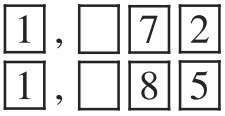
1. Here are two numbers. In both, the missing digit is the same number.

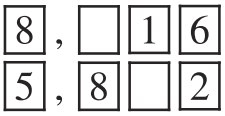
   - Han says the numbers can't be compared because they are incomplete.
   - Clare says the second number is greater, no matter what the missing digit is.

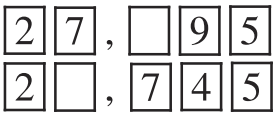
   Do you agree with either one of them? Explain your reasoning.

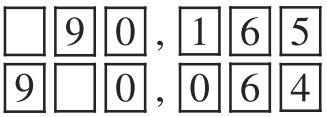
2. Here are some pairs of numbers. The numbers in each pair are missing the same digit. Can you tell which number is greater? Be prepared to explain your reasoning.

   a. 

   b. 

   c. 

   d. 

   e. 

12.3: Is It Possible?

1. Each of the following pairs of numbers is missing the same digit but in different places.

   Your teacher will assign a digit to you. Use it as the missing digit and decide if each comparison statement is true.

   a. $\square,999 > \square,500$

   b. $15,2\square0 > 15,\square02$

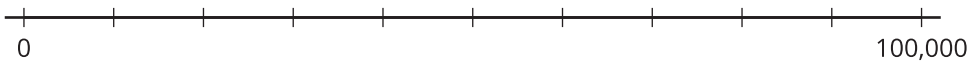
   c. $4\square,700 < 7\square,400$

   d. $1\square5,000 > 5\square1,000$

2. Here are two numbers, each with the same missing digit.

   $4\square,300$ $\qquad$ $3\square,400$

   Choose a digit to complete the numbers and show where they would be on the number line.



3. Is it possible to fill in the two blanks with the same digit to make each statement true? If you think so, give at least one example of what the digits could be. If not, explain why it is not possible.

   a. $4\square,300$ is less than $3\square,400$.

   b. $\square4,300$ is less than $\square3,400$.

Lesson 13: Order Multi-digit Numbers

- Let's put some multi-digit numbers in order.

Warm-up: True or False: Decomposed Numbers

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $1{,}923 = 1 + 90 + 200 + 3{,}000$

- $1{,}923 = 1{,}000 + 90 + 20 + 3$

- $19{,}203 = 10{,}000 + 9{,}000 + 200 + 3$

- $190{,}023 = 10{,}000 + 90{,}000 + 20 + 3$

13.1: Ways to Compare

1. Tyler compares large numbers by looking at the first digit from the left.

   He says, "The greater the first digit, the greater the number. If the first digit is the same, then we compare the second digit."

   In each of these pairs of numbers, is the number with the greater first digit also the greater number?

   a. 985,248 and 320,097

   b. 72,050 and 64,830

   c. 320,097 and 58,978

   d. 54,000 and 587,000

   e. 58,978 and 547,612

   f. 146,001 and 1,483

2. Does Tyler's strategy work for comparing any pair of numbers? Explain your reasoning.

3. How would you compare large numbers? Describe your strategy for comparing 54,000 and 587,000.

4. Use your strategy to order these numbers from least to greatest.

   a. 87,696 847,040 84,381

   b. 63,591 630,951 63,951 631,051

13.2: Video Game Scores

Mai and her friends had a video game tournament one weekend.

Here are the scores at the end of the tournament:

player	score
Mai	93,005
Priya	101,012
Kiran	90,298
Noah	90,056
Clare	98,032
Elena	89,100
Andre	--

1. Rank the scores from highest to lowest. Who is in first place?

2. Andre's score was accidentally deleted but everyone agreed that he is in second place. Could Andre's score be a six-digit number?

   Describe what Andre's score could be and give a couple of examples.

Lesson 14: Multiples of 10,000 and 100,000

- Let’s explore multiples of 1,000, 10,000, and 100,000 and how other numbers relate to them.

14.1: On Which Line Do They Belong?

Your teacher will assign a set of numbers to you.

A	140,261	100,025	486,840	676,850
B	450,099	414,500	128,201	379,900
C	158,002	42,326	99,982	428,950
D	194,030	658,340	541,700	621,035
E	215,300	499,600	608,720	644,700

1. Several number lines are posted around the room. Work with your group to decide on which number line each number should go.

   Then, estimate the location of the number on that line, put a dot sticker to mark it, and label it with the number.

2. Look at the number line that represents 0 to 100,000 and has two points on it.

   a. Name two multiples of 10,000 that are closest to each point.

   b. Of the two multiples of 10,000 you named, which one is the nearest to each point?

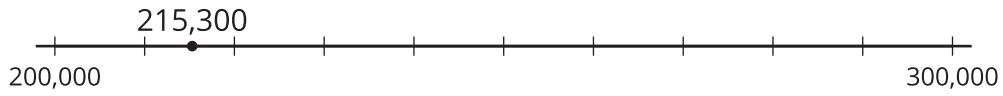
14.2: Closer to Some Multiple

Use the number line that represents the numbers between 100,000 and 200,000 for this activity.

1. Name the multiple of 10,000 that is the nearest to each number. (Leave the last column blank for now.)

number	nearest multiple of 10,000	
100,025		
128,201		
140,261		
158,002		
194,030		

2. Here is the number line with 215,300 shown on it. Which multiple of 100,000 is the nearest to 215,300?



3. Label the last column in the table “nearest multiple of 100,000.” Then, name the nearest multiple of 100,000 for each number in the table.

Lesson 15: The Nearest Multiples of 1,000, 10,000, and 100,000

- Let's find multiples of 1 thousand, 10 thousand, and 100 thousand that are the nearest to a number.

Warm-up: Estimation Exploration: What Could It Be?

What number could this point represent?

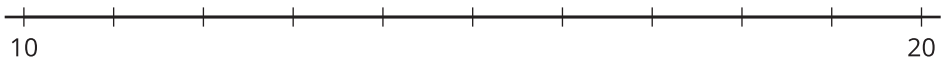
Record an estimate that is:

too low	about right	too high

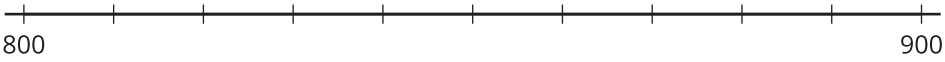
15.1: Closer to This or That?

1. Answer each question. Use the number lines if they are helpful.

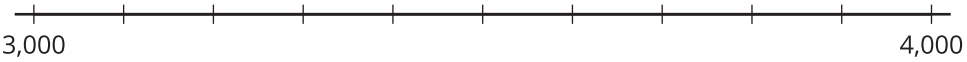
a. Is 16 closer to 10 or to 20?



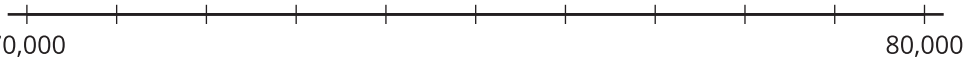
b. Is 816 closer to 800 or to 900?



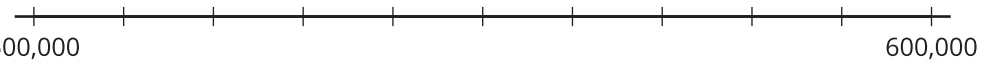
c. Is 3,816 closer to 3,000 or 4,000?



d. Is 73,816 closer to 70,000 or 80,000?



e. Is 573,816 closer to 500,000 or 600,000?



2. For 816:

   - The nearest multiple of 1,000 is 1,000.
   - The nearest multiple of 100 is 800.
   - The nearest multiple of 10 is 820.

Complete the table with the nearest multiple of 10, 100, 1,000, 10,000, and 100,000 for each number.

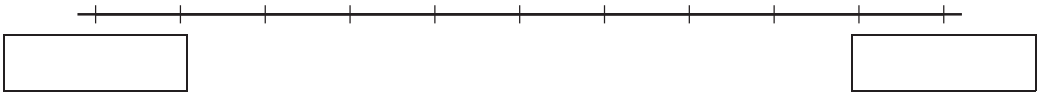
nearest multiple of ...	10	100	1,000	10,000	100,000
16		--	--	--	--
816	820	800	1,000	--	--
3,816				--	--
73,816					
573,816					

15.2: Closer to Which Number?

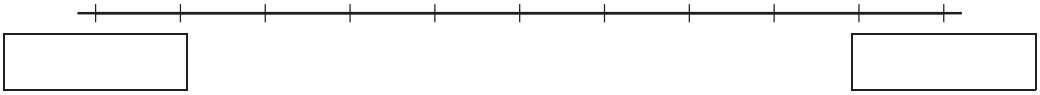
1. Answer each question. Label and use the number lines if they are helpful.

a. Is 425,193 closer to 400,000 or 500,000?

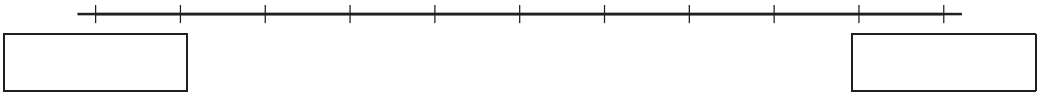
b. Is 425,193 closer to 420,000 or 430,000?



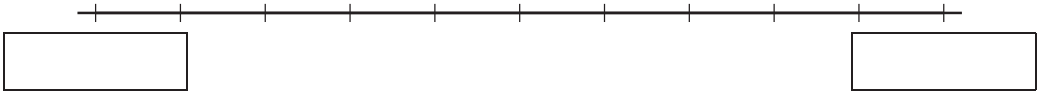
c. Is 425,193 closer to 425,000 or 426,000?



d. Is 425,193 closer to 425,100 or to 425,200?



e. Is 425,193 closer to 425,190 or to 425,200?



2. For the number 425,193:

- The nearest multiple of 100,000 is _____.
- The nearest multiple of 10,000 is _____.
- The nearest multiple of 1,000 is _____.
- The nearest multiple of 100 is _____.
- The nearest multiple of 10 is _____.

15.3: What's the Nearest Multiple?

1. For the number 136,850, Han can name the nearest multiple of 100,000, 10,000, and 1,000.

   He is stuck when trying to name the nearest multiple of 100.

nearest multiple of . . .	100,000	10,000	1,000
136,850			

   a. In the table, write the nearest multiples that Han knows for each place value. Use number lines if they are helpful.

   b. Why might it be tricky to name the nearest multiple of 100 for 136,850? What do you think it is?

2. Name the nearest multiples of 100,000, 10,000, 1,000, and 100 for each number.

nearest multiple of . . .	100,000	10,000	1,000	100
191,530				
70,500				

Lesson 16: Round Numbers

- Let's round some large numbers.

Warm-up: Number Talk: Missing Numbers

Find the value that makes each equation true mentally.

- $421 + \_\_\_\_\_ = 500$

- $421 + \_\_\_\_\_ = 1{,}000$

- $6{,}421 + \_\_\_\_\_ = 7{,}000$

- $6{,}421 + \_\_\_\_\_ = 10{,}000$

16.1: Round to What?

Noah says that 489,231 can be rounded to 500,000.

Priya says that it can be rounded to 490,000.

1. Explain or show why both Noah and Priya are correct. Use a number line if it helps.

2. Describe all the numbers that round to 500,000 when rounded to the nearest hundred-thousand.

3. Describe all the numbers that round to 490,000 when rounded to the nearest ten-thousand.

4. Name two other numbers that can also be rounded to both 500,000 and 490,000.

16.2: Some Numbers to Round

Your teacher will show you six numbers. Choose at least three numbers and round each to the nearest 100,000, 10,000, 1,000, and 100.

Record your work in the table. Use a number line if it is helpful.

round to the nearest . . .	100,000	10,000	1,000	100
53,487				
4,896				
370,130				
96,500				
985,411				
7,150				

16.3: Rounded Populations

The table shows the estimated populations of two cities in the United States, based on surveys in 2018.

city	population	rounded to the nearest 1,000,000	rounded to the nearest 100,000	rounded to the nearest 10,000
Austin, TX	964,254			960,000
Lincoln, NE	287,401			
		1,000,000		900,000
		1,000,000	900,000	
		0	500,000	

Here are three other cities and their estimated populations:

- Charlotte, NC: 872,498
- Jacksonville, FL: 903,889
- Virginia Beach, VA: 450,189

1. Match each of the three cities with the rounded populations in the table.

2. The table shows three ways of rounding large numbers.

    a. To get a rough idea of how many people are in these cities, which ways of rounding seem appropriate?

    b. To compare the populations or put them in order by size, which ways of rounding are more helpful? Less helpful?

Lesson 17: Apply Rounding

- Let's round large numbers to learn about situations and solve problems.

Warm-up: Notice and Wonder: Plane Altitudes

What do you notice? What do you wonder?

plane	altitude (feet)
WN11	35,625
SK51	28,999
VT35	15,450
BQ64	36,000
AL16	31,000
AB25	35,175
CL48	16,600
WN90	30,775
NM44	30,245

17.1: Apart in the Air

1. Altitude is the vertical distance from sea level. Here are the altitudes of ten planes.

plane	altitude (feet)	
WN11	35,625	
SK51	28,999	
VT35	15,450	
BQ64	36,000	
AL16	31,000	
AB25	35,175	
CL48	16,600	
WN90	30,775	
NM44	30,245	

Which planes are flying at about 30,000 feet? Explain or show your reasoning.

2. Planes flying over the same area need to stay at least 1,000 feet apart in altitude.

   Mai said that one way to tell if planes are too close is to round each plane's altitude to the nearest thousand. Do you agree that this is a reliable strategy?

   In the last column, round each altitude to the nearest thousand. Use the rounded values to explain why or why not.

17.2: Safe or Unsafe?

Use the altitude data table from earlier for the following problems.

1. Look at the column showing exact altitudes.

    a. Find two or more numbers that are within 1,000 feet of one another. Mark them with a circle or a color.

    b. Find another set of numbers that are within 1,000 feet of one another. Mark them with a square or a different color.

    c. Based on what you just did, which planes are too close to one another?

2. Repeat what you just did with the rounded numbers in the last column. If we look there, which planes are too close to one another?

3. Which set of altitude data should air traffic controllers use to keep airplanes safe while in the air? Explain your reasoning.

4. Are there better ways to round these altitudes, or should we not round at all? Explain or show your reasoning.

17.3: No-phone Zone?

In some countries, cell phone use is allowed on a flight only when the plane is at a certain altitude, usually around 40,000 feet.

Here are six planes and their altitudes.

plane	altitude (feet)
A	40,990
B	39,524
C	36,138
D	40,201
E	35,472
F	30,956

Jada says the passengers in all planes except for plane F can use their phones.

Elena says only those in B and D can do so.

Do you agree with either of them? Explain your reasoning.

Section Summary

Section Summary
In this section, we learned to compare, order, and round numbers up to 1,000,000.

We started by using what we know about place value to compare large whole numbers. For instance, we know that 45,892 is less than 407,892 because the 4 in 45,892 represents four ten-thousands and the 4 in 407,892 represents four hundred-thousands.

Next, we found multiples of 1,000, 10,000, and 100,000 that are closest to given numbers—at first with the help of number lines, and later without. For example, for 407,892, we know that:

- 408,000 is the nearest multiple of 1,000
- 410,000 is the nearest multiple of 10,000
- 400,000 is the nearest multiple of 100,000

Finally, we used what we know about finding nearest multiples to round large numbers to the nearest thousand, ten-thousand, and hundred-thousand.

Lesson 18: Standard Algorithm to Add and Subtract

- Let's find sums and differences of large numbers.

Warm-up: Estimation Exploration: What's the Difference?

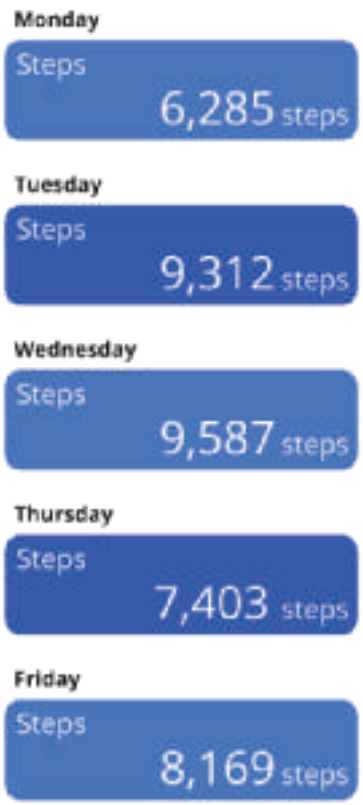
Estimate the difference: $42{,}050 - 3{,}790$.

Record an estimate that is:

too low	about right	too high

18.1: Weekly Steps

A teacher uses an app on her cell phone to track her physical activity. Here is the data on the number of steps over 5 school days.



For each question, show your reasoning.

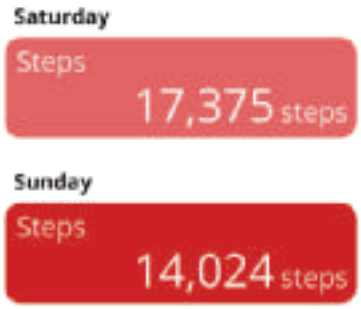
1. On which two days did she take the most steps? Over those two days, how many steps did she take altogether?

2. What is the difference in the number of steps she took on her most active day and on her least active day?

3. Between Wednesday and Thursday, her activity level dropped. How many fewer steps did she take on Thursday than Wednesday?

18.2: Steps During the Weekend

The teacher also keeps track of the number of steps she took during the weekend. The data from Saturday and Sunday of that same week are shown.



Here are two strategies to compute the total number of steps she took over the weekend.

Strategy A

$$\begin{array}{rrrrrrrrrrrr} & 10{,}000 & + & 7{,}000 & + & 300 & + & 70 & + & 5 & \\ + & 10{,}000 & + & 4{,}000 & + & 0 & + & 20 & + & 4 & \\ \hline & 20{,}000 & + & 11{,}000 & + & 300 & + & 90 & + & 9 & = 31{,}399 \end{array}$$

Strategy B

$$\begin{array}{r} {\scriptstyle 1} \\ 17{,}375 \\ +\;\; 14{,}024 \\ \hline 31{,}399 \end{array}$$

1. Analyze the strategies. Discuss with your partner:
    - What is happening in each strategy?
    - How are they alike? How are they different?

2. Use both strategies to find the difference between the number of steps the teacher took on Saturday and on Sunday.

3. During another week, the teacher took 26,815 steps during the weekdays and 11,403 steps during the weekend. Use both strategies to find the total number of steps she took that week.

Lesson 19: Compose and Decompose to Add and Subtract

- Let's compose and decompose units to add and subtract.

Warm-up: Number Talk: Subtract Fractions

Find the value of each expression mentally.

- $2\frac{3}{4} - 1\frac{1}{4}$
- $1\frac{1}{4} - \frac{3}{4}$
- $5\frac{1}{8} - 2\frac{3}{8}$
- $3\frac{2}{10} - 2\frac{7}{10}$

19.1: Find and Check Sums

1. Find the value of each sum.

a

$$\begin{array}{r} 8,299 \\ +\quad\ 1 \\ \hline \end{array}$$

b

$$\begin{array}{r} 8,299 \\ +\quad 11 \\ \hline \end{array}$$

c

$$\begin{array}{r} 8,299 \\ +\quad 111 \\ \hline \end{array}$$

d

$$\begin{array}{r} 8,299 \\ +\ 1,111 \\ \hline \end{array}$$

2. Use the expanded form of both 8,299 and 1,111 to check the value you found for the last sum.

3. Each computation shown has at least one error. Find the errors and show the correct calculation.

a

		1			
	1	2,	3	0	9
+		4,	5	6	7
	1	6,	8	6	6

b

		1	1	1	
	3	2,	2	1	6
+			7	8	9
	3	3,	9	9	5

c

			1			
	6	4	2,	9	9	9
+		4	8,	1	1	1
	6	9	0,	0	0	0

d

		1	1	1	
	1	8,	9	9	9
+		9,	9	9	9
	2	7,	9	9	8

19.2: Priya's Family Heirlooms

Priya's mom wore an heirloom bracelet at her wedding in 1996. The bracelet was made in 1947.

Priya subtracted to find out how old the bracelet was when her parents were married.

$$\begin{array}{r} \ \ 8\ \ 16 \\ 1,\ 9\ \cancel{9}\ \cancel{6} \\ -\ 1,\ 9\ 4\ 7 \\ \hline \ \ 4\ \ 9 \end{array}$$

Priya learned that her grandmother had also worn the bracelet at her wedding 24 years earlier.

Priya subtracted to find out when her grandparents were married.

$$\begin{array}{r} 1,\ 9\ 9\ 6 \\ -\ \ \ \ \ 2\ 4 \\ \hline 1,\ 9\ 7\ 2 \end{array}$$

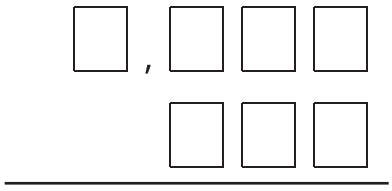
1. Are both calculations correct? Why does one calculation have some numbers crossed out and some new numbers, but the other one does not? Explain your reasoning.

2. Priya's grandmother wore an heirloom necklace and earring set that was 63 years old when she was married in 1972.

a. If Priya uses the standard algorithm to subtract $1972 - 63$ will she need to decompose a unit? Explain your reasoning.

b. Use the standard algorithm to subtract $1972 - 63$ and find the year the necklace was made.

3. Create a subtraction problem that would not require decomposing a unit to subtract. Then solve the problem.



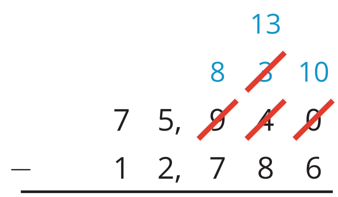
Lesson 20: Add and Subtract Within 1,000,000

Let's use the standard algorithm to add and subtract.

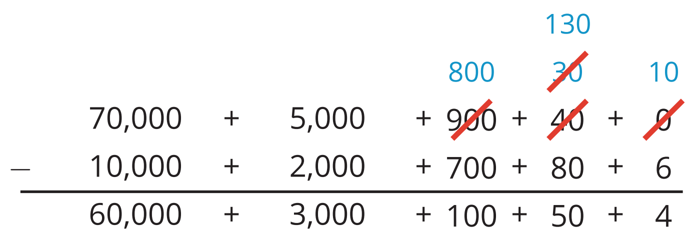
Warm-up: Notice and Wonder: Subtracting Tens of Thousands

What do you notice? What do you wonder?

A



B



20.1: Add and Subtract Large Numbers

1. Use the standard algorithm to find the value of each sum and difference. If you get stuck, try writing the numbers in expanded form.

   a. $7{,}106 + 2{,}835$

   b. $8{,}179 - 3{,}599$

   c. $142{,}571 + 10{,}909$

   d. $268{,}322 - 72{,}145$

2. Find the missing number that would make each computation true.

a

$$\begin{array}{r} 67,182 \\ + \quad\quad\quad \\ \hline 129,400 \end{array}$$

b

$$\begin{array}{r} 234,650 \\ - \quad\quad\quad \\ \hline 193,710 \end{array}$$

20.2: Spot Errors

1. Kiran is trying to find the sum of 204,500 and 695. He isn't sure how to set up the calculation so he wrote down two ideas. Which way is correct? Be ready to share your thinking with your partner.

A

$$\begin{array}{r} 20,450 \\ +\ \ 695 \\ \hline 89,950 \end{array}$$

B

$$\begin{array}{r} {\scriptstyle 1} \\ 204,500 \\ +\ \ \ \ 695 \\ \hline 205,195 \end{array}$$

2. Lin made some errors when subtracting 4,325 from 61,870. Identify as many errors as you can find. Then, show the correct way to subtract.

$$\begin{array}{r} {\scriptstyle 10\ \ \ \ \ 10} \\ 6\,\cancel{1},\,8\,7\,\cancel{0} \\ -\ \ \ 4,325 \\ \hline 66,555 \end{array}$$

Lesson 21: Zeros in the Standard Algorithm

- Let's subtract from numbers with several zeros.

Warm-up: Which One Doesn't Belong: Numbers with 0, 2, and 5

Which one doesn't belong?

A. 2,050

B. 2,055

C. 205.2

D. 20,005

21.1: What If There is Nothing to Decompose?

Here are some numbers you saw earlier. Each number has at least one 0. From each number, 1,436 is being subtracted.

1. Make sense of the problems and explain to a partner.

a

$$\begin{array}{r} {\scriptstyle 1\ \ 10\ \ 4\ \ 10} \\ 2,\ \cancel{0}\ \ \cancel{5}\ \ \cancel{0} \\ -\ \ 1,\ 4\ 3\ 6 \\ \hline 6\ 1\ 4 \end{array}$$

b

$$\begin{array}{r} {\scriptstyle 1\ \ 10\ \ 4\ \ 15} \\ 2,\ \cancel{0}\ \ \cancel{5}\ \ \cancel{5} \\ -\ \ 1,\ 4\ 3\ 6 \\ \hline 6\ 1\ 9 \end{array}$$

2. Use the approach in the first problem to find these two differences:

a

$$\begin{array}{r} 2,\ 0\ 0\ 5 \\ -\ \ 1,\ 4\ 3\ 6 \\ \hline \end{array}$$

b

$$\begin{array}{r} 2\ 0,\ 0\ 0\ 5 \\ -\ \ \ \ 1,\ 4\ 3\ 6 \\ \hline \end{array}$$

3. Find the value of each difference. Be prepared to explain your reasoning. If you get stuck, try subtracting using the expanded form.

a

$$\begin{array}{r} 8,\ 0\ 3\ 0 \\ -\ \ 2,\ 6\ 1\ 5 \\ \hline \end{array}$$

b

$$\begin{array}{r} 8,\ 0\ 3\ 3 \\ -\ \ 2,\ 6\ 1\ 5 \\ \hline \end{array}$$

c

$$\begin{array}{r} 8,\ 0\ 0\ 3 \\ -\ \ 2,\ 6\ 1\ 5 \\ \hline \end{array}$$

d

$$\begin{array}{r} 8\ 0,\ 0\ 0\ 3 \\ -\ \ \ \ 2,\ 6\ 1\ 5 \\ \hline \end{array}$$

21.2: What is Your Age?

Jada recorded the birth year of some of her maternal grandparents for a family history project.

family member	birth year
grandmother	1952
grandfather	1948
great-grandmother	1930
great-grandfather	1926

As of this year, what is the age of each family member? Show your reasoning. Use the standard algorithm at least once.

Lesson 22: Solve Problems Involving Large Numbers

- Let's solve problems by adding and subtracting.

Warm-up: True or False: Sums and Differences

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $7{,}000 + 3{,}000 = 10{,}000$

- $7{,}180 + 3{,}920 = 10{,}100$

- $423{,}450 - 42{,}345 = 105$

- $400{,}000 - 99{,}999 = 311{,}111$

22.1: The Fundraiser

A school's track teams raised $41,560 from fundraisers and concession sales.

In the fall, the teams paid $3,180 for uniforms, $1,425 in entry fees for track meets, and $18,790 in travel costs.

In the spring, the teams paid $10,475 in equipment replacement, $1,160 for competition expenses, and $912 for awards and trophies.

1. Was the amount collected enough to cover all the payments? Explain or show how you know.

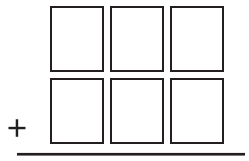
2. If the amount collected was enough, how much money did the track teams have left after paying all the expenses? If it was not enough, how much did the track teams overspend? Explain or show how you know.

22.2: The Least and the Greatest of Them All

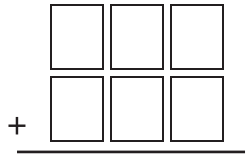
Your teacher will give you and your partner a set of 10 cards, each with a number between 0 and 9. Shuffle the cards and put them face down.

1. Draw 3 cards. Use all 3 cards to form two different numbers that would give:

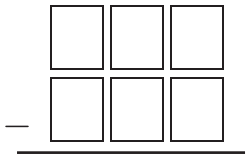
   a. the greatest possible sum

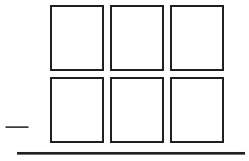
   b. the least possible sum

   c. the greatest possible difference

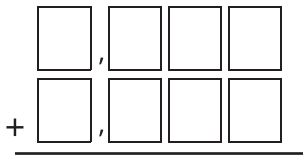
   

   d. the least possible difference

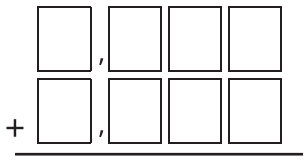
   

2. Shuffle the cards and draw 4 cards. Use them to form two different numbers that would give:

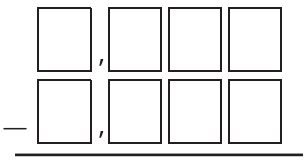
a. the greatest possible sum



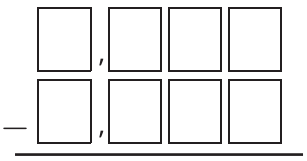
b. the least possible sum



c. the greatest possible difference



d. the least possible difference

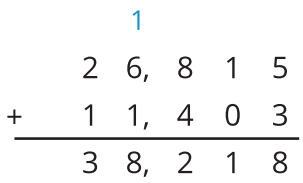


Section Summary

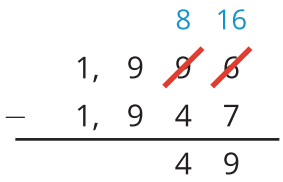
Section Summary
In this section, we used our understanding of place value and expanded form to add and subtract large numbers using the standard algorithm.

We learned how to use the algorithm to keep track of addition of digits that results in a number greater than 9.

Whenever we have 10 in a unit, we make a new unit and record the new unit at the top of the column of numbers in the next place to the left.

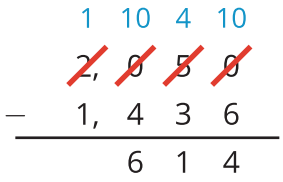


When we subtract numbers it may be necessary to decompose tens, hundreds, thousands or ten-thousands before subtracting.



Finally, we learned that if the digit we are subtracting is a zero, we may need to decompose one unit of the digit in the next place to the left.

Sometimes, it is necessary to look two or more places to the left to find a unit to decompose. For example, here is one way to decompose a ten and a thousand to find $2{,}050 - 1{,}436$.



Lesson 23: Bees are Buzzing

- Let's investigate insect populations.

Warm-up: Estimation Exploration: Bees

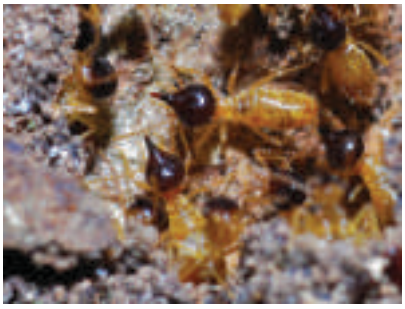
Record an estimate that is:

too low	about right	too high

23.1: Termites, Ants, and Bees

Here is some information about insects:

Termites



- Size of a colony: 100–1,000,000
- A queen lives for 30–50 years.
- There are 3,000–3,500 species of termites.
- The length of a termite is 4 to 15 millimeters.
- In some species, the mature queen may produce around 40,000 eggs a day.

Odorous House Ants

- Size of colony: up to 100,000
- A queen lives for 300–1,800 days.
- The length of an ant is 1.5–3.2 millimeters.
- Foraging ants travel up to 700 feet from their nests.
- There are 12,000–22,000 possible species.

Honey Bees

- Size of a hive: 10,000–60,000
- There are around 500 drones in a hive.
- A queen can lay about 1,500–2,000 eggs each day.
- A hive produces 7–40 liters of honey in a season.
- The length of a bee is 10–20 millimeters.

1. Here are some numbers that could represent facts about termites, house ants, and honey bees. What might each number represent?

number	what it might represent
2.4	
8	
487	
1,794	
6,905	
20,799	
530,097	

2. Add another number to the list. What about the insects might this number represent?

3. Discuss your answers with your partner. Be prepared to show or explain your reasoning.

23.2: Bee Population

An entomologist records the number of bees in their beehive over the course of several months. They record:

- the number of bees at the beginning of the month
- how many bees left (and didn't return) during the month
- how many new bees were added to the hive during the month

Unfortunately, some of the entries in the table are missing.

1. Complete the missing information in the table.

month	bees in the hive at the beginning of the month	new bees	bees that left the hive
May	20,000	9,378	342
June		15,870	970
July		14,965	
August	58,107		28,980
September	30,017	No data	No data

2. Discuss your responses with your partner. Be prepared to show or explain your reasoning.

Section A: Practice Problems

1. **Pre-unit**

   Round each number to the nearest 10 and to the nearest 100.

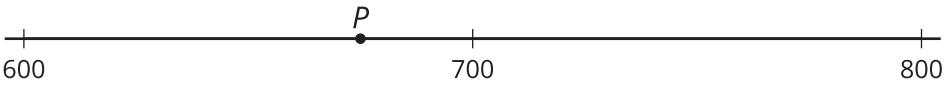
   a. 63

   b. 350

   c. 485

2. **Pre-unit**

   A number P is located on the number line.



   a. Round P to the nearest multiple of 100. Explain your reasoning.

   b. Can you tell what P is if rounded to the nearest multiple of 10? Explain your reasoning.

3. **Pre-unit**

Find the value of each expression. Show your reasoning.

a. $523 + 278$

b. $418 - 235$

4. **Pre-unit**

Here are three numbers: 265, 652, and 526. For each question, explain your reasoning.

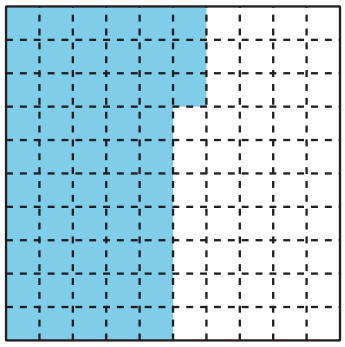
a. Does the digit 6 have a greater value in 265 or 652?

b. Does the digit 5 have a greater value in 265 or 652?

c. In which number does the digit 2 have the greatest value? In which one does it have the least value?

5. Each large square represents 1.

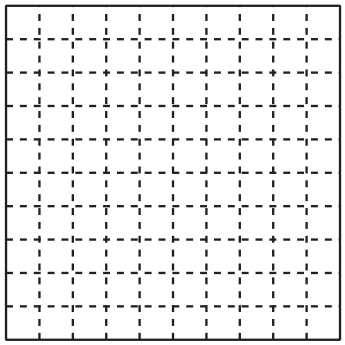
   a. Write a fraction and a decimal that represent the shaded part of the large square.



Fraction: _____

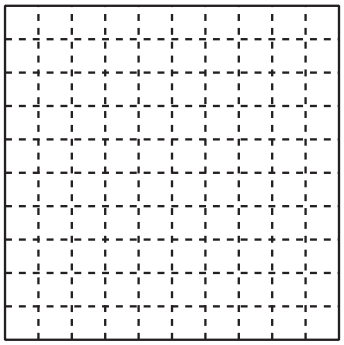
Decimal: _____

   b. Shade a part of each square to represent each given number.



Fraction: $\frac{13}{100}$

Decimal: _____



Fraction: _____

Decimal: 0.44

(From Unit 4, Lesson 1.)

6. Select **all** the numbers equivalent to $\frac{2}{10}$.

   A. 0.5

   B. 0.2

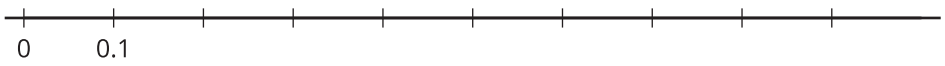
   C. $\frac{20}{100}$

   D. $\frac{25}{100}$

   E. 0.20

(From Unit 4, Lesson 2.)

7. a. Locate and label 0.6 and 0.35 on the number line.



   b. Compare 0.6 and 0.35 using < or >.

(From Unit 4, Lesson 3.)

8. Order the numbers from least to greatest:

   5.90 9.05 5.95 0.59 5.59

(From Unit 4, Lesson 4.)

9. Order the numbers from least to greatest:

$\frac{13}{10}$ 1.25 1.46 $\frac{7}{5}$ $\frac{155}{100}$

(From Unit 4, Lesson 5.)

10. **Exploration**

The table shows the distances, in miles, some students walked during the school week.

Order the numbers from least to greatest.

student	distance (miles)
Han	$5\frac{3}{4}$
Tyler	$5\frac{7}{8}$
Mai	5.95
Elena	$5\frac{8}{10}$
Andre	5.79

11. **Exploration**

In a recent lesson, you learned about the lengths of the jumps made by Carl Lewis and other athletes.

Create and label a number line to show the distances of all ten jumps made by the athletes.

Section B: Practice Problems

1. a. Write the name of the number 8,500 in words.

   b. How many hundreds are there in 8,500? Explain how you know.

   _____

   _____

   _____

   _____

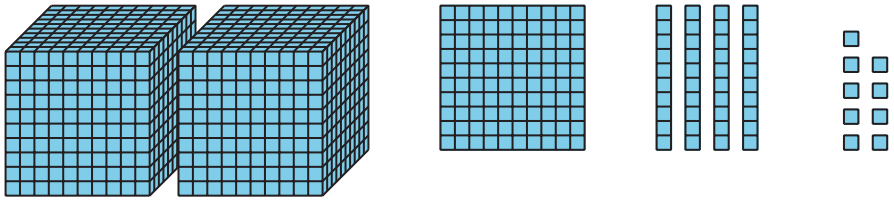
(From Unit 4, Lesson 6.)

2. a. Count by 10,000 starting at 6,500 and stopping at 66,500. Record each number:

   b. Pick two numbers from your list and write their names in words.

(From Unit 4, Lesson 7.)

3.



a. If each small square represents 1, what number does the picture represent?

b. If each small square represents 10, what number does the picture represent?

(From Unit 4, Lesson 8.)

4. a. Write the names of the numbers 702,150, and 73,026 in words.

b. How is the value of the 7 in 702,150 related to the value of the 7 in 73,026?

(From Unit 4, Lesson 9.)

5. a. What is the value of the 6 in 65,247?

   b. What is the value of the 6 in 16,803?

   c. Write multiplication and division equations to represent the relationship between the value of the 6 in 65,247 and the value of the 6 in 16,803.

(From Unit 4, Lesson 10.)

6. a. Locate and label each number on the number line:

   - 100,000
   - 10,000
   - 1,000

   b. Which numbers were easiest to locate? Which were most difficult? Why?

(From Unit 4, Lesson 11.)

7. **Exploration**

For each question, use only the digits 1, 0, 5, 9, and 3. You may not use a digit more than once and you do not need to use all the digits.

a. Can you make three numbers greater than 3,000 but less than 3,500?

b. Can you make three numbers greater than 9,000 but less than 10,000?

c. Which numbers can you make that are greater than 39,500 but less than 40,000?

8. **Exploration**

Estimate the value of the number labeled A on the number line. Explain your reasoning.

Section C: Practice Problems

1. Jada writes the same digit in the two blanks to make the statement true. Which digits could she write?

$$6\square,432 < 65,\square98$$

(From Unit 4, Lesson 12.)

2. a. Order these numbers from least to greatest:

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

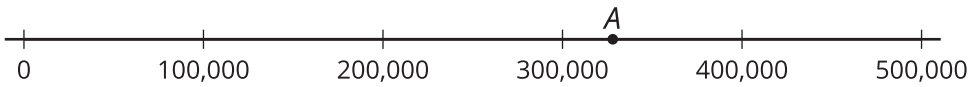
b. How did you pick the smallest number? Explain your reasoning.

(From Unit 4, Lesson 13.)

3. a. Which multiple of 10,000 is closest to 132,256?

b. Which multiple of 100,000 is closest to 132,256?

c. Which multiple of 100,000 is closest to the number labeled A?



(From Unit 4, Lesson 14.)

4. For the number 583,642:

   a. What is the nearest multiple of 100,000?

   b. What is the nearest multiple of 10,000?

   c. What is the nearest multiple of 1,000?

   d. What is the nearest multiple of 100?

   e. What is the nearest multiple of 10?

(From Unit 4, Lesson 15.)

5. a. Describe the numbers that are 460,000 when rounded to the nearest 10,000.

   b. Where are these numbers located on the number line?

(From Unit 4, Lesson 16.)

6. When rounded to the nearest 1,000, Airplane X is flying at 30,000 feet, Airplane Y at 31,000 feet, and Airplane Z at 32,000 feet.

    a. Could Airplanes X and Y be within 1,000 feet of each other? If you think so, give some examples. If you don't think so, explain why not.

    b. Explain why Airplanes X and Z could not be within 1,000 feet of each other. Use a number line if you find it helpful.

(From Unit 4, Lesson 17.)

7. **Exploration**

    Rounded to the nearest 10 pounds, one bag of sand weighs 50 pounds.

    Jada wants at least 1,000 pounds of sand for a sandbox. How many bags of sand does Jada need to buy to be sure that she has enough sand?

8. **Exploration**

You will need a set of digit cards 0–9 for this exploration.

Shuffle your cards and stack them face down. Turn over 6 digit cards.

Can you put the 6 digits in the blanks so that all three statements are true?

a. $\boxed{4}, \boxed{}\boxed{2}\boxed{3} > \boxed{}, \boxed{9}\boxed{7}\boxed{8}$

b. $\boxed{}\boxed{2}, \boxed{4}\boxed{0}\boxed{3} > \boxed{4}\boxed{2}, \boxed{}\boxed{0}\boxed{1}$

c. $\boxed{4}\boxed{3}\boxed{}, \boxed{2}\boxed{5}\boxed{7} > \boxed{4}\boxed{}\boxed{5}, \boxed{9}\boxed{3}\boxed{7}$

9. **Exploration**

To answer these riddles, think about rounding to the nearest 10, 100, 1,000, or 10,000. Use a number line if it is helpful.

a. I can be rounded to 100 or to 140. What number could I be?

b. I can be rounded to 7,500 or to 8,000. What number could I be?

c. I can be rounded to 60,000 or to 57,000. What number could I be?

Section D: Practice Problems

1. Clare took 11,243 steps on Saturday and 12,485 steps on Sunday.

    a. How many steps did Clare take altogether on Saturday and Sunday?

    b. How many more steps did Clare take on Sunday than on Saturday?

(From Unit 4, Lesson 18.)

2. a. Find the value of the sum. Explain your calculations.

$$\begin{array}{r} 4,518 \\ +\ 2,835 \\ \hline \end{array}$$

b. Find the value of the difference. Explain your calculations.

$$\begin{array}{r} 5,627 \\ -\ 2,134 \\ \hline \end{array}$$

(From Unit 4, Lesson 19.)

3. Find the value of each sum and difference using the standard algorithm.

$$\begin{array}{r} 118,257 \\ +\ 367,095 \\ \hline \end{array} \qquad \begin{array}{r} 122,518 \\ -\ 72,479 \\ \hline \end{array}$$

(From Unit 4, Lesson 20.)

4. Here is how Han found $300,526 - 4,472$

$$\begin{array}{r} {\scriptstyle 2\quad 10\ 4\ 12} \\ \cancel{3}\ 0\ \cancel{0},\ \cancel{5}\ \cancel{2}\ 6 \\ -\quad\ 4,\ 4\ 7\ 2 \\ \hline 2\ 0\ 6,\ 0\ 5\ 4 \end{array}$$

a. How can you tell by estimating that Han has made an error?

b. What error did Han make?

c. Find the value of $300,526 - 4,472$.

(From Unit 4, Lesson 21.)

5. In 2018 the population of Boston is estimated as 694,583 and the population of Seattle is estimated as 744,995.

   a. Is the population difference between Boston and Seattle more or less than 100,000? Explain how you know.

   b. Is the population difference more or less than 50,000? Explain how you know.

   c. Find the difference in the populations of the two cities.

(From Unit 4, Lesson 22.)

6. **Exploration**

   Han says he has a method to find the value of $1{,}000{,}000 - 267{,}923$ without any carrying: "I just write 1,000,000 as $999{,}999 + 1$."

   a. How might rewriting 1,000,000, as Han suggested, help with finding the difference of $1{,}000{,}000 - 267{,}923$?

   b. Try Han's method to find $1{,}000{,}000 - 267{,}923$.

7. **Exploration**

   Use the information to determine when the airplane, telephone, printing press, and automobile were first invented.

   - The airplane was invented in 1903.
   - The printing press was invented 453 years before the most recent invention.
   - The automobile was invented 15 years before 1900.
   - It was 426 years after the invention of the printing press that the telephone was invented.
   - The automobile and telephone were invented the closest together in time with only 9 years between them.

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