

Unit **3**

Wrapping Up Addition and Subtraction Within 1,000

Essential Questions

- How do you use place value for addition and subtraction?
- How do you know if an answer is reasonable?



Unit Story: The View From up Here

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

Unit Investigation

Lesson 1 is the Unit Investigation. Students represent the number 999 in multiple ways to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

Caregiver Connection

Students may enjoy representing three-digit numbers they see at home or in their community. You can ask:

- “How many hundreds, tens, and ones are in this number?”
- “How else could you represent this number?”

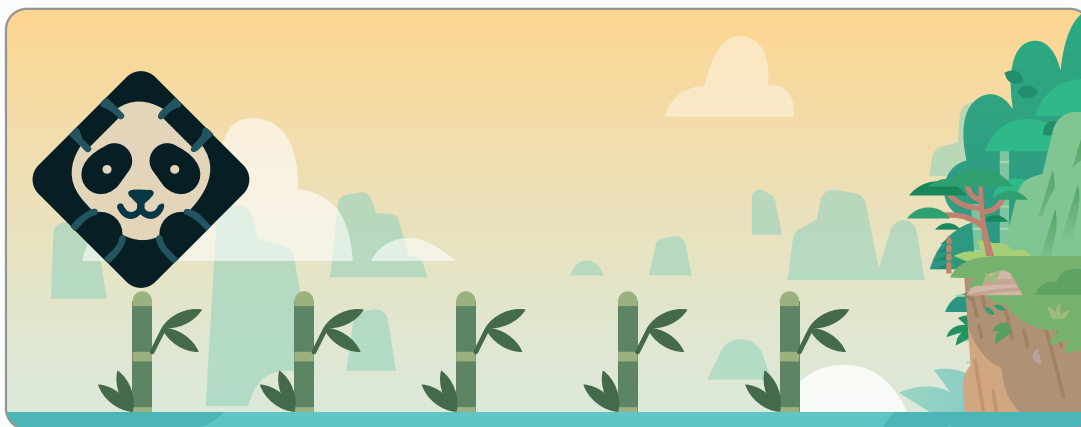
Summary | Lesson 2

You can use addition patterns to help you determine unknown sums by relating them to known sums.

207	308	409	510	611	<u>712</u>
				$611 + 100$ $611 + 100 + 1$ $711 + 1 = 712$	
207	306	405	504	603	<u>702</u>
				$603 + 99$ $603 + 100 - 1$ $703 - 1 = 702$	

Try This

- 1 Continue the pattern by adding 101.



311 _____

Summary | Lesson 3

You may choose to use a different addition strategy depending on the addends in the expression.

195 + 287	215 + 543
$195 + 5 = 200$ $200 + 282 = 482$	$200 + 500 = 700$ $10 + 40 = 50$ $5 + 3 = 8$ $700 + 50 + 8 = 758$

Try This

- 1 Determine the sum.

$$832 + 113$$



Show or explain your thinking.

answer: _____

Summary | Lesson 4

You can write addition expressions in expanded form to add by place.

$$\begin{array}{r} 200 + 10 + 5 \\ + 100 + 60 + 2 \\ \hline \end{array}$$

Try This

- 1 Determine the sum.

$$593 + 368$$



Show or explain your thinking.

answer: _____

To use a partial sums **algorithm**, add each part of the numbers by place.

Partial sums algorithm

$$\begin{array}{r} 239 \\ + 143 \\ \hline 12 \\ 70 \\ + 300 \\ \hline 382 \end{array}$$

Try This

- 1 Determine the sum $271 + 389$ using an algorithm of your choice.

 Show your thinking.

answer: _____

Summary | Lesson 6

In the standard algorithm, single digits are used to record composed units when determining place value sums.

$$\begin{array}{r} 1 \\ 367 \\ + 125 \\ \hline 492 \end{array}$$

Try This

- 1 Use an algorithm of your choice to calculate the sum $839 + 34$.

 Show your thinking.

answer: _____

Summary | Lesson 7

You can use any algorithm to add by place. When you add by place, sometimes you need to compose units in more than 1 place, and sometimes you need to compose more than 1 of the same unit.

$$\begin{array}{r} 11 \\ 547 \\ + 176 \\ \hline 723 \end{array} \qquad \begin{array}{r} 2 \\ 239 \\ 529 \\ + 123 \\ \hline 891 \end{array}$$

Try This

- 1 Clare was adding $284 + 122$. Her work is shown. Complete her work.



Show your thinking.

$$\begin{array}{r} 284 \\ + 122 \\ \hline 6 \end{array}$$

answer: _____

It is helpful to think about the addends in an addition expression before choosing a strategy or algorithm. Making an estimate before determining a sum is a good way to check the reasonableness of your answer.

$$198 + 512 = 710$$

198 is close to 200. 512 is close to 500. 700 is a reasonable estimate for the sum, and 710 is close to 700.

Try This

- 1 What is a reasonable estimate for $588 + 221$?

- 2 Determine the sum $588 + 221$.

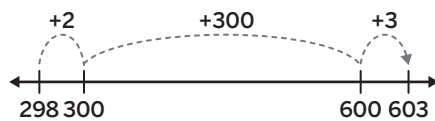
 Show your thinking.

answer: _____

Sub-Unit 1 | Summary

In this sub-unit . . .

- We revisited familiar addition strategies, including adding by place.

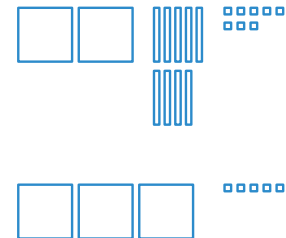


$$200 + 300 = 500$$

$$90 + 0 = 90$$

$$8 + 5 = 13$$

$$500 + 90 + 13 = 603$$



- We worked with addition algorithms using expanded form and standard form.

Expanded form algorithm

$$\begin{array}{r} 300 + 80 + 1 \\ + 500 + 90 + 2 \\ \hline 800 + 170 + 3 \end{array}$$

Partial sums algorithm

$$\begin{array}{r} 381 \\ + 592 \\ \hline 3 \\ 170 \\ + 800 \\ \hline 973 \end{array}$$

Standard algorithm

$$\begin{array}{r} 1 \\ 381 \\ + 592 \\ \hline 973 \end{array}$$

Math tip: When using an algorithm to add, if there are more than 10 ones, you need to compose a ten. If there are more than 10 tens, you need to compose a hundred.

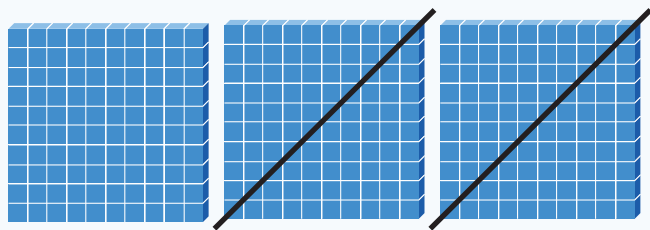
- We estimated to check the reasonableness of an answer.

$$692 + 83$$

- 692 is about 700, and 83 is about 100. $700 + 100$ is 800. 800 is a reasonable estimate for $692 + 83$.
- I determined the actual sum is 775. Because 775 is close to my estimate of 800, I feel confident I added correctly.

You can solve and represent subtraction in a variety of ways.

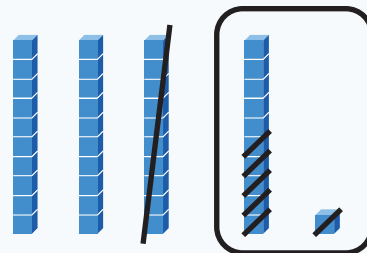
$$341 - 216$$



$$300 - 200 = 100$$

$$41 - 16 = 25$$

$$100 + 25 = 125$$



$$341 = 300 + 30 + 11$$

$$300 - 200 = 100$$

$$30 - 10 = 20$$

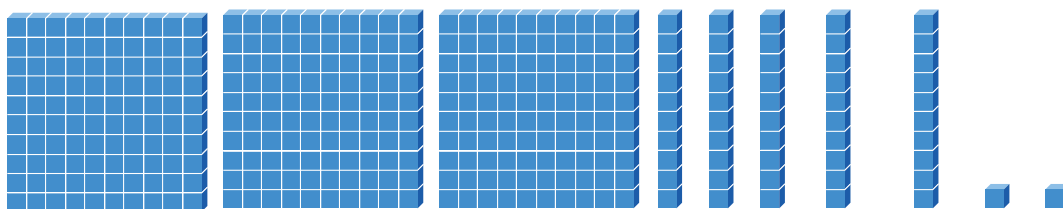
$$11 - 6 = 5$$

$$100 + 20 + 5 = 125$$

Try This

- The base-ten diagram represents 352. Use the diagram to evaluate the expression $352 - 225$.

Show your thinking.



answer: _____

Summary | Lesson 10

The expanded form algorithm can be used to calculate differences when subtracting by place.

$$\begin{array}{r} 400 + 70 + 8 \\ - 100 + 30 + 2 \\ \hline 300 + 40 + 6 \end{array}$$

$$\begin{array}{r} ^{80} ^{11} \\ 300 + \cancel{90} + \cancel{1} \\ - 200 + 10 + 5 \\ \hline 100 + 70 + 6 \end{array}$$

Try This

- 1 Diego was subtracting $273 - 146$. His work is shown. Complete his work.

 Show your thinking.

$$\begin{array}{r} ^{60} ^{13} \\ 200 + \cancel{70} + \cancel{3} \\ - 100 + 40 + 6 \\ \hline \end{array}$$

answer: _____

Summary | Lesson 11

The standard algorithm for subtraction follows the same process as the expanded form algorithm, but decompositions and the final difference are written using fewer digits.

$$\begin{array}{r} \text{400} \quad \text{130} \\ \cancel{500} + \cancel{30} + 8 \\ - 100 + 50 + 6 \\ \hline 300 + 80 + 2 \end{array} \qquad \begin{array}{r} \text{413} \\ \cancel{538} \\ - 156 \\ \hline 382 \end{array}$$

Try This

- 1 Jada was subtracting $349 - 167$ using the standard algorithm. Her work is shown. Complete her work.

$$\begin{array}{r} \text{14} \\ \cancel{349} \\ - 167 \\ \hline \end{array}$$

answer: _____

When subtracting by place, sometimes you need to decompose more than 1 unit. If you start subtracting in the ones place, you can look at 1 unit at a time and decompose as you go.

$$\begin{array}{r} 16 \\ 4\cancel{6}11 \\ 5\cancel{7}1 \\ - 178 \\ \hline 393 \end{array}$$

Try This

- 1 Jada was subtracting $222 - 127$. Her work is shown. Is her work correct? Explain your thinking.

$$\begin{array}{r} 11 \\ \cancel{2}12 \\ 2\cancel{2}2 \\ - 127 \\ \hline 195 \end{array}$$

Summary | Lesson 13

Sometimes you need to decompose hundreds first in order to have enough tens to make 10 ones.

$$\begin{array}{r} \overset{200}{\cancel{300}} + \overset{90}{\cancel{100}} \overset{11}{\cancel{0} + \cancel{1}} \\ - 100 + 60 + 7 \\ \hline 100 + 30 + 4 \end{array} \qquad \begin{array}{r} \overset{9}{\cancel{210}} \overset{11}{\cancel{0} + \cancel{1}} \\ - 167 \\ \hline 134 \end{array}$$

Try This

- 1** Diego determined the value of $403 - 197$. His work is shown. Is his work correct? Explain your thinking.

$$\begin{array}{r} \overset{300}{\cancel{400}} + \overset{120}{\cancel{200}} \overset{10}{\cancel{0} + \cancel{0}} \\ - 100 + 90 + 7 \\ \hline 200 + 30 + 3 \end{array}$$

It is helpful to think about the numbers in a subtraction expression before choosing a strategy or algorithm. Making an estimate before determining a difference is a good way to check the reasonableness of your answer.

$$808 - 498 = 310$$

498 is close to 500, and 808 is close to 800.
300 is a reasonable estimate for the difference,
and 310 is close to 300.

Try This

- 1 What is a reasonable estimate for the difference $392 - 211$?

- 2 Determine the difference $392 - 211$.



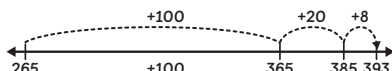
Show your thinking.

answer: _____

Sub-Unit 2 | Summary

In this sub-unit . . .

- We revisited familiar subtraction strategies, including subtracting by place.



$$393 = 300 + 80 + 13$$

$$300 - 200 = 100$$

$$80 - 60 = 20$$

$$13 - 5 = 8$$

$$100 + 20 + 8 = 128$$

- We worked with subtraction algorithms using expanded form and standard form.

Expanded form algorithm

$$\begin{array}{r} 300 + \overset{50}{\cancel{60}} + \overset{13}{\cancel{3}} \\ - \quad \quad 40 + 8 \\ \hline 300 + 10 + 5 \end{array}$$

Standard algorithm

$$\begin{array}{r} \overset{5}{3} \overset{13}{\cancel{0} \cancel{3}} \\ - \quad 48 \\ \hline 315 \end{array}$$

🔥 **Math tip:** When using an algorithm to subtract, if the value of the digit you are subtracting is greater than the value of the digit you are subtracting from, you need to decompose.

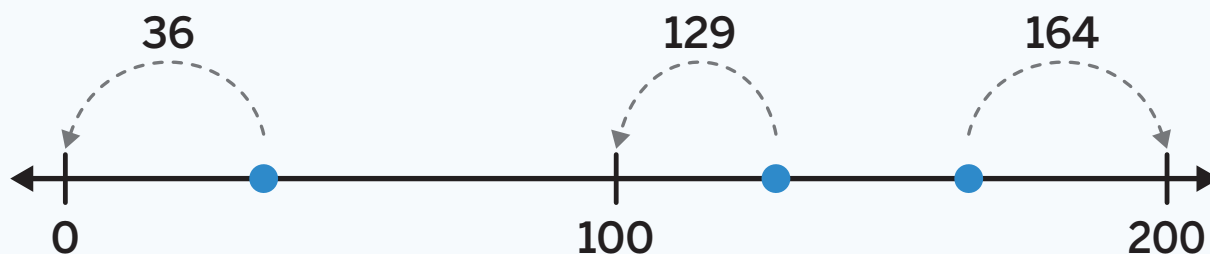
- We estimated to check the reasonableness of an answer.

$$600 - 488$$

- 488 is close to 500. $600 - 500$ is 100.
- I determined the actual difference is 112. Because 112 is close to my estimate of 100, I feel confident in my answer.

Summary | Lesson 15

Every number has a nearest hundred. A number line is a useful tool to help determine the nearest hundred.



Try This

- 1 Identify which number line would be used to locate 539. Then plot and label 539 on that number line.



- 2 What is the nearest hundred to 539? _____

Every number is between 2 tens. Place value can be used to determine the nearest ten to a given number.



Try This

For Problems 1 and 2, determine the nearest ten and the nearest hundred to the number.

1 661

nearest ten: _____

nearest hundred: _____

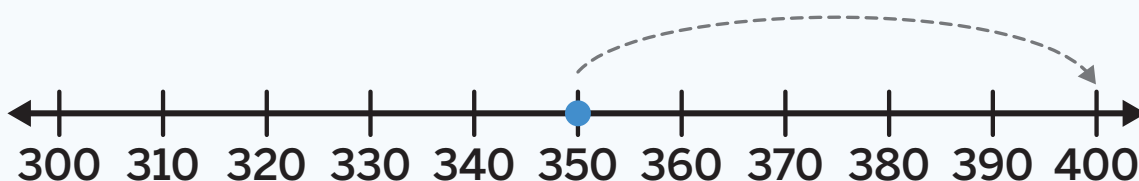
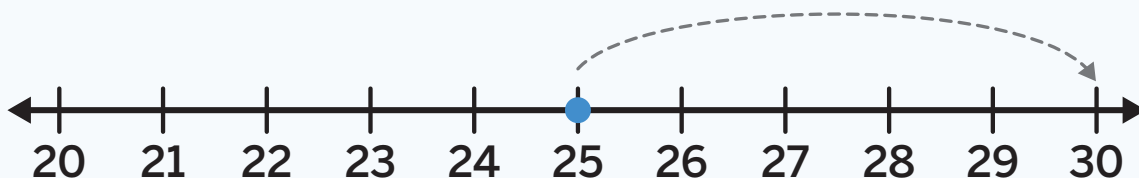
2 26

nearest ten: _____

nearest hundred: _____

Summary | Lesson 17

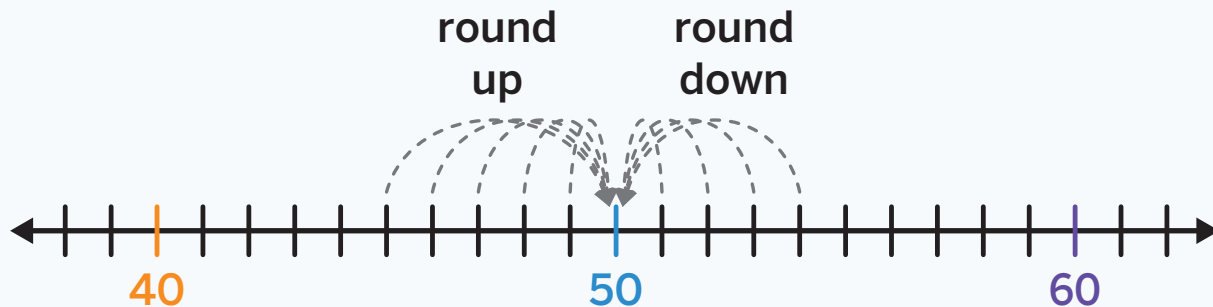
You can round a number to the nearest ten or the nearest hundred. When a number is exactly in the middle of 2 tens or hundreds, you always round up.



Try This

- 1 Round 145 to the nearest ten. _____
- 2 Round 145 to the nearest hundred. _____
- 3 Round 350 to the nearest hundred. _____
- 4 Round 350 to the nearest ten. _____

Every ten or hundred has many numbers that could round to it. Some numbers round up to a given number, while other numbers round down to the same number.



Try This

- 1 When rounded to the nearest ten, what are all the numbers that would round to 70?

- 2 When rounded to the nearest hundred, what are all the numbers that would round to 700?

Sub-Unit 3 | Summary

In this sub-unit . . .

- We rounded numbers to the nearest ten and nearest hundred using number lines and place value reasoning.



- We used rounding to estimate amounts and observed the accuracy of rounding to the nearest ten and rounding to the nearest hundred.

- Rounded numbers can be used to tell about how large a quantity is.

There were about 100 people in the observation deck of the Gateway Arch in St. Louis.

- Rounding to the nearest ten gives a more accurate estimate of a number's value than rounding to the nearest hundred.

32 rounded to the nearest ten is 30, but rounded to the nearest hundred it is 0.

- We considered patterns in numbers that round up and numbers that round down.



Math tip: Numbers that are exactly in the middle round up to the next greater ten or hundred.

Estimating is helpful when solving two-step problems involving addition and subtraction.

$$483 + 162 - 65 = ?$$
$$500 + 200 - 100 = ?$$

483 can be rounded to 500. 162 can be rounded to 200. 65 can be rounded to 100. $500 + 200 = 700$. $700 - 100 = 600$. 600 is a reasonable estimate.

Try This

- 1 There are 708 students at a school. 394 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 your thinking.

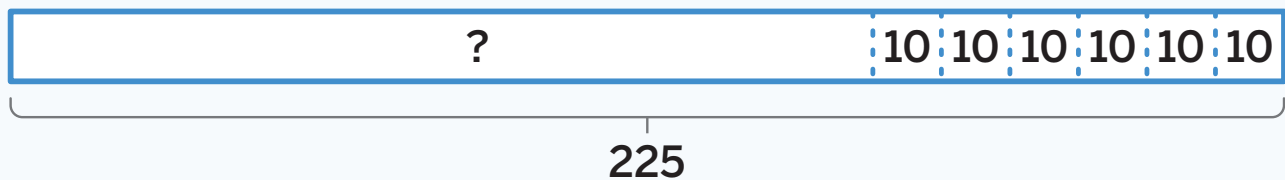
Representing a problem with a diagram or an equation helps show what is known, what is missing, and how they go together to solve a two-step problem.

Han has 225 beads. Then he makes 6 bracelets for his friends. Each bracelet has 10 beads. How many beads does Han have now?

$$225 - (6 \times 10) = ?$$

$$6 \times 10 = 60$$

$$225 - 60 = ?$$



Try This

- 1 Diego has a collection of 345 football cards. His mother buys him 120 more. Then he gives away 32 of his football cards. How many cards does Diego have now?

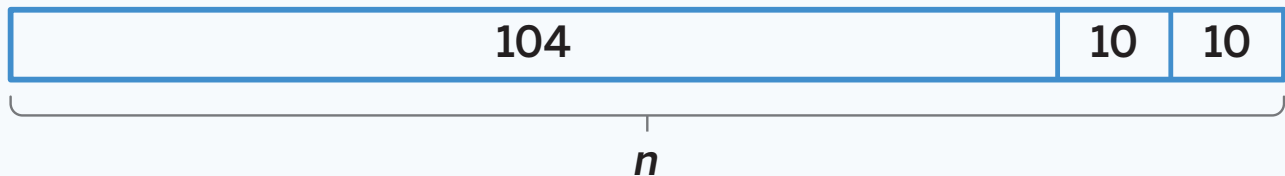
Which equation represents the situation? Explain your thinking.

(A) $345 + 120 + 32 = ?$

(B) $345 + 120 - 32 = ?$

Thinking about the information that is known and the information that is missing helps you understand the steps for solving a problem and what to do first.

Mai had 104 beads. She bought 2 more packages of beads, and each package has 10 beads. Mai's brother has 200 beads. How many beads does Mai have now?



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

Try This

There are 240 connecting cubes in a box. 5 students each take 9 connecting cubes from the box. How many connecting cubes are left in the box? Use the situation for Problems 1 and 2.

- 1 Write an equation to represent the situation. Use a letter for the unknown value.

- 2 Determine the number of connecting cubes left in the box.

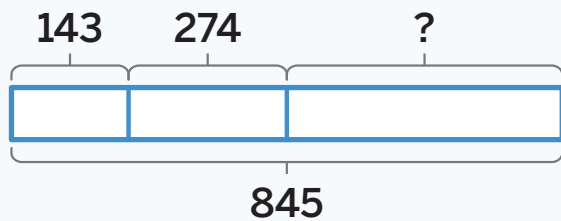


Show or explain your thinking.

answer: _____

You can use representations and rounding to help you make sense of two-step problems and check for reasonableness.

845 people attended an art show over 3 days. If 143 people attended on Day 1 and 274 people attended on Day 2, how many people attended on Day 3?



$$\begin{aligned} &845 - (143 + 274) \\ &800 - (100 + 300) \\ &800 - 400 \\ &400 \end{aligned}$$

About 400 people attended on Day 3.

Try This

- 1 A class would like 10 story books, each costing \$8, and a set of history books costing \$250. How much money would all the books cost?

 Show or explain your thinking.

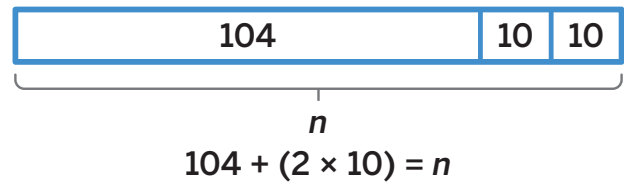
answer: _____

Sub-Unit 4 | Summary

In this sub-unit . . .

- We represented two-step story problems with diagrams and equations.

Mai had 104 beads. She bought 2 more packages of beads, and each package has 10 beads. Mai's brother has 200 beads. How many beads does Mai have now?



Math tip: Using a letter for the unknown value helps you keep track of what the unknown value represents in the problem.

- We were introduced to the *Info Gap* routine, where we asked questions to determine the information needed to solve the problem.

Problem Card

Max is planning how to display his photos. There are some laid out in rows and some still in piles on the table. How many photos are there?

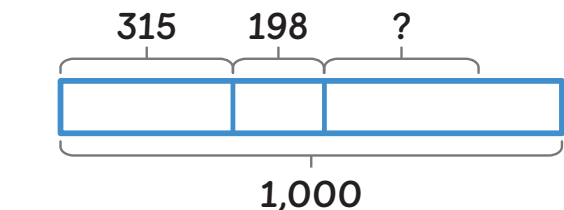
Data Card

- 40 photos are in the pile on the table.
- There are 4 rows of photos.
- There are 8 photos in each row.
- Each pile has the same number of photos.

- We made sense of and solved two-step story problems.

Max received a grant of \$1,000 to purchase new supplies for his next photography trip. He purchased a new camera lens for \$315 and a new camera bag for \$198.

How much grant money does Max have left to purchase supplies?



$$\begin{array}{r} 1 \ 1 \\ 3 \ 1 \ 5 \\ + \ 1 \ 9 \ 8 \\ \hline 5 \ 1 \ 3 \end{array}$$

$$\begin{aligned} 1,000 - 500 &= 500 \\ 500 - 10 &= 490 \\ 490 - 3 &= 487 \end{aligned}$$

Try This | Answer Key

Lesson 2

1 311 412 513 614 715

Lesson 3

1 Sample work:

$$800 + 100 = 900$$

$$30 + 10 = 40$$

$$2 + 3 = 5$$

$$900 + 40 + 5 = 945$$

answer: 945

Lesson 4

1 Sample work:

$$500 + 300 = 800$$

$$90 + 60 = 150$$

$$3 + 8 = 11$$

$$800 + 150 + 11 = 961$$

answer: 961

Lesson 5

1 Sample work:

$$\begin{array}{r} 271 \\ + 389 \\ \hline 10 \\ 150 \\ + 500 \\ \hline 660 \end{array}$$

answer: 660

Lesson 6

1 Sample work:

$$\begin{array}{r} 1 \\ 839 \\ + 34 \\ \hline 873 \end{array}$$

answer: 873

Lesson 7

1

$$\begin{array}{r} 1 \\ 284 \\ + 122 \\ \hline 406 \end{array}$$

answer: 406

Lesson 8

1

Sample responses: 800 or 810

2

Sample work:

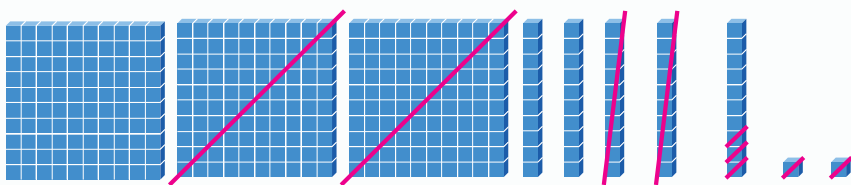
$$\begin{array}{r} 1 \\ 588 \\ + 221 \\ \hline 809 \end{array}$$

answer: 809

Lesson 9

1

Sample work:



answer: 127

Lesson 10

1

$$\begin{array}{r} 200 + \overset{60}{\cancel{70}} + \overset{13}{\cancel{3}} \\ - 100 + 40 + 6 \\ \hline 100 + 20 + 7 \end{array}$$

answer: 127

Lesson 11

$$\begin{array}{r} 1 \quad 214 \\ 349 \\ - 167 \\ \hline 182 \end{array}$$

answer: 182

Lesson 12

- 1 Sample explanation: No. When she decomposed a group of 100, she did not write 1 in the hundreds place. The answer should be 95.

Lesson 13

- 1 Sample explanation:

$$\begin{array}{r} 90 \\ 300 \quad 100 \quad 13 \\ 400 + 0 + 3 \\ - 100 + 90 + 7 \\ \hline 200 + 0 + 6 \end{array}$$

No. He wrote 403 in expanded form incorrectly.
 $403 = 400 + 0 + 3$. The correct answer is 206.

Lesson 14

- 1 Sample responses: 200 or 180

- 2 Sample work:

$$\begin{aligned} 211 + 100 &= 311 \\ 311 + 80 &= 391 \\ 391 + 1 &= 392 \\ 100 + 80 + 1 &= 181 \end{aligned}$$

answer: 181

Lesson 15



- 2 500

Try This | Answer Key

Lesson 16

- 1 nearest ten: 660
nearest hundred: 700
- 2 nearest ten: 30
nearest hundred: 0

Lesson 17

- 1 150
- 2 100
- 3 400
- 4 350

Lesson 18

- 1 65, 66, 67, 68, 69, 70, 71, 72, 73, 74
- 2 all the numbers from 650 through 749

Lesson 19

- 1 explanation: No. There are about 700 students at the school, and about 400 are in the cafeteria. That means there are about 300 students in class.

Lesson 20

- 1 B
Sample explanation: Diego gave away 32 cards. This is represented with subtraction, not addition.

Lesson 21

- 1 Sample response: $240 - (5 \times 9) = n$
- 2 Sample work:
 $5 \times 9 = 45$
 $240 - 45 = 195$
answer: 195 connecting cubes

Lesson 22

- 1 Sample work:
 $250 + (10 \times 8) = ?$
 $250 + 80 = 330$
answer: \$330