Unit 5

Differentiation in Investigation 3

Mathematics in This Investigation

The mathematics focuses on place-value concepts up to 10,000 as well as adding and subtracting multiples of 10, 100 and 1,000.

Understanding the Mathematics

Working with the 10,000 chart, students understand what happens when a number crosses a thousand, and they can locate numbers quickly on the 10,000 chart. They add and subtract accurately and efficiently with numbers in the 1,000s. Students understand the place value of large numbers and add and subtract a sequence of numbers using multiples of 10, 100, and 1,000.

Option: Assign the **Extension** activity.

Partially Understanding the Mathematics

Students add and subtract numbers in the 1,000s, but are less efficient. They understand the place value and the increasing values of the numbers, but may encounter errors in their calculations. They may not use the multiples of 10, 100, and 1,000 to solve addition and subtraction problems, but instead continue to use a strategy with which they are comfortable. These students may have difficulty going from 3-digit to 4- digit numbers, but are still able to determine the size of the numbers.

Option: Assign the **Practice** activity.

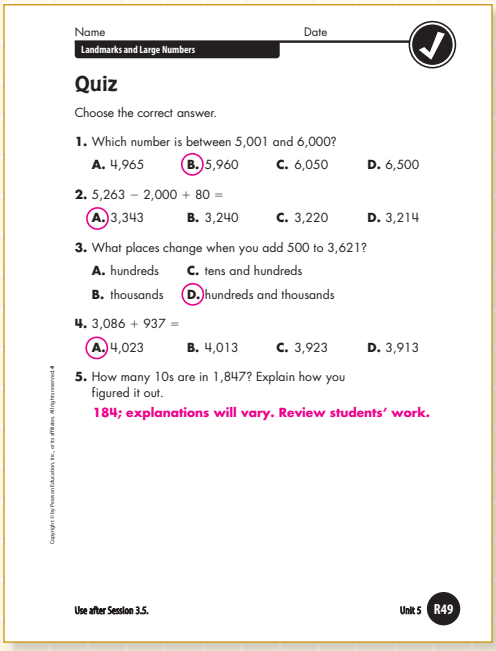
Not Understanding the Mathematics

Students are not accurate when adding and subtracting large numbers in the 1,000s. They may be overwhelmed with the size of the numbers and may struggle with finding accurate solutions to the problems. They do not have a strong concept of place value and often get the values of the numbers mixed up when computing. They are still struggling to learn addition strategies and do not see how adding and subtracting by multiples of 10, 100, and 1,000 will help to solve these problems. When crossing into the hundreds and thousands, they may often misrepresent the values of the different digits, resulting in incorrect answers.

Option: Assign the **Intervention** activity.

Investigation 3 Quiz

In addition to your observations and students' work in Investigation 3, the Quiz (R49) can be used to gather more information.



Name Date

Landmarks and Large Numbers

Quiz

Choose the correct answer.

1. Which number is between 5,001 and 6,000?

A. 4,965 **B.** 5,960 **C.** 6,050 **D.** 6,500

2. 5,263 − 2,000 + 80 =

A. 3,343 **B.** 3,240 **C.** 3,220 **D.** 3,214

3. What places change when you add 500 to 3,621?

A. hundreds **C.** tens and hundreds

B. thousands **D.** hundreds and thousands

4. 3,086 + 937 =

A. 4,023 **B.** 4,013 **C.** 3,923 **D.** 3,913

5. How many 10s are in 1,847? Explain how you figured it out.

184; explanations will vary. Review students' work.

Use after Session 3.5.

Unit 5 R49

Intervention

20 MIN PAIRS

How Many 10s Are in 1,000?

Use anytime after Session 3.2.

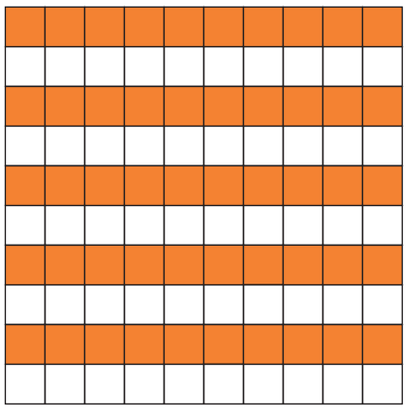
Math Focus Points

- Understanding the structure of 10,000 and its equivalence to one thousand 10s, one hundred 100s, and ten 1,000s

Materials: 1,000 books (from Session 1.1)

Revisit the sticker place-value model from Grade 3. The sticker representation includes single stickers, strips of 10 stickers, and sheets of 100 stickers.

If you could fill up your 1,000 book with stickers, that would be lots and lots of stickers. Let's look at the first page of your book. How many 10-strips will fit on just this page? If necessary, have students point to the end of each row as they count by 10s. A visual representation in which alternate rows are shaded may help students better keep track of the counting.



There are 10 strips on this first page of your book. This page is a 100 chart. So, how many 10s equal 100?

We have found the number of 10s in 100. How can we find the number of 10s in 153? Encourage students to continue using their 1000s book.

Students might say:

"I can keep counting the rows of 10 until I get to the row that ends with 150. It's 15!"

Repeat this discussion with a few more numbers, such as 278, 316, and 465. Encourage students to think of each 100 as ten 10s.

ELL English Language Learners

Provide Sentence Stems Write the following sentence stem on the board to help students clearly communicate the number of 10s in a number.

There are _____ 10s in _____.

Additional Resource

Student Math Handbook page 6

Practice

20 MIN PAIRS

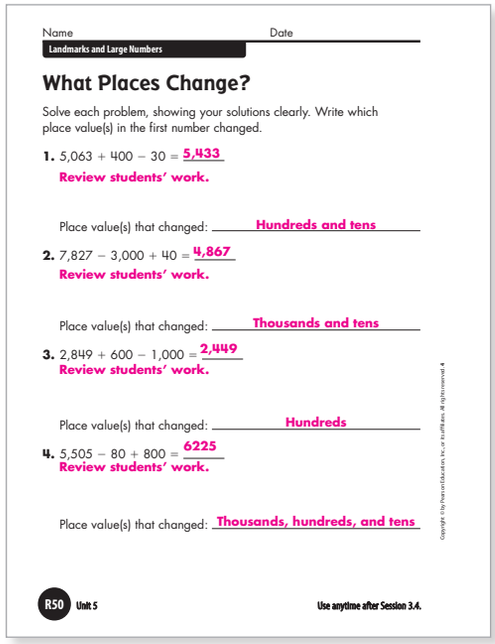
What Places Change?

Use anytime after Session 3.4.

Math Focus Points

- Adding and subtracting multiples of 10, 100, and 1,000

Materials: Change Cards (1 deck per pair), R50



Name _____ Date _____

Landmarks and Large Numbers

What Places Change?

Solve each problem, showing your solutions clearly. Write which place value(s) in the first number changed.

1. 5,063 + 400 − 30 = 5,433
Review students' work.

Place value(s) that changed: Hundreds and tens

2. 7,827 − 3,000 + 40 = 4,867
Review students' work.

Place value(s) that changed: Thousands and tens

3. 2,849 + 600 − 1,000 = 2,449
Review students' work.

Place value(s) that changed: Hundreds

4. 5,505 − 80 + 800 = 6225
Review students' work.

Place value(s) that changed: Thousands, hundreds, and tens

R50 Unit 5 Use anytime after Session 3.4.

Distribute Change Cards to each pair. Review the meaning of *multiple,* and then have them find multiples of 10, 100, and 1,000 on the Change Cards.

Students might say:

"A multiple of 10 ends in 1 zero. A multiple of 100 ends in 2 zeros. A multiple of 1,000 ends in 3 zeros."

"A multiple of 1,000 is also a multiple of 100 and 10."

Ask four students to each suggest a digit from 1 to 9. What 4-digit numbers can we make from these digits? Which 4-digit number is the greatest? Who can locate this number on our class 10,000 chart?

Write the greatest of these student-generated numbers on the board.

Have students in each pair draw 2 Change Cards. Write the equation that shows your starting number and your 2 changes. Solve the problem to find the new number.

Point out that students can do the 2 changes in either order. Have pairs try this to see that they get the same sum. Was one change easier to do than the other? Will you always do the easier change first?

Allow time for pairs to find the new number. How did the number change? Did more than 1 digit change? Why do you think so?

Encourage students to focus on the digits rather than simply counting on. If I add a multiple of 100, what place will change for sure? What other place might also change? When does this happen?

Distribute copies of What Places Change? (R50).

ELL English Language Learners

Rephrase Use place-value charts to check that students know the word names for the places in 4-digit numbers. If I start from the left, the places are *thousands, hundreds, tens,* and *ones*. What are the word names if I start from the right?

Additional Resource

Student Math Handbook pages 6–7

Extension

25 MIN GROUPS

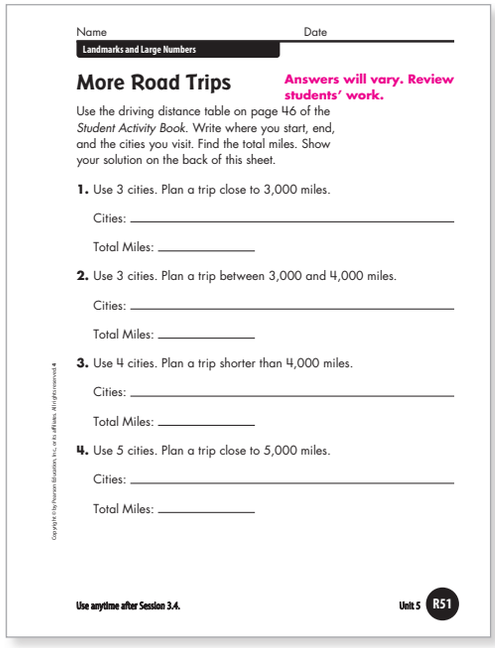
More Road Trips

Use anytime after Session 3.4.

Math Focus Points

- Adding 3- and 4-digit numbers

Materials: M26, R51



Name Date

Landmarks and Large Numbers

More Road Trips

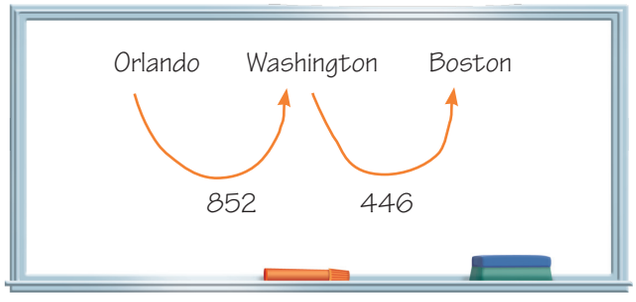
Answers will vary. Review students' work.

Use the driving distance table on page 46 of the *Student Activity Book*. Write where you start, end, and the cities you visit. Find the total miles. Show your solution on the back of this sheet.

1. Use 3 cities. Plan a trip close to 3,000 miles.
   Cities: _____
   Total Miles: _____
2. Use 3 cities. Plan a trip between 3,000 and 4,000 miles.
   Cities: _____
   Total Miles: _____
3. Use 4 cities. Plan a trip shorter than 4,000 miles.
   Cities: _____
   Total Miles: _____
4. Use 5 cities. Plan a trip close to 5,000 miles.
   Cities: _____
   Total Miles: _____

Use anytime after Session 3.4. Unit 5 R51

Students have been using City to City: How Many Miles? (M26) to plan road trips. **Today you will plan trips that have a certain number of miles as the goal. Let's start with a 3-city trip that must be more than 1,500 miles, but shorter than 2,000 miles.** Write the following on the board.



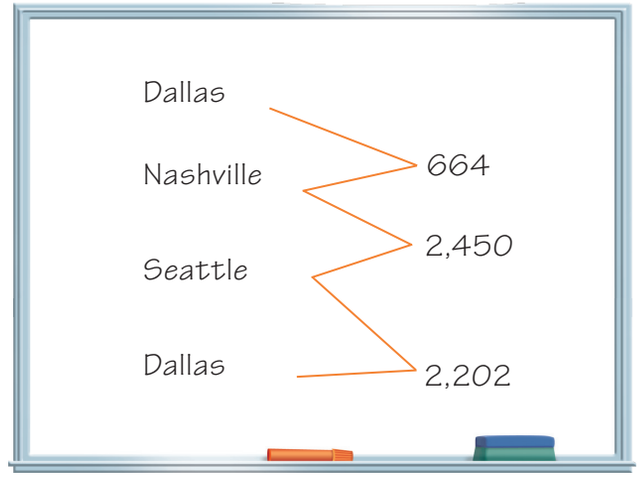
Would this trip work? How do you know? Give students a brief amount of time to think, and then ask for an answer.

Students might say:

"It won't work. It's less than 1,500 miles. 900 + 500 = 1,400 and the actual answer is even less than that."

Now plan a trip with 4 cities that is more than 4,500 miles, but less than 6,000 miles. Give students a few minutes to solve the problem and share solutions with a partner.

Draw this diagram on the board to show one possible solution.



Make a quick estimate. Does it seem like this sum will be between 4,500 and 6,000? Students can explain how they added the numbers.

Distribute copies of More Road Trips (R51).

ELL English Language Learners

Partner Talk Students work in pairs. Have the more proficient speaker explain how they planned their city trips while the partner points to the city distances listed on M26.

Additional Resource

Student Math Handbook pages 8–9