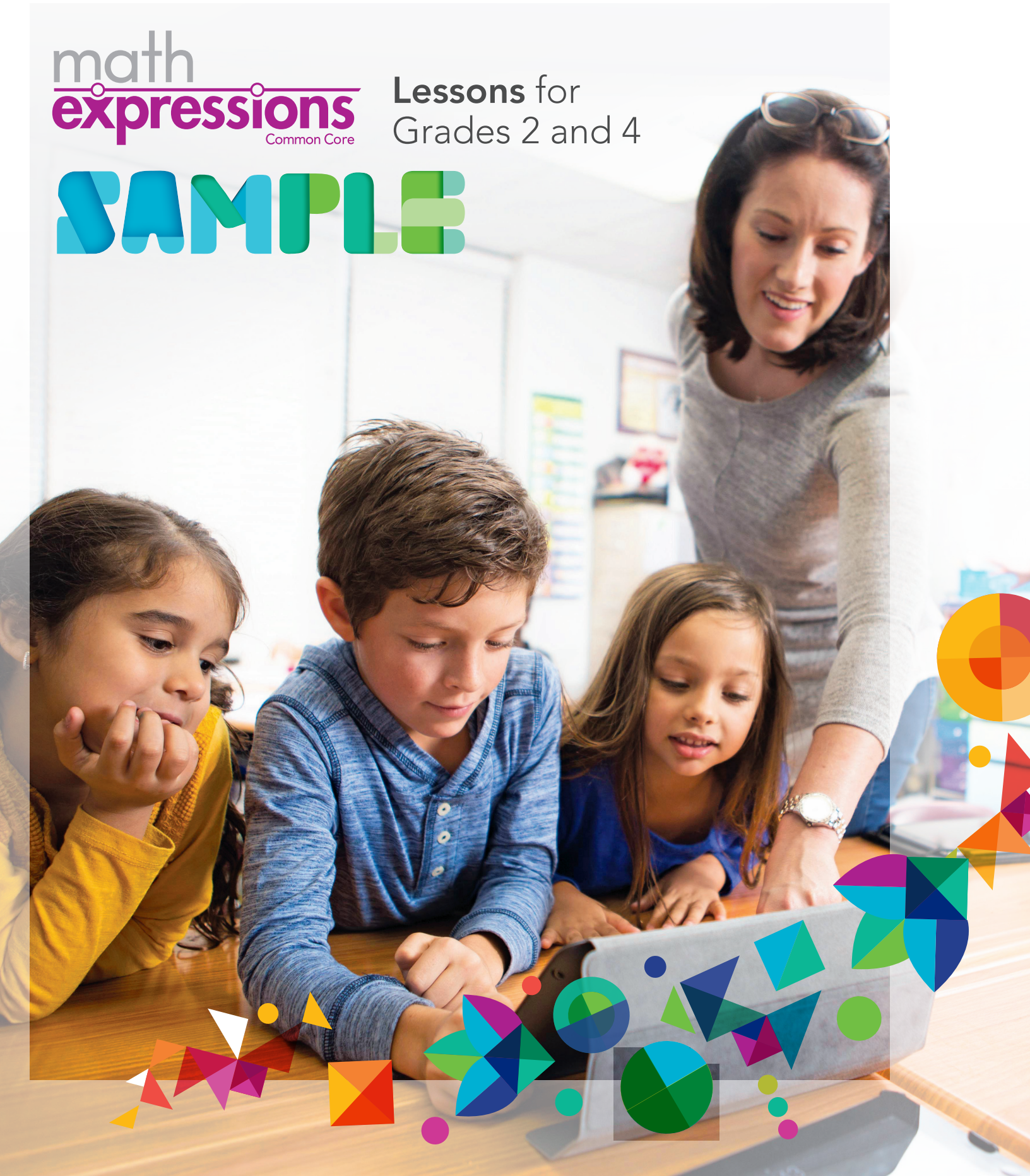


math
expressions
Common Core

Lessons for
Grades 2 and 4

SAMPLE



Put Together/ Take Apart Problems

Common Core State Standards
Content Standards
 2.OA.A.1, 2.OA.B.2
Processes and Practices
 MP1, MP3, MP4, MP6

Day at a Glance

What will children learn?

Children will solve *Put Together/Take Apart* problems.

1 Teaching the Lesson

Math Background for this lesson is included on p. T100 .

ACTIVITY 1 Introduce *Put Together/Take Apart* Problems (Student Activity Book: 111-113)

Why is this activity important?

The use of models helps children develop their understanding of composing and decomposing quantities.

ACTIVITY 2 Solve *Put Together/Take Apart* Problems (Student Activity Book: 114-115)

Why is this activity important?

Explaining their solutions to problems in which they compose and decompose quantities helps solidify children's understanding of these concepts.

Quick Practice 5m

(See TE page QP1–U1.)

- Equation Chains (A2)
- Stay or Go? (B3)

Daily Routines

(See TE page DR1–U1.)

- Money Routine

Vocabulary

- *Put Together/Take Apart*



APP For vocabulary fluency and fun



2 Differentiated Instruction

On-Level, Challenge & Intervention

- Activity Card / Writing Prompt for all levels
- Practice, Reteach & Challenge
- Rtl: Tier 1, 2 & 3

Games

- Primary Operations
- OSMO™ *Rainbow Reef: Model with Arrays* Activity 46
- *Caterpillae Chase*

Math Reader

- *Multiplying a Good Deed*

Assessment and Intervention

Personal Math Trainer, Lesson 1-12

Students learn in a way that works best for them.

OSMO™
*Rainbow Reef:
 Model with Arrays*
 Activity 46 ▶



iTools



iTools: Math Mountains

Personal
 Math Trainer ▼



3 Homework and Spiral Review

Homework and Remembering pp. 23–24



Home or School Activity
 Technology Connection: Illustrate a Problem

1 Teaching the Lesson

ACTIVITY 1 25m

Introduce *Put Together/ Take Apart* Problems

Common Core State Standards

Mathematical Content
2.OA.A.1

Mathematical Practices
MP1, MP4, MP6

Focus

Introduce *Put Together/ Take Apart* problems.

Materials

MathBoard materials

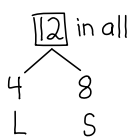
Put Together Problems

Total Unknown Write the problem on the board and read it aloud.

Jason puts 4 large plates and 8 small plates on the table. How many plates are on the table in all?

- What question does the problem ask? How many plates in all?
- Are we looking for a total or an addend? a total How do you know? Jason already has big plates and small plates. We have to find out how many of both sizes he has.

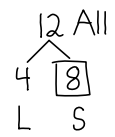
MP1, MP4 Make Sense of Problems/Model with Mathematics | Draw a Diagram Have four to six children draw and solve the problem on the board while others draw and solve it on their MathBoards.

$4 + 8 = \boxed{12}$ L S in all		$8 \text{ } \circ \circ \circ \circ$ S L $\boxed{12}$
------------------------------------	---	--

Addend Unknown Have children discuss, draw, and solve this *addend unknown* problem.

Jason puts 4 large plates and some small plates on the table. Altogether there are 12 plates. How many plates are small?

- What do we have to find out? how many small plates Jason puts on the table
- Are we looking for a total or an addend? an addend How do you know? We know how many total plates Jason puts on the table. We know how many of them are large. We don't know how many are small.

$4 + \boxed{8} = 12$ L S Altogether	$4 \text{ } \circ \circ \circ \circ \circ \circ \circ$ L 8 S
	$4 + \underbrace{6 + 2}_8$

Teaching Note

Math Background

Put Together and *Take Apart* problems involve the composition of a quantity (total) by joining its component parts (addends), or the decomposition of a quantity into its component parts. Unlike *Add To* or *Take From* problems, neither the total nor the addends undergo change.

For example: Gina has 4 black shirts and 2 white shirts. The total number of shirts, 6, can be formed by joining its component parts—4 black shirts and 2 white shirts. Or, if the problem states that Gina has 6 shirts, 4 of which are black and the remaining ones white, the total, 6, can be decomposed to find one or more of its component parts, 4 and 2.

Take Apart Problems

Addend Unknown Children discuss, draw, and solve this *addend unknown* problem.

A total of 13 large and small plates were on the table. Jason put the 7 large plates on a shelf and the small plates on the counter. How many small plates are on the counter?

- *What do we have to find out? how many small plates Jason has, as we did with the previous problem*

MP6 Attend to Precision | Explain a Solution Have four to six children draw and solve the problem on the board while others do the same on their MathBoards. Children's drawings and solution processes should look similar to those done for the *Put Together* problem with *addend unknown*.

$13 - 7 = \boxed{6}$ <p>Total L S</p>	$7 \quad \underbrace{\text{ooo} \quad \text{ooo}}$ <p>L S</p>
$\begin{array}{c} 13 \text{ Total} \\ / \quad \backslash \\ 7 \quad \square \\ \text{L} \quad \text{S} \end{array}$	$7 + \underbrace{3 + 3}_6$

MP1 Make Sense of Problems | Analyze Relationships The same problem may be classified in two ways. One child may view a problem as a Put Together problem with addend unknown, and another may see the same problem as a Take Apart problem with addend unknown. The classification will lead to different situation equations but the same solution equation. These different perspectives allow children to see subtraction as a way of finding an unknown addend.

English Learners

Write **together** and **apart** on the board. Demonstrate putting connecting cubes together and taking them apart, saying and pointing to the words. Explain that together and apart are opposites.

Emerging

Distribute connecting cubes.

- *The cubes are together. The cubes are apart.*

Ask children to repeat and perform the appropriate action.

Expanding

Display connecting cubes that are joined and separate.

- *Are the cubes together or apart? together / apart*

Bridging

Show two sets of cubes, joined and separate.

- *What is the difference between the two sets of cubes? Those cubes are together. These cubes are apart.*

Differentiated Instruction

Extra Help If you notice that some children are experiencing difficulty with their drawings, suggest that they try drawing Math Mountains to represent the situation. Math Mountains depict *Put Together* and *Take Apart* situations very clearly.

1 Teaching the Lesson *(continued)*

ACTIVITY 2 30m

Solve Put Together / Take Apart Problems

Common Core State Standards
Mathematical Content
 2.OA.A.1, 2.OA.B.2
Mathematical Practices
 MP1, MP2, MP3, MP6

Focus
 Solve *Put Together/Take Apart* problems.

Materials
 MathBoard materials.
 Student Activity Book pp. 35–36

Solve and Discuss

Direct children's attention to Student Activity Book pages 35–36.

Use the **Solve and Discuss** structure for Problems 1–7. Children should explain the problem in their own words and tell how they got the answer. Encourage other children to comment and ask questions.



iTools: Math Mountains
 The Math Mountains iTTool may be used in this lesson.

MathTalk in Action

Ria explains how she solved Problem 1.

Ria: There are a total of 13 bikes. There are 8 blue bikes and the rest are red. I need to find out how many red bikes there are. I drew a math mountain and found out there are 5 red bikes.

Tyrone: How did you solve it?

Ria: When I drew the math mountain with the missing addend, I realized that I know that $8 + 5 = 13$, so if 8 of the bikes are blue, then 5 of them must be red.

Formative Assessment Check Understanding

Children's responses will show their understanding of whether an unknown quantity in a problem is the total or an addend.

Unit 1 • Lesson 12 Name _____

Solve and Discuss Drawings and equations may vary.

Make a drawing. Write an equation. Solve the problem, showing your work.

VOCABULARY
 array
 row
 column

1 There are 13 people in a bike race. 8 ride blue bikes. The rest ride red bikes. How many people ride red bikes?

5 people
 label

blue 8 5 red
 $8 + 5 = 13$

2 4 horses are in the barn. 8 horses are in the field. How many horses are there altogether?

12 horses
 label

4 8
 B F
 $4 + 8 = 12$

3 Andrew makes some sandwiches. 6 are turkey sandwiches and 7 are ham sandwiches. How many sandwiches does Andrew make in all?

13 in total
 label

T 6 H 7
 $6 + 7 = 13$

4 Keisha has 11 cousins. 4 are boys and the rest are girls. How many are girls?

7 girls
 label

4 7
 boys girls
 $11 - 4 = 7$

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5 Content Standards 2.OA.A.1
 Mathematical Practices MP1, MP3, MP6

Put Together/Take Apart Problems 35

Unit 1 • Lesson 12

Solve and Discuss (continued) Drawings and equations may vary.

Make a drawing. Write an equation. Solve the problem, showing your work.

5 There are 7 books on the shelf and 5 books on the table. How many books are there?

12 books
 label

7 5
 shelf table
 $7 + 5 = 12$

6 Mandy sews 8 blue beads and 6 red beads on a ribbon. How many beads are on the ribbon?

14 beads
 label

blue 8 6 red
 $8 + 6 = 14$

7 Lisa has 5 green pencils and some yellow pencils. She has 13 pencils in all. How many yellow pencils does Lisa have?

8 yellow pencils
 label

5 5 3
 9 y
 $5 + 8 = 13$

Check Understanding
 Circle the correct answer for each exercise.

In problem 5, the unknown is the total / addend.
 In problem 6, the unknown is the total / addend.
 In problem 7, the unknown is the total / addend.

36 Unit 1 Lesson 12 Put Together/Take Apart Problems



Math Activity Center

Hands-On • Print • Interactive Digital Games and Resources

A
Adaptive

Individuals

Pairs

Groups

ON-LEVEL RESOURCES

Hands-On

Activity Card, Lesson 1-12: *Work Backward*

Independent Work

Practice, Lesson 1-12

Interactive Digital

RtI Tier 1, Lesson 1-12



1 **Work Together** Copy the first exercise.

153	184	148	133	176
-62	-75	-82	-35	-45
91	109	61	98	131

2 Draw Quick Hundreds, Quick Tens, and circles to show the total (the top number).

3 Use a color pencil to show ungrouping in the exercise card in the drawing.

4 Use a different color pencil to show the subtraction.

5 Reverse roles and repeat for the next exercise.

Math Writing Prompt
Model and Solve Explain how drawing a Math Mountain can help you solve this problem: A vase holds 6 red roses and 6 yellow roses. How many roses are there in all?

CHALLENGE RESOURCES

Hands-On

Activity Card, Lesson 1-12: *Different Ways to Solve*

Independent Work

Challenge, Lesson 1-12

Interactive Digital

Primary Operations Game

1 **You Decide** Write a subtraction word problem that needs ungrouping to solve.

2 Use the same total number to write a subtraction word problem that does not need ungrouping to solve.

3 Trade your word problems with a classmate.

4 Solve the word problems that your classmate wrote.

Crystal had 135 pennies. She gave 88 pennies to her sister. How many pennies does Crystal have left?

Crystal had 135 crayons. She gave 21 of them to her brother. How many crayons does Crystal have left?

Math Writing Prompt
Explain Your Thinking Ann solved a word problem using the equation $4 + \square = 13$. Write a word problem that she may have solved.

INTERVENTION RESOURCES

Hands-On

Activity Card, Lesson 1-12: *Act It Out*

Independent Work

Reteach, Lesson 1-12

Interactive Digital

RtI Tier 2, Lesson 1-12



1 Each takes 4 index cards.

2 On the first index card, each writes an exercise that does not need ungrouping.

3 On the second index card, each writes an exercise that only needs the tens ungrouped.

4 On the third index card, each writes an exercise that only needs the hundreds ungrouped.

5 On the fourth index card, each writes an exercise that needs both tens and hundreds ungrouped.

6 Trade cards with your partner and find the differences. Label each exercise with the ungrouping you did.

275 - 122 (no ungrouping)

275 - 16 (only tens ungrouped)

275 - 127 (hundreds ungrouped)

Math Writing Prompt
Explain the Plan Explain how you could use counters to act out this problem: Maria buys 2 red shirts and 3 blue shirts. How many shirts does she buy in all?

MORE RESOURCES

Games

Practice | Reinforce | Extend

- OSO™ *Add Activity 2*
- *Caterpillar Chase*
- *Primary Operations*

Assessment and Intervention

Personal Math Trainer, Lesson 1-12
Formative assessment and adaptive step-by-step intervention.

Diagnostic Interviews RtI Tier 3

▼ Challenge the *Not So Good Guys* with *Addition & Subtraction, digital game*.



▼ *Caterpillar Chase* gameboard



HOMWORK



Goal: Additional Practice

Use this Homework page to provide children with more practice in solving *Put Together/Take Apart* word problems.

Homework and Remembering page 23

1-12 Homework Name _____

Make a drawing. Write an equation.
Solve the problem. *Drawings and equations may vary.* Show your work.

1 There are some pigs on Mr. Smith's farm. 8 of them are eating corn. The other 7 are drinking water. How many pigs are on Mr. Smith's farm?

15 pigs

$8 + 7 = 15$

15 pigs label

2 Wendy buys 3 blue balloons and some red balloons for a party. She buys 11 balloons. How many red balloons does she buy?

3 + 7 + 1 = 11

$3 + 8 = 11$

8 red balloons label

3 There are 14 children at the park. 7 of them are on the swings. The rest are jumping rope. How many are jumping rope?

14 All

$14 - 7 = 7$

7 children label

4 Sean buys 9 red tomatoes and 6 green tomatoes. How many tomatoes does he buy?

9 + 6 = 15

$9 + 6 = 15$

15 tomatoes label

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UNIT 1 LESSON 12 Put Together/Take Apart Problems 23

REMEMBERING



Goal: Spiral Review

This Remembering activity is appropriate anytime after today's lesson.

Homework and Remembering page 24

1-12 Remembering Name _____

Draw lines to make pairs. Write odd or even.

1 odd

2 even

3 odd

4 even

Add. Use doubles.

5 $7 + 8 = 15$ $9 + 8 = 17$ $5 + 4 = 9$

6 $8 + 6 = 14$ $5 + 3 = 8$ $6 + 7 = 13$

Find the total or partner.

7 $\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$ $\begin{array}{r} 5 \\ + 8 \\ \hline 13 \end{array}$ $\begin{array}{r} 9 \\ + 9 \\ \hline 18 \end{array}$ $\begin{array}{r} 7 \\ + 6 \\ \hline 13 \end{array}$ $\begin{array}{r} 3 \\ + 9 \\ \hline 12 \end{array}$ $\begin{array}{r} 2 \\ + 9 \\ \hline 11 \end{array}$

8 $\begin{array}{r} 16 \\ - 8 \\ \hline 8 \end{array}$ $\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$ $\begin{array}{r} 15 \\ - 7 \\ \hline 8 \end{array}$ $\begin{array}{r} 14 \\ - 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 12 \\ - 7 \\ \hline 5 \end{array}$ $\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$

9 **Stretch Your Thinking** Write a word problem that uses doubles and solve.
Sample answer: There are 8 boys waiting in line. The same number of girls are waiting in line. How many children are waiting in line? 16 children

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24 UNIT 1 LESSON 12 Put Together/Take Apart Problems

Home or School Activity

Technology Connection

Illustrate a Problem Children write their own word problem about two groups or choose a problem from Student Activity Book page 35.

Children type the word problem using a computer and illustrate the problem using art.



Unit 1: Lesson 11

Subtract Greater Numbers

Common Core State Standards
Mathematical Content
 4.OA.A.3, 4.NBT.B.4
Mathematical Practices
 MP1, MP3, MP6, MP8

Day at a Glance

What will students learn?

Students will learn to use methods for ungrouping to subtract two whole numbers.

1 Teaching the Lesson

Math Background for this lesson is included on page MB1-U1.

ACTIVITY 1 Subtract From Greater Numbers

Why is this activity important?

Subtracting from greater numbers and discussing when ungrouping is necessary will build students' fluency with subtraction.

ACTIVITY 2 Check Subtraction (Student Activity Book: 31–32)

Why is this activity important?

Exploring ways to check subtraction provides students with ways to decide if their answers are reasonable.

Quick Practice 5m

(See page QP1-U1.)

- Write, Compare, Say (B-8)

Anytime Problem

In a game, four players scored 30, 40, 60, and 80 points. Raj had the highest score. Theo scored 10 points less than Kate. Jenny also played. Which player had each score? **Raj 80, Jenny 60, Kate 40, Theo 30**

Vocabulary



APP For vocabulary fluency and fun



2 Differentiated Instruction

On-Level, Challenge, and Intervention

- Activity Card / Writing Prompt for each level
- Practice, Reteach, and Challenge

Games

- Poggles MX
- Who's the Closest? Gameboard
- Intermediate Vocabulary Game

Math Reader

- The First Space Vacation

Poggles MX: Intermediate ▶



Assessment and Intervention

Personal Math Trainer, Lesson 1-11

Formative assessment and step-by-step intervention.

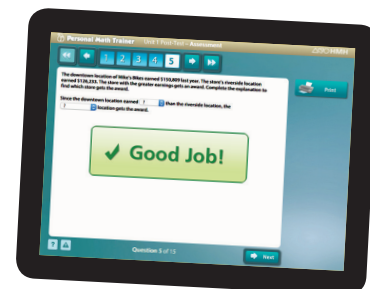
3 Homework and Spiral Review

Homework and Remembering pp. 21–22

Home or School Activity

Social Studies Connection: Numbers in the News

Personal Math Trainer ▼



ACTIVITY 2  35m

Check Subtraction

Common Core State Standards
Mathematical Content
 4.OA.A.3, 4.NBT.B.4
Mathematical Practices
 MP1, MP3, MP6

Focus
 Explore ways to check subtraction.

Materials
 Student Activity Book
 pp. 31–32, MathBoard
 materials

Find and Correct Mistakes 

MP3 Critique the Reasoning of Others Students should discuss the conceptual mistakes shown in Exercises 1 and 2 on Student Activity Book page 31. Two groups can present their work at the board.

- In Exercise 1, the places are not properly aligned. Ones must be subtracted from ones, and so on. Students should rewrite the exercise with correct alignment and find the correct answer. **61,811**
- In Exercise 2, no ungrouping has been done. One hundred should have been ungrouped to make more tens. Instead, the lesser digit was subtracted from the greater digit. The same mistake was made in the thousands place. Students should ungroup as needed and find the correct answer. **129,571**

Unit 1 • Lesson 11

Name _____



Find and Correct Mistakes

Always check your work. Many mistakes can be easily fixed.

What is the mistake in each problem? How can you fix it? **Answers will vary.**
Possible answers given.

1 $67,308 - 5,497$

$$\begin{array}{r} 12 \\ 67\cancel{3}08 \\ - 5,497 \\ \hline 12,338 \end{array}$$

2 $134,865 - 5,294$

$$\begin{array}{r} 134,865 \\ - 5,294 \\ \hline 131,631 \end{array}$$

The numbers are not aligned correctly. To fix the mistake, rewrite the problem so that ones line up with ones, tens line up with tens, and so on.

The student subtracted the lesser digit from the greater digit when the greater digit was on the bottom. To fix the mistake, ungroup so that a greater number is always on top.

Check Subtraction by "Adding Up"

"Add up" to find any places where there is a subtraction mistake. Discuss how each mistake might have been made and correct the subtraction if necessary.

3 $163,406 - 84,357 = 79,159$
 79,049 ungrouped incorrectly

4 $526,741 - 139,268 = 413,473$
 387,473 subtracted top from bottom

5 $1,000,000 - 300,128 = 600,872$
 699,872 ungrouped incorrectly

6 $5,472,639 - 2,375,841 = 3,096,798$
 no mistakes

7 Write and solve a subtraction problem with numbers in the hundred thousands.
Answers will vary.

Content Standards 4.NBT.B.4 Mathematical Practices MP1, MP3, MP6

Subtract Greater Numbers 31

Activity continued ►

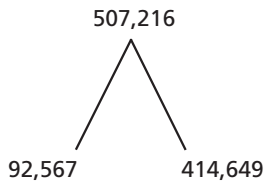
Inquiry

Analyzing another student's work to find errors requires that a student reflect on what he or she knows about the process involved. As students discuss the possible errors in Exercises 1 and 2, use guiding questions rather than pointing out the errors so that they do the work of finding the errors. Seeing why an incorrect method does not work motivates students to work correctly as they carry out multidigit subtractions with ungrouping.

1 Teaching the Lesson *(continued)*

Check Subtraction by “Adding Up”

MP1 Make Sense of Problems | Check Answers To review the relationship between addition and subtraction, draw this break-apart drawing on the board.



Ask students to discuss how the diagram shows both subtraction and addition. **If you subtract either bottom number from the top number, you get the other bottom number as the answer. If you add the two bottom numbers, you get the top number as the answer.**

Have students discuss how they could use this knowledge to check subtraction. Try to elicit the following method: **You can check subtraction by “adding up.” Add the answer and the bottom number (the addends in an addition) to get the top number (the total in an addition).**

“Adding Up” Method to Check Subtraction The “adding up” method is shown below. The new groups are shown as 1s in the appropriate columns just below the answer in the subtraction.

$$\begin{array}{r} 507,216 \\ - 92,567 \\ \hline 414,649 \\ 1 1 1 \end{array}$$

Students can take turns adding place values, beginning with the ones place.

- Add the ones bottom to top: $9 + 7 = 16$. The 16 is consistent with the 6 that is already at the top of the ones column. Write a 1 for the grouped ten at the bottom of the tens column.
- Add the tens bottom to top: $1 + 4 + 6 = 11$. The 11 is consistent with the 1 that is already at the top of the tens column. Write a 1 for the grouped hundred at the bottom of the hundreds column.
- Continue “adding up” in the other places.
- The total is 507,216.

English Learners

Write the word *inverse* on the board. Review the meaning and inverse operations.

Emerging

- Does *inverse* mean “opposite”? **yes**
- Addition is the inverse of ...? **subtraction**
We can use addition to check ...? **subtraction**

Expanding

- What does *inverse* mean? **opposite** What is the inverse of subtraction? **addition** What can we check with addition? **the answer to a subtraction problem**

Bridging

Have students work in pairs. One partner names an addition, subtraction, multiplication, or division equation. The other names the inverse operation that could be used to check the answer.

Teaching Note

Language and Vocabulary The mathematical word for the relationship between addition and subtraction is *inverse*. Students may also use *opposite*, *reverse*, *undoing*, or some other description.

Check Subtraction by “Adding Up” *(continued)*

Have several students work at the board while the others work at their seats to check Exercise 3 on Student Activity Book page 31. Remind students to check by “adding up.”

Students should discuss their findings. Refer student questions to the class for resolution whenever possible.

Students can work through Exercises 4–6 by themselves while you walk around and check for understanding.

Ask different students to discuss the errors they found.

Explanations for the errors are listed below:

3	$\begin{array}{r} 163,406 \\ - 84,357 \\ \hline 79,159 \end{array}$	<p>Ungrouped incorrectly in the tens and hundreds places. Correct Answer: 79,049</p>
4	$\begin{array}{r} 526,741 \\ - 139,268 \\ \hline 413,473 \end{array}$	<p>Subtracted top from bottom in ten thousands and thousands places. Correct Answer: 387,473</p>
5	$\begin{array}{r} 1,000,000 \\ - 300,128 \\ \hline 600,872 \end{array}$	<p>Ungrouped incorrectly in ten thousands and thousands places. Correct Answer: 699,872</p>
6	$\begin{array}{r} 5,472,639 \\ - 2,375,841 \\ \hline 3,096,798 \end{array}$	<p>No mistakes</p>

After students have written six-digit subtraction problems for Exercise 7, have them exchange papers, complete the subtraction, and add up to check.

Estimate to Check

MP1 Make Sense of Problems | Reasonable Answers Discuss how to round greater numbers to check Exercises 3–6.

Rounding to the Nearest Ten Thousand In Exercise 3, we can use rounding and estimation to predict or check the answer.

- *Think about rounding the numbers in Exercise 3 to the nearest ten thousand. Which digit in each number is in the rounding place? 163,406: 6; 84,357: 8*
- *Why are the digits in the thousands places of these numbers important? The digits in the thousands places tell us if the digits in the ten thousands places must increase by 1 or stay the same.*
- *Does each number round up or round down? Why? Each number rounds down because the digit in the thousands place of each number is less than 5.*
- *Round each number to the nearest ten thousand. 163,406 rounds to 160,000; 84,357 rounds to 80,000*
- *What is a reasonable estimate for the difference of these numbers? 160,000 – 80,000 = 80,000*

Rounding to the Nearest Hundred Thousand Remind students that rounding rules remain the same for any number of digits. For Exercises 4–6, students should round to the nearest hundred thousand to check their answers. Use questions similar to those above.

Activity continued ►

Learning Community

MathTalk Best Practices Encourage students to respond before you do, especially to other students' questions. Allow time for students to make comments or ask questions about each other's work before you begin to speak. If you tend to speak first, the students will not take ownership of their role as crucial participants in the discourse; they will look to you instead.

1 Teaching the Lesson *(continued)*

Estimate Differences

MP1 Make Sense of Problems | Reasonable Answers Have the class read the introduction about Dan's subtraction on Student Activity Book page 32.

- *How do we decide if Dan's answer is reasonable? Round to the nearest thousand. $8,000 - 6,000 = 2,000$*
- *Is Dan's answer reasonable? probably not*
- *What mistake did Dan make, and how might you fix it? Dan subtracted the top digit from the bottom digit in the hundreds place. He should have ungrouped 8 thousands to make 7 thousands and 10 hundreds. The correct answer is 2,216.*

Have students discuss Exercises 8–12 in small groups.

Formative Assessment **Check Understanding**

Students should generalize that they can use the same methods to ungroup regardless of the number of digits.

Student Activity Book page 32

Unit 1 • Lesson 11

Estimate Differences

You can use estimation to decide if an answer is reasonable.

Dan did this subtraction: $8,196 - 5,980$. His answer was 3,816. Discuss how using estimation can help you decide if his answer is correct. *Answers will vary.*

Decide whether each answer is reasonable. Show your estimate.

8 $4,914 - 949 = 3,065$

Not reasonable;
 $5,000 - 1,000 = 4,000$

9 $52,022 - 29,571 = 22,451$

Reasonable;
 $52,000 - 30,000 = 22,000$

Solve.

Show your work.

- 10 Bob has 3,226 marbles in his collection. Mia has 1,867 marbles. Bob says he has 2,359 more than Mia. Is Bob's answer reasonable? Show your estimate.

Not reasonable; $3,000 - 2,000 = 1,000$

- 11 Two towns have populations of 24,990 and 12,205. Gretchen says the difference is 12,785. Is Gretchen's answer reasonable? Show your estimate.

Reasonable; $25,000 - 12,000 = 13,000$

- 12 Estimate to decide if the answer is reasonable. If it is not reasonable, describe the mistake and find the correct answer.

$$\begin{array}{r} 805,716 \\ - 290,905 \\ \hline 614,811 \end{array}$$

Not reasonable; $800,000 - 300,000 = 500,000$; 8 hundred thousands should be ungrouped to make 7 hundred thousands and 10 ten thousands. Correct answer: 514,811

Check Understanding

Describe how subtracting and ungrouping with greater numbers is similar to subtracting and ungrouping with lesser numbers.

32 UNIT 1 LESSON 11

Subtract Greater Numbers

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Teaching Note

Math Background In many situations, there is no “right way” to estimate. Estimating is often a matter of judgment, which can vary depending on the numbers involved and the purpose of the estimate. In Exercise 11, a student might estimate by rounding to the nearest ten thousand: $20,000 - 10,000 = 10,000$. This is acceptable, but may not be “the best way.”

Emphasize the main purpose of this activity—to determine whether answers are reasonable. This is a habit that should be strongly encouraged.



Math Activity Center

Hands-On • Print • Interactive Digital Games and Resources

Adaptive
 Individuals
 Pairs
 Groups

ON-LEVEL RESOURCES

Hands-On

Activity Card, Lesson 1-11: *Cover Up*

Digital and Print

Practice, Lesson 1-11

Cover Up Activity Card 1-11

Objective Decide if ungrouping is needed and solve.

Materials MathBoard, dry erase marker, eraser

- Copy the problem at the right on your MathBoard.
- Use paper to cover all of the digits except the first two digits in each number.
- Decide if ungrouping is needed, and then continue by moving the paper to the right one column at a time. Ungroup as needed to solve the problem.
- Analyze: Will this method always produce a correct answer? Explain.

Problem

$$\begin{array}{r} 84,000 \\ -27,000 \\ \hline \end{array}$$

Hint

- Make sure your problems have solutions.
- Be careful not to place more than one box on a column as the problem will have multiple solutions.

Math Writing Prompt
Investigate Math Explain how subtracting 56,000 from 84,000 is similar to subtracting 56 from 84. Compare the answers.

CHALLENGE RESOURCES

Hands-On

Activity Card, Lesson 1-11: *Missing Digits*

Digital and Print

Challenge, Lesson 1-11

Missing Digits Activity Card 1-11

Objective Find the missing digits.

Materials MathBoard, dry erase marker, eraser

- Copy the problem below on your MathBoard.
- Work Together: Find the unknown digits. $905,727 - 420,333 = 285,194$
- One Your Own: Write another unknown-digits problem on your MathBoard.
- Exchange boards with your partner, and solve the problem. Then check your answer using addition.

Problem

$$\begin{array}{r} \square \square \square \square \square \\ - \square \square \square \square \square \\ \hline 2 \square \square \square \square \square \end{array}$$

Hint

- Make sure your problems have solutions.
- Be careful not to place more than one box on a column as the problem will have multiple solutions.

Math Writing Prompt
Explain Your Thinking You buy four items at a store, but the receipt is smudged and you cannot read the cost of one item. Explain how you can find the missing cost.

INTERVENTION RESOURCES

Hands-On

Activity Card, Lesson 1-11: *When to Ungroup?*

Digital and Print

Reteach, Lesson 1-11

When to Ungroup? Activity Card 1-11

Objective Write and solve subtraction problems.

Materials MathBoard, dry erase marker, eraser, 3 number cubes labeled 1-6

- Roll the three number cubes, and use the digits to write a subtraction problem on your MathBoard.
- If 2, 5, and 6 are rolled, a problem like the one below can be written.
- Subtract, using ungrouping as needed.
- Discuss: Is the difference correct? How do you know? *Use a correct subtraction by using addition.*
- Exchange roles and repeat the activity.

Problem

$$\begin{array}{r} 62 \\ -51 \\ \hline \end{array}$$

Math Writing Prompt
Define Your Work Break the word *ungroup* into “un” and “group.” Define each part of the word. Give another example of a word that starts with *un-* and define it.

MORE RESOURCES

Games

Practice | Reinforce | Extend place value, addition and subtraction

- *Poggles MX*
- *Who's the Closest?*
- *Intermediate Vocabulary Game*

Math Reader

- *The First Space Vacation*

Assessment and Intervention

Personal Math Trainer, Lesson 1-11

Personalized intervention and enrichment with learning supports

▼ Personal Math Trainer



▼ *The First Space Vacation* (Math Reader)



HOMWORK



Goal: Formative Assessment

✓ Include students' completed Homework page as part of their portfolios.

Homework and Remembering page 21

1-11 Homework

Name _____ Date _____

Subtract.

1 $\begin{array}{r} 71,824 \\ - 36,739 \\ \hline 35,085 \end{array}$	2 $\begin{array}{r} 960,739 \\ - 894,045 \\ \hline 66,694 \end{array}$	3 $\begin{array}{r} 665,717 \\ - 82,824 \\ \hline 582,893 \end{array}$	4 $\begin{array}{r} 372,608 \\ - 57,425 \\ \hline 315,183 \end{array}$
5 $\begin{array}{r} 597,603 \\ - 404,980 \\ \hline 192,623 \end{array}$	6 $\begin{array}{r} 614,702 \\ - 539,508 \\ \hline 75,194 \end{array}$	7 $\begin{array}{r} 724,359 \\ - 99,068 \\ \hline 625,291 \end{array}$	8 $\begin{array}{r} 394,280 \\ - 56,473 \\ \hline 337,807 \end{array}$

In an experiment, a scientist counted how many bacteria grew in several labeled dishes. The table shows how many bacteria were in each dish.

Dish	Number of Bacteria
A	682,169
B	694,154
C	57,026
D	150,895
E	207,121

Solve. Estimate to check. *Show your work.*

9 What was the difference between the greatest number of bacteria and the least number of bacteria?
637,128 bacteria

10 How many more bacteria were in dish A than in dish D?
531,274 more bacteria

11 How many fewer bacteria were in dish E than in the combined dish C and dish D?
800 fewer bacteria

UNIT 1 LESSON 11
Subtract Greater Numbers **21**

REMEMBERING



Goal: Spiral Review

This Remembering activity would be appropriate anytime after today's lesson.

Homework and Remembering page 22

1-11 Remembering

Name _____ Date _____

Write an equation that shows an estimate of each answer. Then write the exact answer. Estimates may vary.

1 $503 + 69$ estimate: $500 + 70 = 570$; exact: 572

2 $2,825 + 212$ estimate: $2,800 + 200 = 3,000$; exact: $3,037$

3 $6,190 + 3,858$ estimate: $6,000 + 4,000 = 10,000$; exact: $10,048$

Subtract. Show your new groups.

4 $\begin{array}{r} 8,760 \\ - 1,353 \\ \hline 7,407 \end{array}$	5 $\begin{array}{r} 6,000 \\ - 5,258 \\ \hline 742 \end{array}$	6 $\begin{array}{r} 5,060 \\ - 2,175 \\ \hline 2,885 \end{array}$
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Subtract. Then use addition to check the subtraction. Show your work.

7 $6,355 - 891 =$ 5,464 **8** $8,326 - 1,425 =$ 6,901

Check: $5,464 + 891 = 6,355$ **Check:** $6,901 + 1,425 = 8,326$

9 Stretch Your Thinking Write an addition word problem in which the estimated sum is 14,000.
Possible answer: Brandon walks 2,750 steps on Tuesday and 4,218 steps on Wednesday. He walks 6,854 steps on Friday. About how many steps does Brandon walk during these three days?

22 UNIT 1 LESSON 11
Subtract Greater Numbers

Home or School Activity

Social Studies Connection

Numbers in the News Have students find articles in newspapers, magazines, or on the Internet that contain greater numbers. Ask them to bring in the articles. Have the class use them as a basis for practice with adding, subtracting, and using one operation to check an answer for the other operation.





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