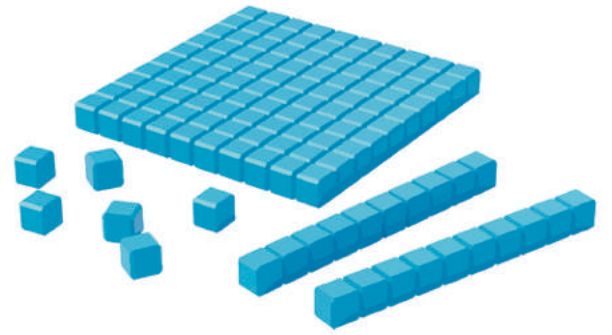




Core Knowledge[®] MATHEMATICS

Wrapping Up Addition and Subtraction Within 1,000



Student Workbook



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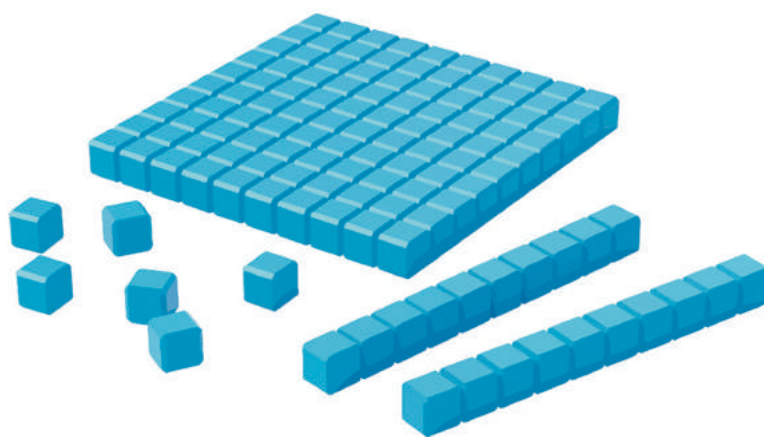
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Wrapping Up Addition and Subtraction Within 1,000

Table of Contents

Lesson 1	Represent Numbers in Different Ways	1
Lesson 2	Addition and Subtraction Situations	4
Lesson 3	Add Your Way	8
Lesson 4	Introduction to Addition Algorithms	11
Lesson 5	Another Addition Algorithm	15
Lesson 6	Use Strategies and Algorithms to Add	19
Lesson 7	Subtract Your Way	25
Lesson 8	Subtraction Algorithms (Part 1)	29
Lesson 9	Subtraction Algorithms (Part 2)	32
Lesson 10	Subtraction Algorithms (Part 3)	36
Lesson 11	Analyze Subtraction Algorithms	39
Lesson 12	Subtract Strategically	42
Lesson 13	Multiples of 100	48
Lesson 14	Nearest Multiples of 10 and 100	52
Lesson 15	Round to the Nearest Ten and Hundred	56
Lesson 16	Round and Round Again	59
Lesson 17	Does It Make Sense?	62
Lesson 18	Diagrams and Equations for Word Problems	65
Lesson 19	Situations and Equations	68
Lesson 20	More Practice to Represent and Solve	71
Lesson 21	Classroom Supplies (optional)	75
Cumulative Practice Problems		
Section A:	Add Within 1,000	79
Section B:	Subtract Within 1,000	86
Section C:	Round Within 1,000	91
Section D:	Solve Two-Step Problems	93



Wrapping Up Addition and Subtraction Within 1,000 **Student Workbook**

Core Knowledge Mathematics™

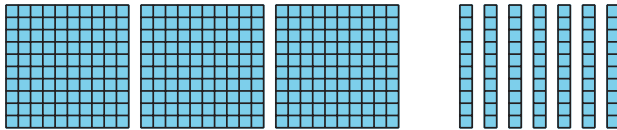
Lesson 1: Represent Numbers in Different Ways

- Let's represent numbers in different ways.

Warm-up: Which One Doesn't Belong: Numbers within 1,000

Which one doesn't belong?

A.



B. $300 + 70 + 1$



C. $300 + 60 + 10$

D. $400 - 30$

1.1: Card Sort: Numbers in Their Different Forms

Your teacher will give you a set of cards that show numbers in different forms.

Match the cards that represent the same number. Record your matches here. Be ready to explain your reasoning.

<p>Card Sort: Numbers in Their Different Forms</p> <p>A</p> <p>175</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>E</p> <p>three hundred twenty-nine</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>I</p> <p>299</p>
<p>Card Sort: Numbers in Their Different Forms</p> <p>B</p> <p>$800 + 10 + 3$</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>F</p> <p>371</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>J</p> 
<p>Card Sort: Numbers in Their Different Forms</p> <p>C</p> 	<p>Card Sort: Numbers in Their Different Forms</p> <p>G</p> <p>one hundred seventy-five</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>K</p> <p>329</p>
<p>Card Sort: Numbers in Their Different Forms</p> <p>D</p> <p>two hundred ninety-nine</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>H</p> <p>813</p>	<p>Card Sort: Numbers in Their Different Forms</p> <p>L</p> <p>$100 + 60 + 15$</p>

Lesson 2: Addition and Subtraction Situations

- Let's solve problems involving addition and subtraction.

Warm-up: Notice and Wonder: Two Curious Tables

What do you notice? What do you wonder?

+	10	20	30	40	50
10			40		
20			50		
30	40	50	?	70	80
40			70		
50			80		

+	10	20	30	40	50
10	20				60
20		40		60	
30			?		
40		60		80	
50	60				100

2.1: Monuments and Falls

Solve each problem. Explain or show your reasoning.

1. Iguazu Falls in South America marks the border between Paraguay, Brazil, and Argentina. It is the largest waterfall in the world.

The waterfall has two parts. The water falls 115 feet in the first part and 131 feet in the second part. How far down does the water fall altogether?



2. In Washington, D.C., there are many monuments that honor important people in American history.

The Lincoln Memorial is 99 feet tall. The Washington Monument is 555 feet tall.



How much taller is the Washington Monument than the Lincoln Memorial?

3. The Eiffel Tower in Paris, France, has 674 steps that go from the ground to the second floor. There are 328 steps from the ground to the first floor.

How many steps are there from the first floor to the second floor?



2.2: Journal About Connections

Respond to one of these journal prompts:

- What math did you do today that connected to something you did in an earlier grade?
- Describe something you really understand after today's lesson.
- Describe something that was confusing, challenging, or that you'd like to learn more about.

Lesson 3: Add Your Way

- Let's add numbers within 1,000.

Warm-up: Number Talk: Hundreds, Tens, and Ones

Find the value of each expression mentally.

- $200 + 40 + 7$

- $50 + 300 + 2$

- $40 + 600 + 12$

- $500 + 17 + 130$



3.1: Strategies to Add

Find the value of each sum in any way that makes sense to you. Explain or show your reasoning.

1. $325 + 102$

2. $301 + 52$

3. $276 + 118$

4. $298 + 305$

3.2: Two Ways to Add

Andre found the value of $276 + 118$. His work is shown.

$$\begin{aligned}200 + 100 &= 300 \\70 + 10 &= 80 \\6 + 8 &= 14 \\300 + 80 + 14 &= 394\end{aligned}$$

Clare found the value of $276 + 118$. Her work is shown.

$$\begin{aligned}6 + 8 &= 14 \\70 + 10 &= 80 \\200 + 100 &= 300 \\14 + 80 + 300 &= 394\end{aligned}$$

With your partner, discuss:

- What's different about Clare and Andre's work?
- What's the same?

Lesson 4: Introduction to Addition Algorithms

- Let's learn new ways to add.

Warm-up: Which One Doesn't Belong: 247

Which one doesn't belong?

A. $200 + 30 + 17$

B. 247

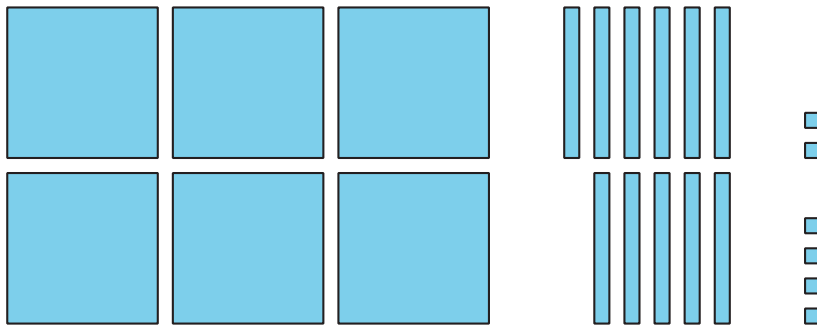
C. $200 + 47 + 10$

D. $100 + 140 + 7$

4.1: What is an Algorithm?

Three students found the value of $362 + 354$. Their work is shown. Explain how each method works.

1. Tyler's drawing

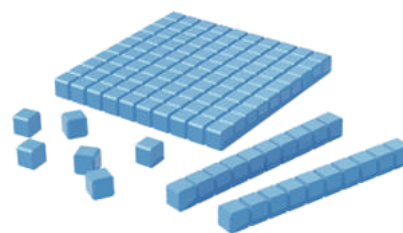


2. Lin's method

$$\begin{array}{r} 300 + 60 + 2 \\ + 300 + 50 + 4 \\ \hline 600 + 110 + 6 \end{array}$$

3. Han's method

$$\begin{array}{r} 362 \\ + 354 \\ \hline 716 \end{array}$$



4.2: Try an Algorithm

Try using an algorithm to find the value of each sum. Show your thinking. Organize it so it can be followed by others.

1. $475 + 231$

2. $136 + 389$

3. $670 + 257$

Lesson 5: Another Addition Algorithm

- Let's learn another algorithm to add.

Warm-up: Notice and Wonder: Another Curious Table

What do you notice? What do you wonder?

+	98	99	100	101	102
98		197		199	
99	197		199		201
100		?		?	
101	199		201		203
102		201		203	

5.1: A New Addition Algorithm

Here are two algorithms for adding $367 + 231$.

Han's algorithm

$$\begin{array}{r} 367 \\ + 231 \\ \hline 8 \end{array} \quad \text{step 1}$$
$$\begin{array}{r} 90 \\ + 500 \\ \hline 598 \end{array} \quad \begin{array}{l} \text{step 2} \\ \text{step 3} \\ \text{step 4} \end{array}$$

Elena's algorithm

$$\begin{array}{r} 367 \\ + 231 \\ \hline 8 \end{array} \quad \text{step 1}$$
$$\begin{array}{r} 367 \\ + 231 \\ \hline 98 \end{array} \quad \text{step 2}$$
$$\begin{array}{r} 367 \\ + 231 \\ \hline 598 \end{array} \quad \text{step 3}$$

Discuss with your partner:

1. How is Elena's algorithm different from Han's algorithm?
2. Why do both algorithms work?

5.2: Compose New Units

Here are two algorithms for adding $365 + 182$.

Han's algorithm

$$\begin{array}{r} 365 \\ + 182 \\ \hline 7 \end{array} \quad \text{step 1}$$
$$\begin{array}{r} 140 \\ + 400 \\ \hline 547 \end{array} \quad \begin{array}{l} \text{step 2} \\ \text{step 3} \\ \text{step 4} \end{array}$$

Elena's algorithm

$$\begin{array}{r} 365 \\ + 182 \\ \hline 7 \end{array} \quad \text{step 1}$$
$$\begin{array}{r} 100 \\ 365 \\ + 182 \\ \hline 47 \end{array} \quad \text{step 2}$$
$$\begin{array}{r} 100 \\ 365 \\ + 182 \\ \hline 547 \end{array} \quad \text{step 3}$$

1. How do the algorithms show the 14 tens differently?

2. Try Elena's algorithm to find the value of each sum.

a. $174 + 352$

b. $273 + 619$

c. $354 + 198$

d. $525 + 376$

Lesson 6: Use Strategies and Algorithms to Add

- Let's consider when to use algorithms and when to use other strategies to add.

Warm-up: Number Talk: Little More, Little Less

Find the value of each expression mentally.

- $300 + 156$

- $299 + 156$

- $303 + 156$

- $204 + 376$

6.1: Just Ones

Two methods of recording the addition of $657 + 286$ are shown.

Method 1

$$\begin{array}{r} 100 \\ 10 \\ 657 \\ + 286 \\ \hline 943 \end{array}$$

Method 2

$$\begin{array}{r} 11 \\ 657 \\ + 286 \\ \hline 943 \end{array}$$

1. How is the newly composed ten and hundred recorded differently in each method?

2. Try the second method of recording to add these numbers:

a. $602 + 179$

b. $493 + 161$

c. $438 + 364$

d. $329 + 381$

6.2: How Would You Add?

Use a strategy of your choice to find the value of each sum. Show your reasoning. Organize it so it can be followed by others.

1. $199 + 348$

2. $264 + 359$

3. $203 + 75$

$4. 316 + 198$

$5. 399 + 499$



Section Summary

Section Summary

In this section, we learned that an **algorithm** is a set of steps that works every time as long as the steps are carried out correctly. Then, we learned algorithms to add numbers within 1,000.

We also learned that we can choose to add using a strategy or an algorithm based on the numbers being added.

$$\begin{array}{r} 300 + 60 + 2 \\ + 300 + 50 + 9 \\ \hline 600 + 110 + 11 \end{array}$$

$$\begin{array}{r} 362 \\ + 359 \\ \hline 110 \\ + 600 \\ \hline 721 \end{array}$$

$$\begin{array}{r} 100 \\ 10 \\ 362 \\ + 359 \\ \hline 721 \end{array}$$

$$\begin{array}{r} 11 \\ 362 \\ + 359 \\ \hline 721 \end{array}$$

Lesson 7: Subtract Your Way

- Let's subtract numbers within 1,000.

Warm-up: Number Talk: Subtract Two-Digit Numbers

Find the value of each expression mentally.

- $50 - 10$

- $58 - 10$

- $258 - 20$

- $258 - 24$

7.1: Strategies to Subtract

Find the value of each difference in any way that makes sense to you. Explain or show your reasoning.

1. $428 - 213$

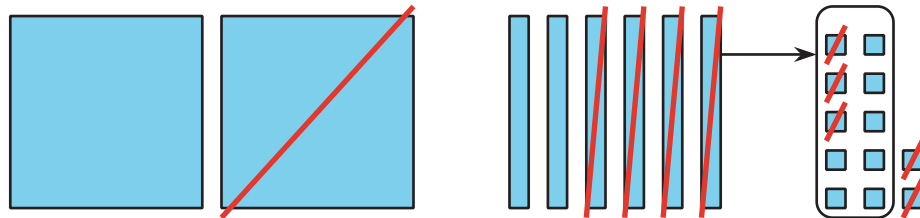
2. $505 - 398$

3. $394 - 127$

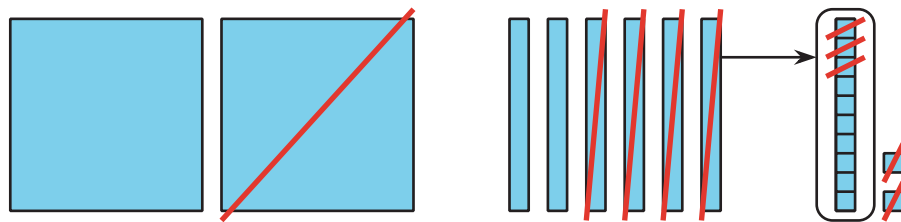
7.2: Base-ten Drawings

1. Jada and Han made drawings to show how they used base-ten blocks to find the value of $262 - 135$. Their drawings are shown.

Jada's drawing



Han's drawing



How are their drawings alike? How are they different?

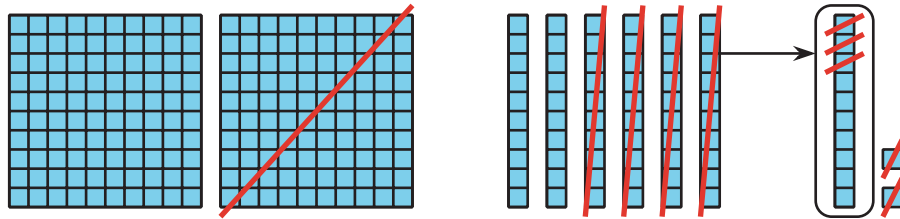
2. Here are three expressions, followed by three diagrams. Write each expression next to the diagram that represents it. Then, find the value of the expression.

$$252 - 181$$

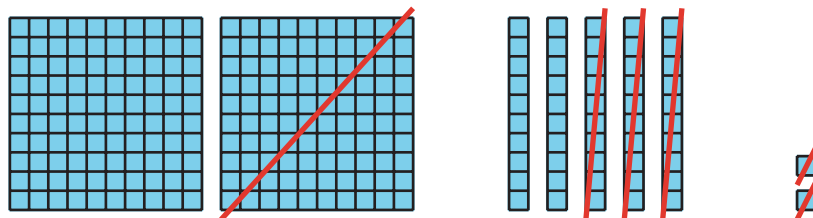
$$262 - 135$$

$$252 - 132$$

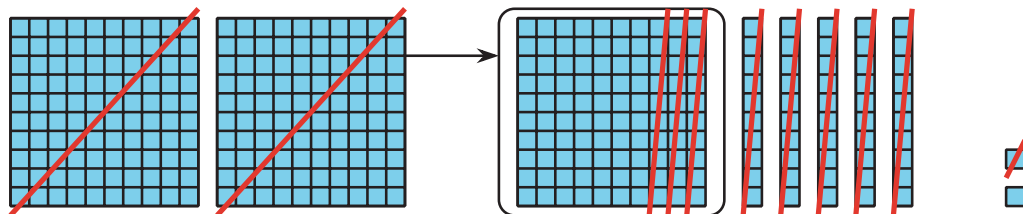
a.



b.



c.



Lesson 8: Subtraction Algorithms (Part 1)

- Let's learn a new way to subtract.

Warm-up: Number Talk: Subtraction Strategies

Find the value of each expression mentally.

- $100 - 98$

- $101 - 99$

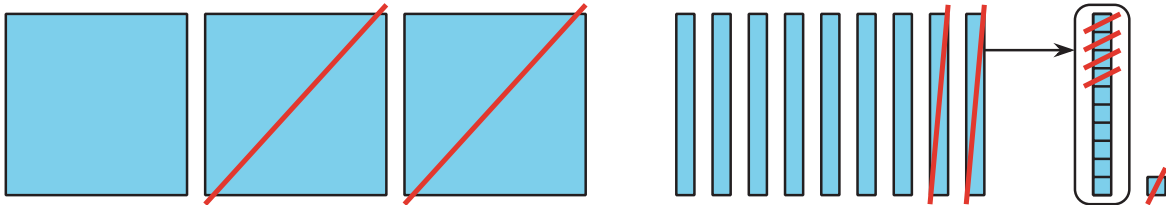
- $200 - 98$

- $204 - 98$

8.1: From Drawings to an Algorithm

Jada and Kiran found the value of $391 - 215$. Their work is shown.

Jada's drawing



Kiran's algorithm

$$\begin{array}{r}
 00 + 00 + 01 \\
 - 200 + 10 + 5 \\
 \hline
 \end{array}$$

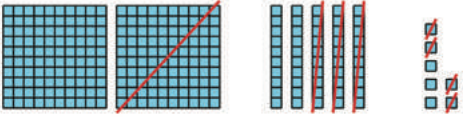
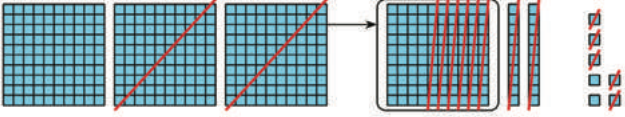
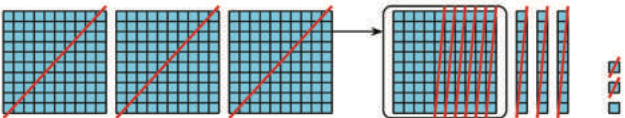
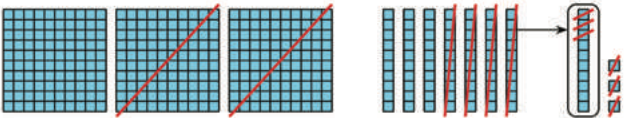
1. Explain how Kiran's algorithm starts.

2. Explain how Kiran recorded the decomposition of the ten into more ones.

3. Finish Kiran's work.

8.2: Card Sort: Diagrams and Algorithms

Your teacher will give you a set of cards. Match each diagram with an algorithm.

<p>A</p> $\begin{array}{r} 300 + \cancel{70} + \cancel{3} \\ - 200 + 30 + 6 \\ \hline 100 + 30 + 7 \end{array}$	<p>B</p> 
<p>C</p> $\begin{array}{r} 200 + 50 + 7 \\ - 100 + 30 + 4 \\ \hline 100 + 20 + 3 \end{array}$	<p>D</p> 
<p>E</p> 	<p>F</p> $\begin{array}{r} 200 \quad 120 \\ \cancel{300} + \cancel{20} + 7 \\ - 100 + 80 + 5 \\ \hline 100 + 40 + 2 \end{array}$
<p>G</p> 	<p>H</p> $\begin{array}{r} 200 \quad 130 \\ \cancel{300} + \cancel{30} + 3 \\ - 200 + 90 + 2 \\ \hline 0 + 40 + 1 \end{array}$

Lesson 9: Subtraction Algorithms (Part 2)

- Let's learn more about our first subtraction algorithm.

Warm-up: True or False: Does It Commute?

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

- $4 \times 5 = 5 \times 4$

- $125 + 200 = 200 + 125$

- $300 - 100 = 100 - 300$

9.1: Revise Subtraction Work

Lin's work for finding the value of $428 - 156$ is shown.

$$\begin{array}{r} 400 + 20 + 8 \\ - 100 + 50 + 6 \\ \hline 300 + 30 + 2 \end{array}$$

1. What error do you see in Lin's work?

2. What would you tell or show Lin so she can revise her work?

9.2: Try the Algorithm

Here is a subtraction algorithm you saw in an earlier lesson:

$$\begin{array}{r} + + \\ 300 + \cancel{90} + \cancel{1} \\ - + 10 + 5 \\ \hline \end{array}$$

80 11

Try using this algorithm to find the value of each difference. Show your reasoning. Organize it so it can be followed by others.

1. $283 - 159$

2. $425 - 192$

3. $639 - 465$

$$4. 591 - 128$$

$$5. 832 - 575$$

Lesson 10: Subtraction Algorithms (Part 3)

- Let's learn another algorithm to subtract.

Warm-up: Notice and Wonder: Digits that Disappear

What do you notice? What do you wonder?

$$\begin{array}{r} 200 \\ 300 \end{array} + \begin{array}{r} 120 \\ 20 \end{array} + 5$$

$$\begin{array}{r} 2 \\ 3 \end{array} \begin{array}{r} 12 \\ 2 \end{array} + 5$$

10.1: A New Subtraction Algorithm

Andre and Clare found the value of $528 - 271$. How they started their work is shown.

Andre's algorithm

$$\begin{array}{r} 400 \quad 120 \\ 500 + \cancel{20} + 8 \\ - 200 + 70 + 1 \\ \hline \end{array}$$

Clare's algorithm

$$\begin{array}{r} 4 \quad 12 \\ \cancel{5} \quad \cancel{2} \quad 8 \\ - 2 \quad 7 \quad 1 \\ \hline \end{array}$$

1. Complete both algorithms to find the difference.
2. Andre and Clare started their subtraction in different ways. How did their way of starting affect the steps needed to find the difference?

10.2: Try Clare's Algorithm

Clare used an algorithm to find the value of $538 - 156$.

Try using her algorithm to find the value of each difference.

$$\begin{array}{r} 4 \ 13 \\ \cancel{5} \ \cancel{3} \ 8 \\ - \ 1 \ 5 \ 6 \\ \hline 3 \ 8 \ 2 \end{array}$$

1. $691 - 358$

2. $926 - 584$

3. $317 - 182$

4. $492 - 325$

Lesson 11: Analyze Subtraction Algorithms

- Let's think about subtraction algorithms in more detail.

Warm-up: Number Talk: Subtract within 1,000

Find the value of each expression mentally.

- $400 - 200$

- $450 - 200$

- $450 - 205$

- $450 - 215$

11.1: Compare Two Subtraction Algorithms

1. The first steps of two algorithms are shown.

Algorithm A, step 1

$$\begin{array}{r} 4 \ 10 \\ \cancel{5} \ \cancel{0} \ 8 \\ - 1 \ 5 \ 6 \\ \hline \end{array}$$

Algorithm B, step 1

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

How are the steps different?

2. Use each algorithm to find the value of $824 - 541$.

11.2: Use an Algorithm?

Noah wanted to find the value of $301 - 167$ and wrote:

$$\begin{array}{r} 301 \\ - 167 \\ \hline \end{array}$$

Elena said that we can't subtract this way because we would need more ones to subtract 7 ones, but there's a zero in the tens place of 301.

1. Do you agree with Elena's statement? Explain your reasoning.

2. Show how you would use an algorithm (either Noah's or another algorithm) to find the difference between 301 and 167.

Lesson 12: Subtract Strategically

- Let's consider when to use algorithms and when to use other strategies to subtract.

Warm-up: Number Talk: Threes

Find the value of each expression mentally.

- 2×6

- 3×6

- 2×7

- 3×7

12.1: How Would You Subtract?

Use a strategy or algorithm of your choice to find the value of each difference. Show your reasoning. Organize it so it can be followed by others.

1. $451 - 329$

2. $382 - 190$

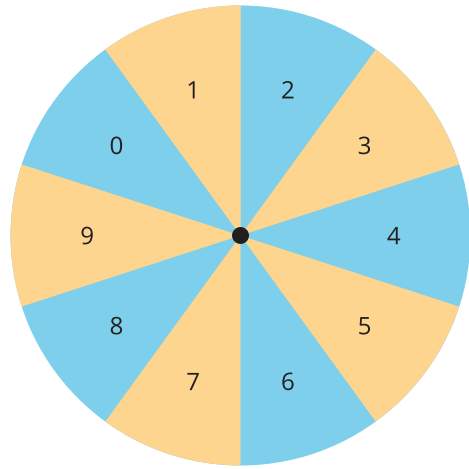
3. $924 - 285$

$$4. 600 - 478$$

$$5. 505 - 417$$

12.2: Greatest Difference, Smallest Difference

1. Decide with your partner whether you will try to make the greatest difference or smallest difference.
2. Take turns spinning and recording a digit in the hundreds, tens, or ones place. Continue until your numbers are complete.
3. Find the difference.
4. Compare your values.
5. Write a comparison using $>$, $<$, or $=$.
6. Play again.



my numbers		my partner's numbers	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
difference			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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my numbers	my partner's numbers
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difference	
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Section Summary

Section Summary

In this section, we learned algorithms to subtract numbers within 1,000. We also learned that we can choose whether to use an algorithm or another strategy for subtracting based on the numbers.

$$\begin{array}{r} 400 \quad 130 \\ \cancel{500} + \cancel{30} + 8 \\ - 100 + 50 + 6 \\ \hline 300 + 80 + 2 \end{array}$$

step 1

$$\begin{array}{r} 538 \\ - 156 \\ \hline 2 \end{array}$$

step 2

$$\begin{array}{r} 4 \quad 13 \\ \cancel{5} \quad \cancel{3} \quad 8 \\ - 156 \\ \hline 2 \end{array}$$

step 3

$$\begin{array}{r} 4 \quad 13 \\ \cancel{5} \quad \cancel{3} \quad 8 \\ - 156 \\ \hline 82 \end{array}$$

step 4

$$\begin{array}{r} 4 \quad 13 \\ \cancel{5} \quad \cancel{3} \quad 8 \\ - 156 \\ \hline 382 \end{array}$$

Lesson 13: Multiples of 100

- Let's explore multiples of 100 and how other numbers relate to them.

Warm-up: Estimation Exploration: Marching Band

How many people are in the marching band?



Record an estimate that is:

too low	about right	too high

13.1: About 100? Close to 100?

1. Here are the numbers of people in different parts of a school at noon during a school day.

- playground: 94
- cafeteria: 163
- art room: 36
- library: 13
- classrooms: 216
- gymnasium: 109
- music room: 52

Where in the school would you say that there are about 100 people?

Record the numbers in the table. Be prepared to explain your reasoning.

about 100	not about 100

2. Now decide if the number of people in each part of the school is close to 0, close to 100, or close to 200.

If you don't think a number belongs in any column, set it aside. Be prepared to explain your reasoning.

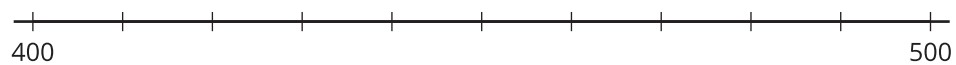
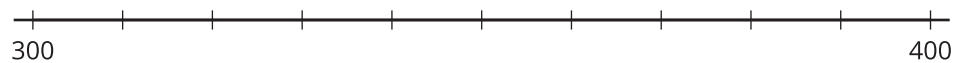
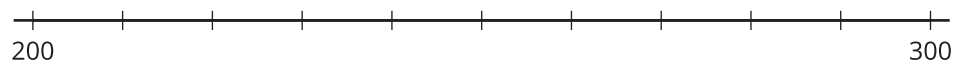
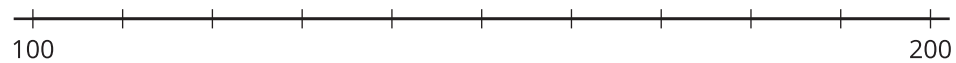
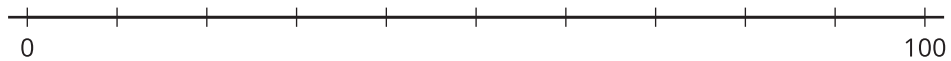
close to 0	close to 100	close to 200

13.2: Close to Multiples of 100

Your teacher will assign a set of numbers to you.

A	94	36	109	163	229
B	24	52	216	11	481
C	187	135	67	83	241
D	332	154	408	296	45
E	279	205	377	449	73

1. Work with your group to decide on which number line each number should go. Then, locate and label each number on the number line.



2. Locate and label 364 on the correct number line.

a. Name two multiples of 100 that are closest to 364.

b. Of the two multiples of 100 you named, which one is 364 closer to?

3. Write the numbers assigned to you earlier. For each number, name the nearest multiple of 100.

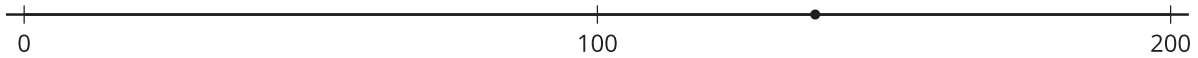
number					
nearest multiple of 100					

Lesson 14: Nearest Multiples of 10 and 100

- For a given number, let's find the closest multiple of 100 and the closest multiple of 10.

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

What number could the point on the number line represent?



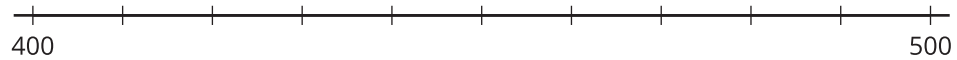
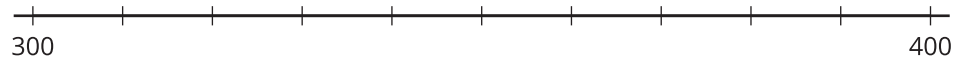
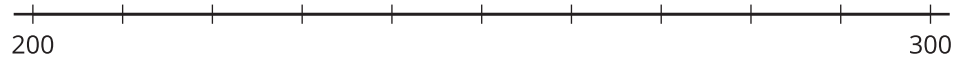
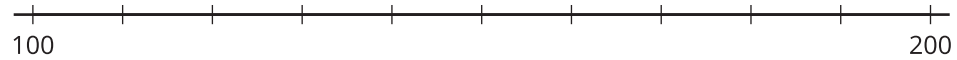
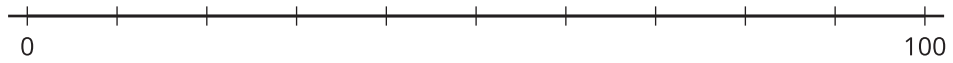
Record an estimate that is:

too low	about right	too high

14.1: Close to Multiples of 10

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

128 272 436 89 351



- b. The same numbers are listed in the table. Name the multiple of 100 that is the nearest to each number. (Leave the last column blank for now.)

number	nearest multiple of 100	
128		
272		
436		
89		
351		

2. Look at the point for 128 on the number line.
 - a. Name two multiples of 10 that are the closest to 128.

 - b. Which of the two is the nearest multiple of 10?

3. Label the last column in the table “nearest multiple of 10.” Then, name the nearest multiple of 10 for each number. Use the number lines if you find them helpful.

Lesson 15: Round to the Nearest Ten and Hundred

- Let's round to the nearest ten and hundred.

15.1: Can the Nearest Ten and Hundred be the Same?

1. Round each number to the nearest ten and the nearest hundred. Use number lines if you find them helpful.

number	nearest ten	nearest hundred
18		
97		
312		
439		
601		

2. Kiran and Priya are rounding some numbers and are stuck when trying to round 415 and 750.
 - Kiran said, "415 doesn't have a nearest multiple of 10, so it can't be rounded to the nearest ten."
 - Priya said, "750 doesn't have a nearest multiple of 100, so it can't be rounded to the nearest hundred."

Do you agree with Kiran and Priya? Explain your reasoning.

15.2: Round to Estimate

The table shows the numbers of people in different parts of a school at noon during a school day.

Andre and Lin are trying to estimate the number of people in the whole school. Andre plans to round the numbers to the nearest hundred. Lin plans to round them to the nearest ten.

1. Make a prediction: Whose estimate is going to be greater? Explain your reasoning.

2. Work with a partner to find Andre and Lin's estimates. Record them in the table. Then find the totals.

location	number	Andre's estimate (nearest hundred)	Lin's estimate (nearest ten)
playground	94		
cafeteria	163		
art room	36		
library	13		
classrooms	216		
gymnasium	109		
music room	52		
total			

3. Make two observations about the completed table. Was your prediction correct?

Lesson 16: Round and Round Again

Let's look for patterns in rounding.

Warm-up: Number Talk: More Groups, Fewer Groups

Find the value of each expression mentally.

- 5×7

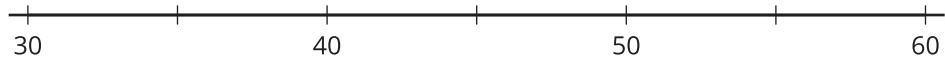
- 4×7

- 6×7

- 4×8

16.1: All the Numbers

1. What are all the numbers that would round to 50 if you're rounding to the nearest ten? You can use this number line if it helps you.



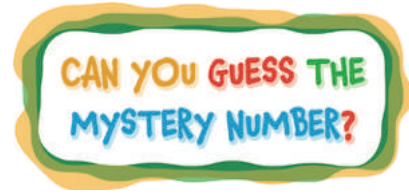
2. What are all the numbers that would round to 70 if you're rounding to the nearest ten?
3. What are all the numbers that would round to 600 if you're rounding to the nearest hundred?

If you finish early, find the numbers that would round to 100 and to 500 if you're rounding to the nearest hundred. Compare your lists with a partner's lists and discuss patterns you see.

16.2: What's My Mystery Number?

Write down a number between 100 and 1,000 on your index card. This is your mystery number.

Fold your index card in half so that no one can see your mystery number.



Write down 3 clues about your mystery number by finishing these sentences:

1. My mystery number is (odd or even) _____.
2. My mystery number rounds to _____.
3. My mystery number is between _____ and _____.

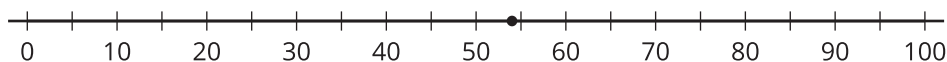
Play What's My Number?

1. Read the clues for your mystery number.
2. Starting with the person on your right, have every member in your team try to guess your mystery number and explain their reasoning.
3. If they haven't guessed the mystery number by the time the last person shares, reveal the mystery number.
4. Repeat steps 1 through 3 with the next person in the group reading the clues for their mystery number.

Section Summary

Section Summary

In this section, we learned that rounding is a formal way to decide what number a given number is closest to. We rounded numbers to the nearest ten and the nearest hundred. We saw that a number line can help us see the closest multiple of 10 or 100.



Lesson 17: Does It Make Sense?

- Let's decide if our answers make sense.

Warm-up: True or False: Is it Greater?

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

- $132 + 115 > 200$

- $228 + 195 > 400$

- $217 + 151 > 400$

17.1: Quick Estimates

1. There are 212 beads in a plastic bag. Then, 98 of the beads are used to make a necklace. Finally, 308 beads are placed in the bag.

Priya makes an estimate that there are about 400 beads in the bag now. Does Priya's estimate make sense? Explain your reasoning.

2. Estimate the answer for each of these problems.

- a. Clare has 252 beads. She used 92 beads to make some bracelets. Then, a friend gave her 203 beads. How many beads does Clare have now?

- b. Han had 558 beads. His sister had 302 beads. They combined their beads for an art project that used 250 beads. How many beads do they have left?



17.2: Solve and Reason

1. Solve one of the problems. Explain or show your reasoning.

a. Jada has 326 beads. She gives her friend 32 beads. Then, Jada uses 84 beads to make a bracelet for her cousin. How many beads does Jada have now?

b. Noah starts an art project on Monday and uses 624 beads. On Tuesday he uses 132 more beads. Finally, on Wednesday he finishes the project by using 48 more beads. How many beads did Noah use on his art project?

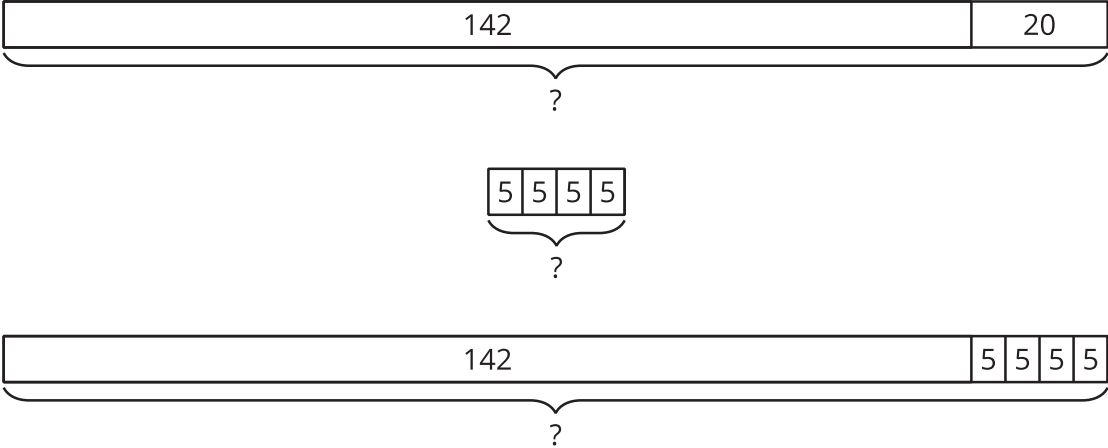
2. Trade work with a partner. Decide whether your partner's answer for their problem makes sense. On their paper, explain your reasoning.

Lesson 18: Diagrams and Equations for Word Problems

- Let's connect diagrams and equations to situations.

Warm-up: Notice and Wonder: Diagrams

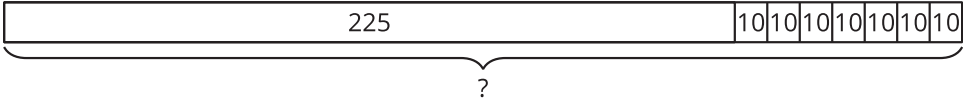
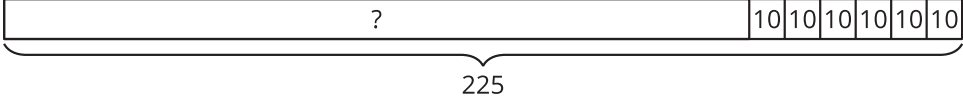
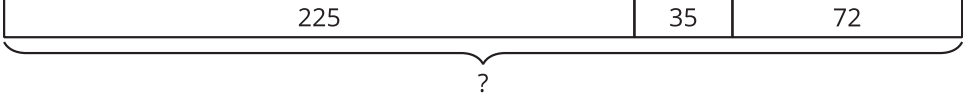
What do you notice? What do you wonder?



18.1: Card Sort: Situations, Equations, and Diagrams

Your teacher will give you a set of cards showing situations, equations, and diagrams.

Sort the cards into groups so that the cards in each group represent the same situation. Be ready to explain your reasoning.

A	Clare had 225 beads. A friend gave her a pack of 48 beads. Then she used 70 beads to make a necklace. How many beads does Clare have now?
B	
C	$225 - (6 \times 10) = ?$
D	Elena has 7 notebooks. Each notebook has 10 paper clips in it. Elena also has a box of 225 paper clips. How many paper clips does Elena have?
E	$225 + (6 \times 10) = ?$
F	$? = 225 + 48 - 70$
G	Andre has 225 crayons. He buys 6 more packs and each pack has 10 crayons. How many crayons does Andre have now?
H	
I	Diego has a collection of 225 baseball cards. He gets 35 more cards from a friend, then buys 72 cards. How many cards does Diego have now?
J	Han has 225 beads. Then he makes 6 bracelets for his friends. Each bracelet has 10 beads. How many beads does Han have now?
K	
L	$? = (7 \times 10) + 225$

18.2: Makes Sense to Me: A Gallery Walk

1. Your teacher will assign a problem to your group. Work together to solve your assigned problem.
2. Create a poster of your group's solution. Organize your work so that it can be followed by others.
3. As you visit other groups' posters, consider how each answer makes sense.

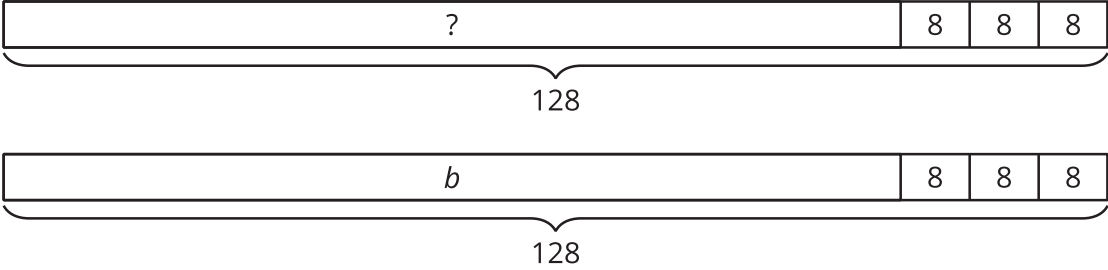
Choose one poster and make a comment on the solution. Write on your sticky note how you know the answer makes sense.

Lesson 19: Situations and Equations

- Let's represent and solve problems.

Warm-up: Notice and Wonder: The Unknown

What do you notice? What do you wonder?



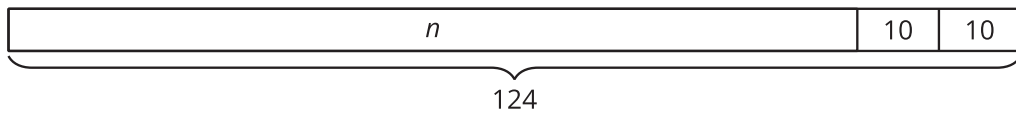
19.1: Mai's Beads

Part 1

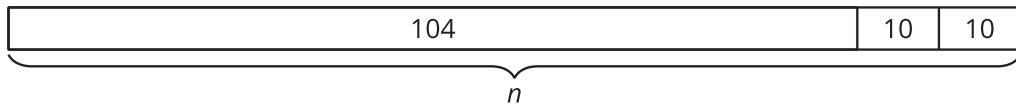
Match each diagram with a situation. Be ready to explain your reasoning.

- Situation 1: Mai had 104 beads. She bought two packs of beads and now she has 124 beads. How many beads were in each pack?
- Situation 2: Mai had some beads. She bought 2 more packs of beads and each pack has 10 beads in it. Now she has 124 beads. How many beads did Mai have before?
- Situation 3: Mai had 104 beads. She bought 2 more packs of beads and each pack has 10 beads in it. How many beads does she have now?

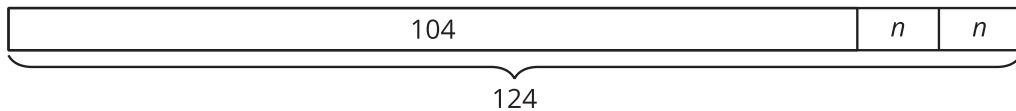
A



B



C



Part 2

Match each equation with a letter for the unknown quantity to a situation in Part 1.

1. $104 + 2 \times 10 = n$
2. $104 + (2 \times n) = 124$
3. $n + 10 + 10 = 124$

19.2: Represent, Solve, Explain

Kiran is setting up a game of mancala. He has a jar of 104 stones.

From the jar, he takes 3 stones for each of the 6 pits on his side of the board.

How many stones are in the jar now?



1. Write an equation to represent the situation. Use a letter for the unknown quantity.
2. Solve the problem. Explain or show your reasoning.
3. Explain how you know your answer makes sense.

Lesson 20: More Practice to Represent and Solve

- Let's represent and solve more problems.

Warm-up: Number Talk: Two Steps

Find the value of each expression mentally.

- $20 + (2 \times 3)$

- $30 + (4 \times 3)$

- $50 + (8 \times 3)$

- $99 + (8 \times 3)$

20.1: Info Gap: Introduction

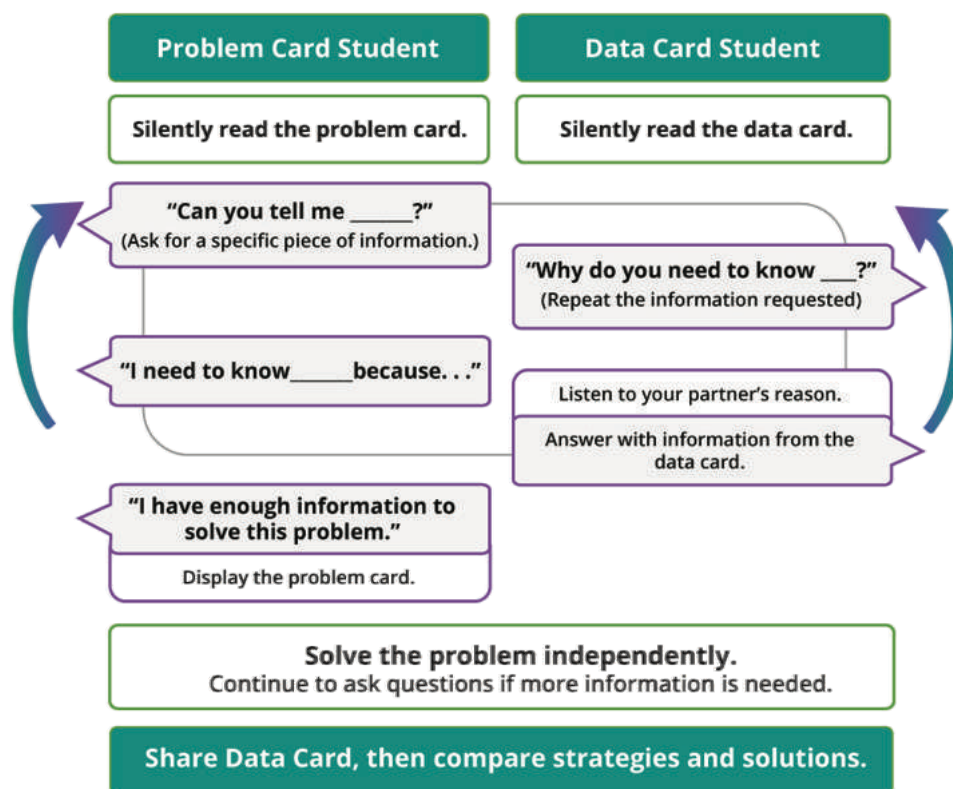
Problem Card

A room has some chairs set up in rows and some chairs stacked up in a corner.

How many chairs are in the room?

20.2: Info Gap: Bake Sale

Your teacher will give you either a problem card or a data card. Do not show or read your card to your partner.



Pause here so your teacher can review your work.

Ask your teacher for a new set of cards and repeat the activity, trading roles with your partner.

Section Summary

Section Summary

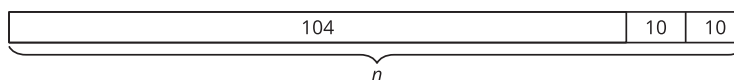
In this section, we used rounding to estimate answers to problems. This helped us decide if our answers to problems made sense based on the situation and the numbers in the situation.

We also wrote equations with an unknown and used diagrams to solve for the exact answer in problems.

Situation:

Mai had 104 beads. She bought 2 more packs of beads and each pack has 10 beads in it. How many beads does she have now?

Diagram:



Equation with an unknown:

$$104 + (2 \times 10) = n$$

Lesson 21: Classroom Supplies

- Let's make a wish list for class supplies.

Warm-up: Notice and Wonder: School Supplies List

What do you notice? What do you wonder?

work supplies	cost
box of 25 markers	\$5
box of 100 crayons	\$8

class library	cost
set of 20 books about history	\$250
story book (80 to choose from)	\$8

special items	cost
carpet for the reading corner	\$65
a class aquarium, with fish	\$159

entertainment	cost
board games (40 to choose from)	\$15
interactive computer games (math and reading)	\$75

21.1: Make a Wish List

Imagine our class received \$1,000 to spend on school supplies from the given list. How would you spend the money to benefit our classroom the most?

work supplies	cost
box of 25 markers	\$5
box of 100 crayons	\$8
box of 60 pencils	\$5
box of 5,000 pages of printer paper	\$40
package of 10 pads of lined paper	\$15
box of 50 pieces of construction paper	\$32

class library	cost
set of 20 books about history	\$250
set of books about nature	\$400
story book (80 choices)	\$8
maps (5 choices: world, continent, North America, U.S. state, U.S. city)	\$45

special items	cost
carpet for the reading corner	\$65
a class aquarium, with fish	\$150
fish food for one month	\$15
field trip to the zoo	\$350

entertainment	cost
puzzles (30 choices)	\$12
board games (40 choices)	\$15
interactive computer games (math and reading)	\$75

1. Make a plan on how to spend the money. You may purchase more than one of the same item. Use estimation or rounding to keep track of the total as you make your selections.

2. On your wish list, what is the total cost of the items in each category?

○ Supplies

○ Puzzles and games

○ Books and maps

○ Special items

3. What was the total cost of all your choices?

a. Would you have any money left over? If so, how much?

b. Did you spend too much money? If so, how much?

21.2: What's on Your List?

1. Share your wish list with another group. Take turns to explain how you made your choices and listen to the choices of the other group.

2. Compare your spending:

- How much more or less did you choose to spend on each category than the other group?

- How much more or less did you spend in total compared to your partner group?

Section A: Practice Problems

1. Pre-unit

Which number could be labeled on the number line?



A. 23

B. 45

C. 77

D. 92

2. Pre-unit

There are 85 students on the playground. There are 57 fewer students in the classroom than on the playground. How many students are in the classroom? Explain or show your reasoning.

3. Pre-unit

Jada says she can find $87 - 59$ by taking away 60 from 87 and adding 1 so it is the same as $27 + 1$ or 28. Explain or show why Jada's method to calculate $87 - 59$ makes sense.

4. Pre-unit

Find the value of $316 + 514$. Explain or show your reasoning.

5. Pre-unit

Put a $<$ or $>$ in the blank to make each statement true.

a. 197 _____ 311

b. 567 _____ 555

c. 908 _____ 809

6. Pre-unit

Find the value of each expression.

a. $206 + 543$

b. $327 + 181$

c. $674 - 129$

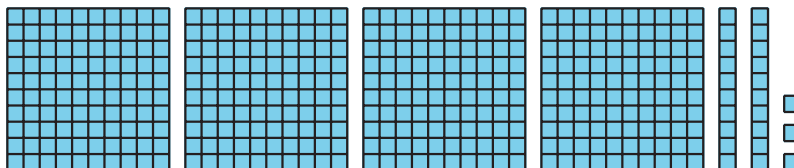
7. Select **all** representations of the number four hundred twenty-three.

A. 324

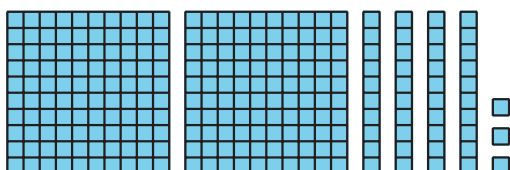
B. 423

C. $400 + 30 + 2$

D.



E.



(From Unit 3, Lesson 1.)

8. The height of the Empire State Building in New York City is 443 meters. The tallest building in the world is 830 meters. How many meters taller than the Empire State Building is the tallest building in the world?

(From Unit 3, Lesson 2.)

9. Find the value of each sum in any way that makes sense to you. Explain or show your reasoning.

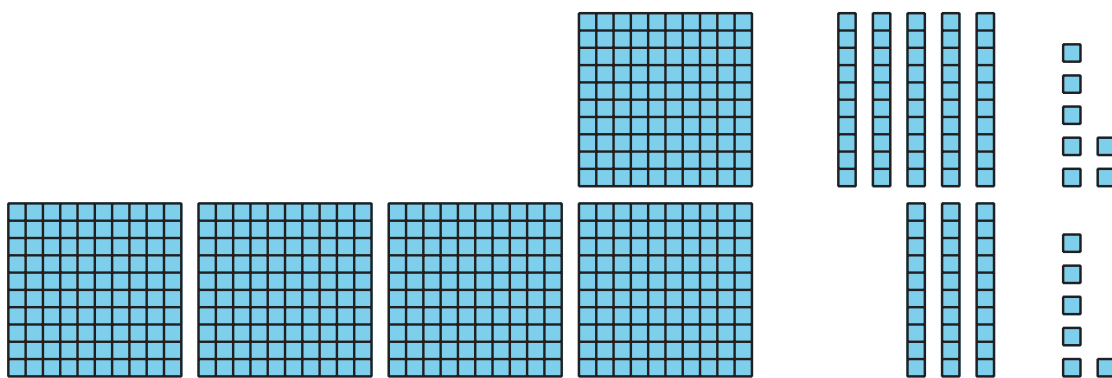
a. $456 + 231$

b. $372 + 165$

(From Unit 3, Lesson 3.)

10. Here are three different ways to find the value of $157 + 436$.

A



B

$$\begin{array}{r} 100 + 50 + 7 \\ + 400 + 30 + 6 \\ \hline 500 + 80 + 13 \end{array}$$

C

$$\begin{array}{r} 157 \\ + 436 \\ \hline 13 \\ 80 \\ \hline 500 \\ \hline 593 \end{array}$$

How are the methods alike? How are they different? Explain your reasoning.

(From Unit 3, Lesson 4.)

11. Here is Elena's algorithm for finding $273 + 481$.

$$\begin{array}{r}
 273 \\
 + 481 \\
 \hline
 4
 \end{array}
 \text{ step 1}$$

$$\begin{array}{r}
 100 \\
 273 \\
 + 481 \\
 \hline
 54
 \end{array}
 \text{ step 2}$$

$$\begin{array}{r}
 100 \\
 273 \\
 + 481 \\
 \hline
 754
 \end{array}
 \text{ step 3}$$

a. Where does the 100 that Elena wrote in step 2 come from?

b. Use Elena's method to find $255 + 372$.

(From Unit 3, Lesson 5.)

12. a. What do the 1s above the 2 and 5 in 253 mean in this calculation?

$$\begin{array}{r}
 11 \\
 253 \\
 + 89 \\
 \hline
 342
 \end{array}$$

b. Use an algorithm or another strategy to find the value of each sum.

i. $572 + 268$

ii. $726 + 199$

(From Unit 3, Lesson 6.)

13. **Exploration**

Here is Lin's strategy to find the value of $596 + 385$: "I added 600 and then took away 4."

a. Explain why Lin's strategy works. Then, use it to find the value of $596 + 385$.

b. For which of these expressions would you use Lin's strategy? Explain or show your reasoning.

i. $436 + 173$

ii. $517 + 255$

iii. $787 + 135$

iv. $247 + 395$

14. **Exploration**

Write an addition problem with 3-digit numbers that you think is well suited for each of the following methods. Then, find the value of the sum using that method.

a. mental strategies

b. base-ten blocks

c. an algorithm

Section B: Practice Problems

1. Find the value of $472 - 155$ in a way that makes sense to you.

(From Unit 3, Lesson 7.)

2. Here is a subtraction calculation.

$$\begin{array}{r} 400 \quad 140 \\ \cancel{500} + \cancel{40} + 5 \\ - 300 + 60 + 3 \\ \hline 100 + 80 + 2 \end{array}$$

- a. Explain what the 400 above the 500 means.

- b. Explain what the 140 above the 40 means.

- c. Explain how the calculation works to find $545 - 363$.

(From Unit 3, Lesson 8.)

3.
 - a. Write 518 and 346 in expanded form.

 - b. Use the expanded form to find the difference of the two numbers.

(From Unit 3, Lesson 9.)

4.
 - a. Use an algorithm of your choice to find the value of $316 - 154$.

 - b. Use an algorithm of your choice to find the value of $647 - 285$.

(From Unit 3, Lesson 10.)

5. Use an algorithm of your choice to find the value of each difference.

a. $218 - 136$

b. $473 - 258$

(From Unit 3, Lesson 11.)

6. Use a strategy or algorithm of your choice to find the value of each difference.

a. $573 - 299$

b. $653 - 341$

c. $371 - 158$

(From Unit 3, Lesson 12.)

7. Exploration

Here is Noah's way to find the value of $523 - 371$.

$$371 + 100 = 471$$

$$471 + 30 = 501$$

$$501 + 20 = 521$$

$$521 + 2 = 523$$

The answer is $100 + 30 + 20 + 2 = 152$.

a. Explain why Noah's method works.

b. Use Noah's method to calculate $618 - 266$.

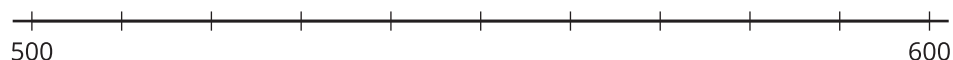
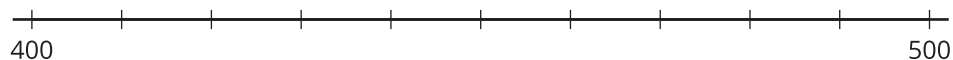
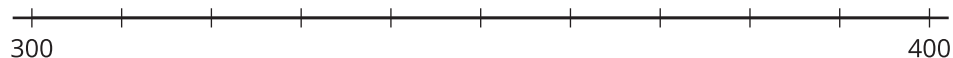
8. Exploration

- a. Find the value of $600 - 253$. Explain or show your reasoning.

- b. How is this problem different from other subtraction problems you have solved?

Section C: Practice Problems

1. a. Locate and label 539 on one of the number lines.



- b. What is the closest multiple of 100 to 539?

(From Unit 3, Lesson 13.)

2. Find the nearest multiple of 10 and the nearest multiple of 100 for:

a. 537

b. 661

(From Unit 3, Lesson 14.)

3. a. What are all the numbers that round to 350 when rounded to the nearest 10?

- b. Which numbers round to 350 when rounded to the nearest ten and round to 400 when rounded to the nearest hundred?

(From Unit 3, Lesson 16.)

4. a. What is 346 rounded to the nearest ten? Explain or show your reasoning.

b. What is 346 rounded to the nearest hundred? Explain or show your reasoning.

(From Unit 3, Lesson 15.)

5. Round each number to the nearest ten and to the nearest hundred. Explain or show your reasoning.
 - a. 254

 - b. 145

(From Unit 3, Lesson 15.)

6. Jada rounds 145 to the nearest ten and gets 150. Then she rounds 150 to the nearest hundred and gets 200. Jada says 145 rounded to the nearest hundred is 200. Do you agree with Jada? Explain or show your reasoning.

7. Exploration

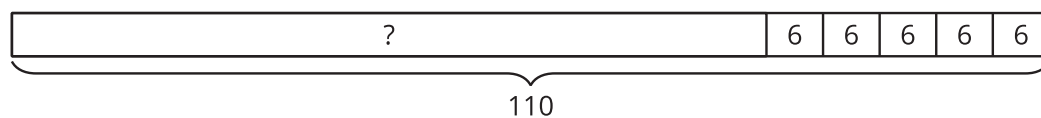
It is 234 miles from New York City to Boston. Tyler says, "That's about 200 miles, so it's about 400 miles to travel back and forth between New York City and Boston." Do you agree with Tyler? Explain or show your reasoning.

Section D: Practice Problems

1. There are 708 students at the school. Three hundred ninety-four students are in the cafeteria and the rest are in class. Han estimates that 400 students are in class. Do you agree with Han's estimate? Explain or show your reasoning.

(From Unit 3, Lesson 17.)

2. Select **all** equations that match the tape diagram.



- A. $110 + 5 \times 6 = ?$
 B. $? + 5 \times 6 = 110$
 C. $110 - ? = 5 \times 6$
 D. $110 + ? = 5 \times 6$
 E. $110 - 30 = ?$

(From Unit 3, Lesson 18.)

3. There are 240 connecting cubes in the box. Five students each take 9 connecting cubes from the box. How many connecting cubes are left in the box?
- Write an equation to represent the situation. Use a letter for the unknown quantity.
 - Solve the problem. Explain or show your reasoning.

(From Unit 3, Lesson 19.)

4. Andre has 245 cards. He bought 7 more packages of cards. How many cards does he have now?
- What information do you need to know to answer the question?
 - Write an expression to represent the situation. Use a letter for the unknown quantity.

(From Unit 3, Lesson 20.)

5. **Exploration**

For each equation, draw a diagram and write a situation with a question.

a. $3 \times n + 163 = 187$

b. $b - (4 \times 10) = 89$

6. Exploration

a. A question in a subtraction situation can be answered with an estimate of “about 200.” What could the subtraction situation be?

b. A question in a situation that uses addition and multiplication could be answered with an estimate of “about 300.” What could the situation be?

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