In Topic A, students build the place value chart to 1 million and learn the relationship between each place value as \( 10 \) times the value of the place to the right. Students manipulate numbers to see this relationship, such as 30 hundreds can be composed as 3 thousands. Conversely students decompose numbers to see that 7 thousands is the same as 70 hundreds. As students build the place value chart into thousands and up to 1 million, the sequence of 3 digits will be emphasized. They become familiar with the base thousand unit names up to 1 billion. Students fluently write numbers in multiple formats: as digits, in unit form, as words, and in expanded form up to 1 million.
A Teaching Sequence Towards Mastery of Place Value of Multi-Digit Whole Numbers

Objective 1: Interpret a multiplication equation as a comparison.
   (Lesson 1)

Objective 2: Recognize a digit represents 10 times the value of what it represents in the place to its right.
   (Lesson 2)

Objective 3: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.
   (Lesson 3)

Objective 4: Read and write multi-digit numbers using base ten numerals, number names, and expanded form.
   (Lesson 4)
Lesson 1

Objective: Interpret a multiplication equation as a comparison.

Suggested Lesson Structure

- Fluency Practice (13 minutes)
- Application Problem (5 minutes)
- Concept Development (35 minutes)
- Student Debrief (7 minutes)
- Total Time (60 minutes)

Fluency Practice (13 minutes)

- Multiply and Divide by 10 4.NBT.1 (10 minutes)
- Place Value 4.NBT.2 (3 minutes)

Sprint: Multiply and Divide by 10 (10 minutes)

Materials: (S) Multiply and Divide by 10 Sprint

Note: Reviewing this fluency will acclimate students to the Sprint routine, a vital component of the fluency program.

Place Value (3 minutes)

Materials: (S) Personal white boards, place value chart

Note: Reviewing and practicing place value skills in isolation will prepare students for success in multiplying different place value units during the lesson.

T: (Project place value chart to the thousands.) Show 4 ones in number disks. Write the number below it.
S: (Students draw 4 ones disks and write 4 below it.)
T: Show 4 ten disks and write the number below it.
S: (Students draw 4 ten disks and write 4 at the bottom of the tens column.)
T: Say the number in unit form.
S: 4 tens 4 ones.

NOTES ON MULTIPLE MEANS FOR ACTION AND EXPRESSION:

For the place value fluency drill, students may represent ones, etc., using counters rather than drawing. Others may benefit from the opportunity to practice simultaneously speaking and showing units (e.g., tens). Provide sentence frames to support oral response, such as “____ tens ____ ones is ____ (standard form) ____.”
Lesson 1: Interpret a multiplication equation as a comparison.

T: Say the number in standard form.
S: 44.

Continue for the following possible sequence: 2 tens 3 ones, 2 hundreds 3 ones, 2 thousands 3 hundreds, 2 thousands 3 tens, and 2 thousands 3 hundreds 5 tens and 4 ones.

Application Problem (5 minutes)

Ben has a rectangular area 9 meters long and 6 meters wide. He wants a fence that will go around it as well as grass sod to cover it. How many meters of fence will he need? How many square meters of grass sod will he need to cover the entire area?

Note: As the first lesson of the year, this application problem reviews area and perimeter, multiplication, and addition—all important concepts from Grade 3. This problem can be extended after the Concept Development by asking students to find an area 10 times as much as the grass sod, or to find a perimeter 10 times as wide and 10 times as long.

Concept Development (35 minutes)

Materials: (T) Base ten disks: ones, tens, hundreds, and thousands (S) Personal white boards

Problem 1

1 ten is 10 times as many as 1 one.

T: (Have a place value chart ready. Draw or place 1 unit into the ones place.)
T: How many units do I have?
S: 1.
T: What is the name of this unit?
S: A one.
T: Count the ones with me. (Draw ones as they do so.)
S: 1 one, 2 ones, 3 ones, 4 ones, 5 ones...10 ones.
Lesson 1

Interpret a multiplication equation as a comparison.

Date: 5/9/13

Problem 1

T: 10 ones. What larger unit can I make?

S: 1 ten.

T: I change 10 ones for 1 ten. We say, “1 ten is 10 times as much as 1 one.” Tell your partner what we say and what that means. Use the model to help you.

S: 10 ones make 1 ten. \(\rightarrow\) 10 times 1 one is 1 ten or 10 ones. \(\rightarrow\) We say 1 ten is 10 times as many as 1 one.

Problem 2

One hundred is 10 times as much as 1 ten.

Quickly repeat the above process with 10 copies of 1 ten.

Problem 3

One thousand is 10 times as much as 1 hundred.

Quickly repeat the above process with 10 copies of 1 hundred.

T: Discuss the patterns you have noticed with your partner.

S: 10 ones makes 1 ten. 10 tens make 1 hundred. 10 hundreds make 1 thousand. \(\rightarrow\) Every time we get 10 we bundle and make a bigger unit. \(\rightarrow\) We copy a unit 10 times to make the next larger unit. \(\rightarrow\) If we take any of the place value units, the next unit on the left is ten times as many.

T: Let’s review the multiplication pattern that matches our models and 10 times as many words.

Display the following information for student reference:

1 ten = 10 \times 1 one  
1 hundred = 10 \times 1 ten  
1 thousand = 10 \times 1 hundred

(Read, as “1 ten is 10 times as much as 1 one.”)

(Say, “1 hundred is 10 times as much as 1 ten.”)

(Say, “1 thousand is 10 times as much as 1 hundred.”)

Problem 4

Model on the place value chart and as equations 10 times as much as 2 ones.

T: Draw place value disks as dots. Because you are using dots, label your columns with the unit value.

T: Represent 2 ones. Solve to find 10 times as many as 2 ones. Work together.

S: (Students work. Circulate as they do so.)

T: 10 times as many as 2 ones is?

S: 20 ones \(\rightarrow\) 2 tens.
Lesson 1: Interpret a multiplication equation as a comparison.

T: Explain this number sentence to your partner using your model.

\[10 \times 2 \text{ ones} = 20 \text{ ones} = 2 \text{ tens}\]

Repeat the process with 10 times as many as 4 tens.

\[10 \times 4 \text{ tens} = 40 \text{ tens} = 4 \text{ hundreds}\]

Problem 5
Model as an equation 10 times as many as 7 hundreds.

T: Write an equation and solve for 10 times as many as 7 hundreds.

Circulate and assist students as necessary.

T: Show me your boards. Read your equation.

S: 10 times 7 hundreds equals 70 hundreds equals 7 thousands.

\[10 \times 7 \text{ hundreds} = 70 \text{ hundreds} = 7 \text{ thousands}\]

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. Some problems do not specify a method for solving. This is an intentional reduction of scaffolding that invokes MP.5, Use Appropriate Tools Strategically. Students should solve these problems using the RDW approach used for Application Problems.

For some classes, it may be appropriate to modify the assignment by specifying which problems students should work on first. With this option, let the careful sequencing of the Problem Set guide your selections so that problems continue to be scaffolded. Balance word problems with other problem types to ensure a range of practice. Assign incomplete problems for homework or at another time during the day.

Challenge quick finishers to write their own \(10 \text{ times as many}\) statements similar to Problems 2 and 5.
Lesson 1: Interpret a multiplication equation as a comparison.

Student Debrief (7 minutes)

Lesson Objective: Interpret a multiplication equation as a comparison.

Invite students to review their solutions for the Problem Set and the totality of the lesson experience. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set. You may choose to use any combination of the questions below to lead the discussion.

- What relationship do you notice between the problem of Matthew’s stamps and 1(a) and 1(b)?
- How did Problem 1(c) help you to solve Problem 4 about Jane’s savings?
- In Problem 5 which solution proved most difficult to find? Why?
- How does the answer about Sarah’s age and her grandfather’s age relate to our lesson’s objective?
- What are some ways you could model 10 times as many? What are the benefits and drawbacks of each way of modelling? (Money, base ten materials, disks, labeled drawings of disks, dots on a labeled place value chart, tape diagram.)
- Take 2 minutes to explain to your partner what we learned about the value of each unit as we move from right to left.
- Write and complete the following statements in your math journal:

  ____ ten is _____ times as many as ____ one
  ____ hundred is ____ times as many as ____ ten
  ____ thousand is ____ times as many as ____ hundred

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
### Lesson 1 Sprint

**NYS COMMON CORE MATHEMATICS CURRICULUM**

**Lesson 1**: Interpret a multiplication equation as a comparison.

**Date:** 5/9/13

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Lesson 1: Interpret a multiplication equation as a comparison.

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Lesson 1 Problem Set

Name ____________________________ Date ________________

1. Label the place value charts. Fill in the blanks to make the following statements true. Draw disks in the place value chart to show how you got your answer, using arrows to show any bundling.

a. \(10 \times 3\) ones = _______ ones = __________

b. \(10 \times 2\) tens = _______ tens = __________

c. 4 hundreds \(\times 10\) = _______ hundreds = __________

2. Complete the following statements using your knowledge of place value:

a. 10 times as many as 1 ten is _______ tens.

b. 10 times as many as _______ tens is 30 tens or _______ hundreds.

c. _____________________________ as 9 hundreds is 9 thousands.

d. _______ thousands is the same as 20 hundreds.

Use pictures, numbers, and words to explain how you got your answer for Part (d).
3. Matthew has 30 stamps in his collection. Matthew’s father has 10 times as many stamps as Matthew. How many stamps does Matthew’s father have? Use numbers and words to explain how you got your answer.

4. Jane saved $800. Her sister has 10 times as much money. How much money does Jane’s sister have? Use numbers and words to explain how you got your answer.

5. Fill in the blanks to make the statements true.
   a. 2 times as much as 4 is _______.
   b. 10 times as much as 4 is _______.
   c. 500 is 10 times as much as _______.
   d. 6,000 is __________________________ as 600.

6. Sarah is 9 years old. Sarah’s grandfather is 90 years old. Sarah’s grandfather is how many times as old as Sarah?

   Sarah’s grandfather is _______ times as old as Sarah.
Lesson 1 Exit Ticket

Name _________________________________ Date ______________________

1. Use the number disks in the place value chart below to complete the following problems.

   a. Label the place value chart.

   b. Tell about the movement of the disks in the place value chart by filling in the blanks to make the following equation true and match what is happening in the place value chart.

   ____________ × 10 = __________________ = ____________

   c. Write a statement about this place value chart using the words “10 times as many.”
1. Label the place value charts. Fill in the blanks to make the following statements true. Draw disks in the place value chart to show how you got your answer.

   a. \(10 \times 4\) ones = ______ ones = __________

   b. \(10 \times 2\) tens =_________ tens = _________

   c. 5 hundreds \(\times 10\) = _______ hundreds = _______

2. Complete the following statements using your knowledge of place value:

   a. 10 times as many as 1 hundred is ______ hundreds or ________ thousand.

   b. 10 times as many as _________ hundreds is 60 hundreds or ________ thousands.

   c. _____________________________ as 8 hundreds is 8 thousands.

   d. _______ hundreds is the same as 4 thousands.

Use pictures, numbers, and words to explain how you got your answer for Part (d).
3. Katrina has 60 GB of storage on her tablet. Katrina’s father has 10 times as much storage on his computer. How much storage does Katrina’s father have? Use numbers and words to explain how you got your answer.

4. Katrina saved $200 to purchase her tablet. Her father spent 10 times as much money to buy his new computer. How much did her father’s computer cost? Use numbers and words to explain how you got your answer.

5. Fill in the blanks to make the statements true.
   
a. 4 times as much as 3 is _______.

b. 10 times as much as 9 is _______.

c. 700 is 10 times as much as _______.

d. 8,000 is ___________________________ as 800.

6. Tomas’s grandfather is 100 years old. Tomas’s grandfather is 10 times as old. How old is Tomas?
Lesson 2

Objective: Recognize a digit represents 10 times the value of what it represents in the place to its right.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (6 minutes)
- Concept Development (33 minutes)
- Student Debrief (9 minutes)
- Total Time (60 minutes)

Fluency Practice (12 minutes)

- Skip-Counting 3.OA.7 (4 minutes)
- Place Value 4.NBT.2 (4 minutes)
- Multiply by 10 4.NBT.5.1 (4 minutes)

Skip Counting (4 minutes)

Note: Practicing skip-counting on the number line builds a foundation for accessing higher order concepts throughout the year.

Direct students to count by threes forward and backward to 36, focusing on the crossing-ten transitions.

Example: (3, 6, 9, 12, 9, 12, 9, 12, 15, 18, 21, 18, 21, 24, 27, 30, 27, 30, 33, 30, 33, 30, 33, 36...) The purpose of focusing on crossing the ten transitions is to help students to make the connection that, for example, when adding 3 to 9 that 9 + 1 is 10 and then 2 more is 12.

We see a similar purpose in counting down by threes; 12 – 2 is 10 and subtracting 1 more is 9. This work builds on the fluency work of previous grade levels. Students should understand that when crossing the tens that they, in essence, are regrouping.

Direct students to count by fours forward and backward to 48, focusing on the crossing ten transitions.

Place Value (4 minutes)

Materials: (S) Personal white boards with a place value chart to thousands

Note: Reviewing and practicing place value skills in isolation will prepare students for success in multiplying different place value units during the lesson.
T: (Project place value chart to the thousands place.) Show 5 tens in number disks and write the number below it.

Students draw 5 ten disks, write 5 below it and 0 in the ones column. (Draw to correct student misunderstanding.)

T: Say the number in unit form.
S: 5 tens.
T: Say the number in standard form.
S: 50.

Continue for the following possible sequence: 3 tens 2 ones, 4 hundreds 3 ones, 1 thousand 2 hundreds, 4 thousands 2 tens, 4 thousands 2 hundreds 3 tens and 5 ones.

**Multiply by 10 (4 minutes)**

Materials: (S) Personal white boards

Note: This fluency will review concepts learned in Lesson 1.

T: (Project 10 ones x 10 = 1 _______.) Fill in the blank.

Students write 10 ones x 10 = 1 hundred.

T: Say the multiplication sentence in standard form.
S: 10 x 10 = 100.

Repeat for the following possible sequence 10 x _____ = 2 hundreds; 10 x _____ = 3 hundreds; 10 x _____ = 7 hundreds; 10 x 1 hundred = 1 ______; 10 x ____ = 2 thousands; 10 x ______ = 8 thousands; 10 x 10 thousands = ______.

**Application Problem (6 minutes)**

Amy is baking muffins. Each baking tray can hold 6 muffins.

a. If Amy bakes 4 trays of muffins, how many muffins will she have all together?

b. The corner bakery has made 10 times as many muffins as Amy baked. How many muffins did the bakery produce?

Bonus: If the corner bakery packages the muffins in boxes of 100, how many boxes of 100 could they make?

Note: This application problem builds on the concept from the previous lesson of 10 times as many.
**Concept Development (33 minutes)**

Materials: (S) Personal white boards

**Problem 1**

Multiply single units by 10 to build the place value chart to 1 million. Divide to reverse the process.

**T:** On your board, write the multiplication sentence that shows the relationship between 1 hundred and 1 thousand.

**S:** (Students write: \(10 \times 1 \text{ hundred} = 10 \text{ hundreds} = 1 \text{ thousand}\).)

**T:** Draw number disks on your place value chart to find the value of 10 times 1 thousand.

**T:** (Circulate.) I saw that Tessa drew 10 disks in the thousands column. What does that represent?

**S:** 10 times 1 thousand equals 10 thousand. (\(10 \times 1 \text{ thousand} = 10 \text{ thousand}\).)

**T:** How else can 10 thousand be represented?

**S:** 10 thousand can be bundled because when you have 10 of one unit, you can bundle it and move it to the next column.

**T:** (Point to the place value chart.) Can anyone think what the name of our next column after the thousands might be? (Students might share. Label the ten thousands column.)

**T:** Now write a complete multiplication sentence to show 10 times the value of 1 thousand. Show how you regroup.

\[10 \times 1 \text{ thousand} = 10 \text{ thousand} = 1 \text{ ten thousand}\]

**T:** On your place value chart, show what 10 times the value of 1 ten thousand equals.

Circulate and assist students as necessary.

**T:** What is 10 times 1 ten thousand?

**S:** 10 ten thousands. \(\rightarrow 1 \text{ hundred thousand}\).

**T:** That is our next larger unit.

\[10 \times 1 \text{ ten thousand} = 10 \text{ ten thousands} = 1 \text{ hundred thousand}\]

**T:** To move another column to the left, what would be my next 10 times statement?

**S:** 10 times 1 hundred thousand.

**T:** Solve to find 10 times 1 hundred thousand.

Circulate and assist students as necessary.

---

**NOTES ON MULTIPLE MEANS OF REPRESENTATION:**

Scaffold student understanding of the place value pattern by recording the following sentence frames:

- 10 x 1 one is 1 ten
- 10 x 1 ten is 1 hundred
- 10 x 1 hundred is 1 thousand
- 10 x 1 thousand is 1 ten thousand
- 10 x 1 ten thousand is 1 hundred thousand

Students may benefit from speaking this pattern chorally. Deepen understanding with prepared visuals (perhaps using a SMART board).
T: 10 hundred thousands can be bundled and represented as 1 million. Title your column and write the multiplication sentence.

10 × 1 hundred thousand = 10 hundred thousands = 1 million

After having built the place value chart by multiplying by ten, quickly review the process simply moving from right to left on the place value chart, and then reversing and moving left to right. (e.g., 2 tens times 10 equals 2 hundreds times 10 equals 2 thousands divided by 10 equals 2 hundreds divided by 10 equals 2 tens.)

Problem 2

Multiply multiple copies of one unit by 10 (e.g., 10 × 4 ten thousands).

T: Draw number disks and write a multiplication sentence to show the value of 10 times 4 ten thousands.

T: 10 times 4 ten thousands is?
S: 40 ten thousands. → 4 hundred thousands.
T: Explain to your partner how you know this equation is true.

10 × 4 ten thousands = 40 ten thousands = 4 hundred thousands
Repeat with 10 × 3 hundred thousands.

Problem 3

Divide multiple copies of one unit by 10: 2 thousands ÷ 10. Solve in unit form: 2 thousands ÷ 10

T: What is the process for solving this division equation?
S: Use a place value chart. → Represent 2 thousands on a place value chart and then change for smaller units so we can divide.
T: What would our place value chart look like if we changed each thousand for 10 smaller units?
S: 20 hundreds. → 2 thousands can be changed to be 20 hundreds because 2 thousands and 20 hundreds are equal.
T: Solve for the answer.
S: 2 hundreds. → 2 thousands ÷ 10 is 2 hundreds because 2 thousands unbundled becomes 20 hundreds. → 20 hundreds divided by 10 is 2 hundreds.

2 thousands ÷ 10 = 20 hundreds ÷ 10 = 2 hundreds
Repeat with 3 hundred thousands ÷ 10.
Problem 4

Multiply and divide multiple copies of two different units by 10.

T: Draw number disks to show 3 hundreds and 2 tens.
T: Work in pairs to solve (write) $10 \times (3 \text{ hundreds} 2 \text{ tens})$.
T: I wrote (3 hundreds 2 tens) in parentheses to show it is one number.

Circulate as students work. Clarify that both hundreds and tens must be multiplied by 10.

T: What is your product?
S: 3 thousands 2 hundreds.

$10 \times (3 \text{ hundreds} 2 \text{ tens}) = 3 \text{ thousands} 2 \text{ hundreds} = 3,200$

T: How could we write this in standard form?
S: 3,200

(4 ten thousands 2 tens) ÷ 10

T: In this equation we have two units. Explain how you will find your answer.
S: We can use the place value chart again and represent the unbundled units, then divide.

(4 ten thousands 2 tens) ÷ 10 = 4 thousands 2 ones = 4,002

T: Watch as I represent numbers in the place value chart to multiply or divide by ten, instead of drawing disks.

Repeat with $10 \times (4 \text{ thousands} 5 \text{ hundreds})$ and $(7 \text{ hundreds} 9 \text{ tens}) ÷ 10$. 
**Problem Set (10 minutes)**

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

**Student Debrief (9 minutes)**

**Lesson Objective:** Recognize a digit represents 10 times the value of what it represents in the place to its right.

Invite students to review their solutions for the Problem Set and the totality of the lesson experience. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief.

Guide students in a conversation to debrief the Problem Set. You may choose to use any combination of the questions below to lead the discussion.

- How did we use patterns to predict the increasing units on the place value chart up to 1 million? Can you predict the unit that is 10 times 1 million? 100 times 1 million?
- What happens when you multiply a number by 10? 1 ten thousand is what times 10? 1 hundred thousand is what times 10?
- Gail said that she noticed that when you multiply a number by 10, you shift the digits one place to the left and put a zero in the ones place. Is she correct?
- How can you use multiplication and division to describe the relationship between units on the place value chart? Use Problems 1(a) and 1(c) to help explain.
- Practice reading your answers in Problem 2 out loud. What similarities did you find in saying the numbers in unit form and standard form? Differences?
In Problem 7, did you write your equation as a multiplication or division sentence? Which way is correct?

Which problem in Problem 3 was hardest to solve?

When we multiply 6 tens times 10, as in Problem 2, are we multiplying the 6, the tens, or both? Does the digit or the unit change?

Is 10 times 6 tens the same as 6 times 10 tens? (Use a place value chart to model.)

Is 10 times 10 times 6 the same as 10 tens times 6? (Use a place value chart to model 10 times 10 is the same as 1 ten times 1 ten.)

When we multiply or divide by 10 do we change the digits or the unit? Make a few examples.

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 2 Problem Set

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
</table>

1. As you did during the lesson, label and represent the product or quotient drawing disks on the place value chart.

   a. \[10 \times 2 \text{ thousands} = \text{_______ thousands} = \text{__________________________}\]

   b. \[10 \times 3 \text{ ten thousands} = \text{_______ ten thousands} = \text{__________________________}\]

   c. \[4 \text{ thousands} \div 10 = \text{_______ hundreds} \div 10 = \text{__________________________}\]
2. Fill in the blanks to complete each number sentence. Respond first in unit form, then in standard form.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit form</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10 \times 6$ tens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$7$ hundreds $\times 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3$ thousands $\div 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$6$ ten thousands $\div 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$10 \times 4$ thousands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Fill in the blanks to complete each number sentence. Respond first in unit form, then in standard form.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit form</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(4$ tens $3$ ones)$ \times 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(2$ hundreds $3$ tens)$ \times 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(7$ thousands $8$ hundreds)$ \times 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(6$ thousands $4$ tens)$ \div 10$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$(4$ ten thousands $3$ tens)$ \div 10$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Explain how you solved the last problem of Set 2. Use a place value chart to support your explanation.
5. Explain how you solved the last problem of Set 3. Use a place value chart to support your explanation.

6. Jacob saved 2 thousand dollar bills, 4 hundred dollar bills, and 6 ten dollar bills to buy a car. The car costs 10 times as much as he has saved. How much does the car cost?

7. Last year the apple orchard experienced a drought and didn’t produce many apples. But this year, the apple orchard produced 45 thousand granny smith apples and 9 hundred red delicious apples, which is 10 times as many apples as last year. How many apples did the orchard produce last year?

8. Planet Ruba has a population of 1 million aliens. Planet Zamba has 1 hundred thousand aliens.
   a. How many more aliens does Planet Ruba have than Planet Zamba?
   b. Write a sentence to compare the populations for each planet using the words “10 times as many.”
Lesson 2 Exit Ticket

Name ___________________________________________ Date _________________________

1. Fill in the blank to complete the number sentence. Respond with a numeral.

   a. (4 ten thousands 6 hundreds) × 10 = _______________________

   b. (8 thousands 2 tens) ÷ 10 = _______________________

2. The Carson family saved up $39,580 for a new home. The cost of their dream home is 10 times as much as they have saved. How much does their dream home cost?
Name ___________________________ Date __________________

1. As you did during the lesson, label and represent the product or quotient drawing disks on the place value chart.
   a. \(10 \times 4\) thousands = _______ thousands = ______________________________

2. Fill in the blanks to complete each number sentence. Respond first in unit form, then in standard form.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit Form</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10 \times 3) tens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) hundreds (\times 10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(9) ten thousands (\div 10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10 \times 7) thousands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Fill in the blanks to complete each number sentence. Respond first in unit form, then in standard form.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit Form</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 tens 1 one) x 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5 hundreds 5 tens) × 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2 thousands 7 tens) ÷ 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4 ten thousands 8 hundreds) ÷ 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Emily collected $950 selling Girl Scout cookies all day Saturday. Emily’s troop collected 10 times as much as she did. How much money did Emily’s troop raise?

5. On Saturday, Emily made 10 times as much as on Monday. How much money did Emily collect on Monday?
Lesson 3

Objective: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

Suggested Lesson Structure

- Fluency Practice (15 minutes)
- Application Problem (6 minutes)
- Concept Development (32 minutes)
- Student Debrief (7 minutes)
- Total Time (60 minutes)

Fluency Practice (15 minutes)

- Multiply by 3 3.OA.7 (10 minutes)
- Place Value and Value 4.NBT.2 (3 minutes)
- Base Ten Units 4.NBT.1 (2 minutes)

Sprint: Multiply by 3 (10 minutes)

Materials: (S) Multiply by 3 Sprint

Note: This fluency will review a foundational third grade standard that will help students learn standard 4.NBT.5.

Place Value and Value (3 minutes)

Note: Reviewing and practicing place value skills in isolation will prepare students for success in multiplying different place value units during the lesson.

T: (Project the number 1,468,357 on a place value chart. Underline the 5.) Say the digit.
S: 5.
T: Say the place value of the 5.
S: Tens.
T: Say the value of 5 tens.
S: 50.
Repeat process, underlining 8, 4, 1, and 6.

**Base Ten Units (2 minutes)**

Note: This fluency will bolster students’ place value proficiency while reviewing multiplication concepts learned in Lessons 1 and 2.

T:  (Project 2 tens =____.) Say the number in standard form.
S:  2 tens = 20.

Repeat for possible sequence: 3 tens, 9 tens, 10 tens, 11, tens, 12 tens, 19 tens, 20 tens, 30, tens, 40 tens, 80 tens, 84 tens, and 65 tens.

**Application Problem (6 minutes)**

The school library has 10,600 books.
The town library has 10 times as many books.
How many books does the town library have?

Note: This application problem builds on the concept from the previous lesson of determining 10 times as much as a number.

**Concept Development (32 minutes)**

Materials: (S) Personal white boards with million-place value chart outline template

Note: Students will go beyond the 4.NBT standard of using numbers less than or equal to 1 million to establish a pattern within the base ten units.

T:  In the last lesson we extended the place value chart to 1 million. Take a minute to label the place value headings on your place value chart.

Circulate and check all headings.

T:  Excellent. Now talk with your partner about similarities and differences you see in those heading names.

S:  I notice some words repeat, like ten, hundred, thousands. But, ones appears once. I notice the thousand unit repeats 3 times—thousands, ten thousands, hundred thousands.
Lesson 3: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

Date: 5/9/13

T: That’s right! Beginning with thousands, we start naming new place value units by how many one thousands, ten thousands, and hundred thousands we have. What do you think the next unit might be called after 1 million?

S: Ten millions.

T: (Extend chart to the ten millions.) And the next?

S: Hundred millions.

T: (Extend chart again.) That’s right! Just like with thousands, we name new units here in terms of how many one millions, ten millions, and hundred millions we have. 10 hundred millions gets renamed as 1 billion. Talk with your partner about what the next two place value units should be.

S: Ten billions, and hundred billions. → It works just like it does for thousands and millions!

Problem 1

Placing commas in and naming 3,608,430,325.

T: You’ve noticed a pattern: ones, tens and hundreds; one thousands, ten thousands, and hundred thousands; one millions, ten millions, and hundred millions; and so on. We use commas to indicate this grouping of units, taken 3 at a time. For example ten billion would be written: 10,000,000,000.

Write 3608430325.

T: Record this number in your place value chart and place the commas to show our groupings of units.

T: (Show 430,325 on a place value chart.) How many thousands are in this number?

S: 430.

T: 430 what?

S: 430 thousands.

T: Correct, we read this number as “four hundred thirty thousand, three hundred twenty-five.”

T: (Extend chart and show 608,430,325.) How many millions are there in this number?

S: 608 millions.

T: Using what you know about our pattern in naming units, talk with your partner about how to name this number.

NOTES ON MULTIPLE MEANS FOR ACTION AND EXPRESSION:

Scaffold reading numbers into the hundred thousands with questioning, such as:

- What’s the value of the 3? 30 thousand. How many thousands altogether? 36 thousands. What’s the value of the 8? 80. Add the remaining ones? 89. Read the whole number. Thirty-six thousand, eighty-nine.

Continue with similar numbers until students reach fluency. Alternate student recording numbers, modeling, and reading.
Problem 2
Add to make 10 of a unit and bundling up to 1 million.

T: What would happen if we combined 2 groups of 5 hundreds? With your partner draw number disks to solve. Use the largest unit possible to express your answer.

S: 2 groups of 5 hundreds equals 10 hundreds. → It would make 10 hundreds, which can be bundled to make 1 thousand.

T: Now, solve for 5 thousands plus 5 thousands. Bundle in order to express your answer using the largest unit possible.

S: 5 thousands plus 5 thousands equals 10 thousands. Bundle 10 thousands to make 1 ten thousand.

T: Solve for 4 ten thousands plus 6 ten thousands. Express your answer using the largest unit possible.

S: 4 ten thousands plus 6 ten thousands equals 10 ten thousands. Bundle 10 ten thousands to make 1 hundred thousand.

Continue renaming problems, showing regrouping as necessary.

3 hundred thousands + 7 hundred thousands
23 thousands + 4 ten thousands
43 ten thousands + 11 thousands

Problem 3
10 times as many with multiple units.

T: On your place value chart, model 5 hundreds and 3 tens with number disks. What is ten times 5 hundreds 3 tens?

S: (Students show.) 5 thousands 3 hundreds.

T: Model 5 thousands 3 hundreds with numbers on the place value chart.

S: 5,300.

T: Check your partner’s work and remind him of the comma’s role in this number.

T: With your partner solve this problem and write your answer in standard form.

Display 10 X 1 ten thousand 5 thousands 3 hundreds 2 ones = _______

S: 10 x 15,309 equals 153,090
Lesson 3: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

Student Debrief (7 minutes)

Lesson Objective: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

Invite students to review their solutions for the Problem Set and the totality of the lesson experience. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set. You may choose to use any combination of the questions below to lead the discussion.

- In Problem 1, how did you know where to place commas within a number?
- Read aloud the numbers in Problems 1(d) and 1(e) with your partner. What role do the commas have as you read across the number?
- What did you discover as you solved Problem 3? How did part (a) help you to solve part (b)?
- How did you use the place value chart to help you compare unlike units in Problem 5?
- When might it be useful to omit commas? (Please refer to the UDL box for commas to guide your discussion.)
Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 3:

Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

Date: 5/9/13

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1 x 3 =</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>3 x 1 =</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>2 x 3 =</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>3 x 2 =</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>3 x 3 =</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>4 x 3 =</td>
<td>28</td>
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<tr>
<td>7</td>
<td>3 x 4 =</td>
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<td>8</td>
<td>5 x 3 =</td>
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<td>9</td>
<td>3 x 5 =</td>
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<td>10</td>
<td>6 x 3 =</td>
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<td>11</td>
<td>3 x 6 =</td>
<td>33</td>
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<tr>
<td>12</td>
<td>7 x 3 =</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>3 x 7 =</td>
<td>35</td>
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<tr>
<td>14</td>
<td>8 x 3 =</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>3 x 8 =</td>
<td>37</td>
</tr>
<tr>
<td>16</td>
<td>9 x 3 =</td>
<td>38</td>
</tr>
<tr>
<td>17</td>
<td>3 x 9 =</td>
<td>39</td>
</tr>
<tr>
<td>18</td>
<td>10 x 3 =</td>
<td>40</td>
</tr>
<tr>
<td>19</td>
<td>3 x 10 =</td>
<td>41</td>
</tr>
<tr>
<td>20</td>
<td>3 x 3 =</td>
<td>42</td>
</tr>
<tr>
<td>21</td>
<td>1 x 3 =</td>
<td>43</td>
</tr>
<tr>
<td>22</td>
<td>2 x 3 =</td>
<td>44</td>
</tr>
</tbody>
</table>
Lesson 3: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

**Lesson 3 Sprint**

<table>
<thead>
<tr>
<th>Multiply.</th>
<th>Improvement</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3 × 1 =</td>
<td>23 9 × 3 =</td>
<td></td>
</tr>
<tr>
<td>2 1 × 3 =</td>
<td>24 3 × 3 =</td>
<td></td>
</tr>
<tr>
<td>3 3 × 2 =</td>
<td>25 8 × 3 =</td>
<td></td>
</tr>
<tr>
<td>4 2 × 3 =</td>
<td>26 4 × 3 =</td>
<td></td>
</tr>
<tr>
<td>5 3 × 3 =</td>
<td>27 7 × 3 =</td>
<td></td>
</tr>
<tr>
<td>6 3 × 4 =</td>
<td>28 5 × 3 =</td>
<td></td>
</tr>
<tr>
<td>7 4 × 3 =</td>
<td>29 6 × 3 =</td>
<td></td>
</tr>
<tr>
<td>8 3 × 5 =</td>
<td>30 3 × 5 =</td>
<td></td>
</tr>
<tr>
<td>9 5 × 3 =</td>
<td>31 3 × 10 =</td>
<td></td>
</tr>
<tr>
<td>10 3 × 6 =</td>
<td>32 3 × 1 =</td>
<td></td>
</tr>
<tr>
<td>11 6 × 3 =</td>
<td>33 3 × 6 =</td>
<td></td>
</tr>
<tr>
<td>12 3 × 7 =</td>
<td>34 3 × 4 =</td>
<td></td>
</tr>
<tr>
<td>13 7 × 3 =</td>
<td>35 3 × 9 =</td>
<td></td>
</tr>
<tr>
<td>14 3 × 8 =</td>
<td>36 3 × 2 =</td>
<td></td>
</tr>
<tr>
<td>15 8 × 3 =</td>
<td>37 3 × 7 =</td>
<td></td>
</tr>
<tr>
<td>16 3 × 9 =</td>
<td>38 3 × 3 =</td>
<td></td>
</tr>
<tr>
<td>17 9 × 3 =</td>
<td>39 3 × 8 =</td>
<td></td>
</tr>
<tr>
<td>18 3 × 10 =</td>
<td>40 11 × 3 =</td>
<td></td>
</tr>
<tr>
<td>19 10 × 3 =</td>
<td>41 3 × 11 =</td>
<td></td>
</tr>
<tr>
<td>20 1 × 3 =</td>
<td>42 13 × 3 =</td>
<td></td>
</tr>
<tr>
<td>21 10 × 3 =</td>
<td>43 3 × 13 =</td>
<td></td>
</tr>
<tr>
<td>22 2 × 3 =</td>
<td>44 12 × 3 =</td>
<td></td>
</tr>
</tbody>
</table>

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Lesson 3 Problem Set

Name ________________________________ Date _________________________

1. Rewrite the following numbers including commas where appropriate:
   a. 1234 ________________
   b. 12345 ________________
   c. 123456 ________________
   d. 1234567 ________________
   e. 12345678901 ________________

2. Complete the following chart:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 tens + 5 tens</td>
<td></td>
</tr>
<tr>
<td>3 hundreds + 7 hundreds</td>
<td></td>
</tr>
<tr>
<td>400 thousands + 600 thousands</td>
<td></td>
</tr>
<tr>
<td>8 thousands + 4 thousands</td>
<td></td>
</tr>
</tbody>
</table>

3. Represent each addend with number disks in the place value chart. Show the composition of larger units from 10 smaller units. Write the sum in standard form.
   a. 4 thousands + 11 hundreds = ________________________________
      | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
      |_________ |_______________ |_____________ |__________ |_________ |_______|_______|
   b. 24 ten thousands + 11 thousands = ________________________________
      | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
      |_________ |_______________ |_____________ |__________ |_________ |_______|_______|
4. Use the place value chart to represent the following equations with numbers or disks. Write the product in standard form.

   a. \(10 \times 3\) thousands = _______________________________

      How many thousands are in the answer? ________________

      | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
      |----------|------------------|--------------|-----------|----------|------|------|

   b. \((3\ \text{ten thousands}\ 2\ \text{thousands}) \times 10\) = _____________________________

      How many thousands are in the answer? ________________

      | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
      |----------|------------------|--------------|-----------|----------|------|------|

   c. \((32\ \text{thousands}\ 1\ \text{hundred}\ 4\ \text{ones}) \times 10\) = _____________________________

      How many thousands are in your answer? ________________

      | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
      |----------|------------------|--------------|-----------|----------|------|------|

5. Lee and Gary visited South Korea. They exchanged their dollars for South Korean bills. Lee received 15 ten thousand South Korean bills. Gary received 150 thousand bills. Use disks or numbers on a place value chart to compare Lee and Gary’s money.
Lesson 3 Exit Ticket

NYS COMMON CORE MATHEMATICS CURRICULUM

Name ________________________________          Date __________________

1. In the spaces provided, rewrite the following units as digits. Be sure to place commas where appropriate.

   a. 9 thousands, 3 hundreds, 4 ones ______________________________

   b. 6 ten thousands, 2 thousands, 7 hundreds, 8 tens, 9 ones ________________

   c. 1 hundred thousand, 8 thousands, 9 hundreds, 5 tens, 3 ones ________________

2. Use the place value chart to write 26 thousands and 13 hundreds using digits.

   millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones
   --------|-------------------|---------------|-----------|----------|------|-----

   How many thousands are in your answer? ________________
Lesson 3 Homework

NYS COMMON CORE MATHEMATICS CURRICULUM

Name _________________________________ Date __________________

1. Rewrite the following numbers including commas where appropriate:
   a. 4321 __________________________ b. 54321 __________________
   c. 224466 _______________________ d. 2224466 ________________
   e. 10010011001 ____________________

2. Complete the following chart:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit Form (Use the largest units possible.)</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 tens + 6 tens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 hundreds + 2 hundreds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 thousands + 7 thousands</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Represent each addend with number disks in the place value chart. Show the composition of larger units from 10 smaller units. Write the sum in standard form.
   a. 2 thousands + 12 hundreds = _________________________________

<table>
<thead>
<tr>
<th></th>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b. 14 ten thousands + 12 thousands = _________________________________

<table>
<thead>
<tr>
<th></th>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Use the place value chart to represent the following equations with numbers or disks. Write the product in standard form.

   a. $10 \times 5 \text{ thousands} = \underline{\quad \quad}$

      How many thousands are in the answer? \underline{\quad \quad}

<table>
<thead>
<tr>
<th></th>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
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<th>ones</th>
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</tbody>
</table>

   b. $(4 \text{ ten thousands} \ 4 \text{ thousands}) \times 10 = \underline{\quad \quad}$

      How many thousands are in the answer? \underline{\quad \quad}

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<tr>
<th></th>
<th>millions</th>
<th>hundred thousands</th>
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   c. $(27 \text{ thousands} \ 3 \text{ hundreds} \ 5 \text{ ones}) \times 10 = \underline{\quad \quad}$

      How many thousands are in your answer? \underline{\quad \quad}

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<tr>
<th></th>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
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5. A large grocery store received an order of 2 thousand apples. A neighboring school received an order of 20 boxes of apples with 100 apples in each. Use disks or numbers on a place value chart to compare the number of apples received by the school and the number of apples received by the grocery store.
Lesson 4

Objective: Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

Suggested Lesson Structure

- **Fluency Practice** (13 minutes)
- **Application Problem** (6 minutes)
- **Concept Development** (26 minutes)
- **Student Debrief** (15 minutes)
- **Total Time** (60 minutes)

**Fluency Practice (13 minutes)**

- Skip-Counting 3.OA.4–7 (3 minutes)
- Place Value 4.NBT.2 (2 minutes)
- Numbers Expressed in Different Base Units 4.NBT.1 (8 minutes)

**Skip-Counting (3 minutes)**

Note: Practicing skip-counting on the number line builds a foundation for accessing higher order concepts throughout the year.

Direct students to skip-count by fours forward and backward to 48 focusing on transitions crossing the ten.

**Place Value (2 minutes)**

Materials: (S) Personal white boards, place value chart to the hundred thousands

Note: Reviewing and practicing place value skills in isolation will prepare students for success in writing multi-digit numbers in expanded form.

T: Show 5 hundred thousands in number disks and write the number below it on the place value chart.

Students draw 5 hundred thousands disks, write 5 at the bottom of the ten thousands column and 0 in each column to the right of it. (Draw to correct student misunderstanding.)

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Place value fluency practices support language acquisition as it couples meaningful visuals with valuable practice speaking the standard and unit form of numbers to 1 million.

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Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

5/9/13
T: Say the number in unit form.
S: 5 hundred thousands.
T: Say it in standard form 500,000.

Continue for the following possible sequence: 5 hundred thousands 3 ten thousands, 5 hundred thousands 3 hundreds, 5 ten thousands 3 hundreds, 1 hundred thousand 3 hundreds 5 tens, 4 hundred thousands, 2 ten thousands, 5 tens, 3 ones.

**Numbers Expressed in Different Base Units (8 minutes)**

Materials: (S) Personal white boards, place value chart to the millions

Note: This fluency will prepare students for success in writing multi-digit numbers in expanded form.

**Base Hundred Units**

T: (Project 3 hundreds = _____.) Say the number in standard form.
S: 300.

Continue with a suggested sequence of 9 hundreds, 10 hundreds, 19 hundreds, 21 hundreds, 33 hundreds, 30 hundreds, 100 hundreds, 200 hundreds, 500 hundreds, 530 hundreds, 537 hundreds, and 864 hundreds.

**Base Thousand Units**

T: (Project 5 thousands = _____.) Say the number in standard form.
S: 5000.

Continue with a suggested sequence of 9 thousands, 10 thousands, 20 thousands, 100 thousands, 220 thousands, and 347 thousands.

**Base Ten Thousand Units**

T: (Project 7 ten thousands = _____.) Say the number in standard form.
S: 70,000.

Continue with a suggested sequence of 9 ten thousands, 10 ten thousands, 12 ten thousands, 19 ten thousands, 20 ten thousands, 30 ten thousands, 80 ten thousands, 800 ten thousands, 817 ten thousands, and 438 ten thousands.

**Base Hundred Thousand Units**

T: (Project 3 hundred thousands = _____.) Say the number in standard form.
S: 300,000.

Continue with a suggested sequence of 6 hundred thousands, 9 hundred thousands, 10 hundred thousands, 20 hundred thousands, 70 hundred thousands, 71 hundred thousands, 75 hundred thousands, and 43 hundred thousands.
Application Problem (6 minutes)

There are about forty-one thousand Asian elephants and about four hundred seventy thousand African elephants left in the world. About how many Asian and African elephants are left in total?

Note: This application problem builds on the content of the previous lesson, requiring students to name base thousand units. It also builds from 3.NBT.2 (fluently add and subtract within 1000). Assist students by asking them to add using unit names (similar to the example), not the entire numbers as digits.

Concept Development (26 minutes)

Materials: (S) Personal white boards

Problem 1

Write a four-digit number in expanded form.

T: On your place value chart write the following number: 1,708.
S: 1,000.
T: What is the value of the 1?
S: 1,000.
T: (Write 1,000 under the thousands place.) What is the value of the 7?
S: 700. (Record 700 under the hundreds.)
T: What value does zero have?
S: Zero.
T: What is the value of 8?
S: 8. (Record 8.)
T: What is the value of 1,000 and 700 and 8?
S: 1,708.
T: So, 1,708 is the same as 1,000 plus 700 plus 8.
T: Write a number sentence to show that equation.
S: 1,000 + 700 + 8 = 1,708.
Lesson 4:
Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

Date: 5/9/13

Problem 2
Write a five-digit number in word form and expanded form.

T: Now erase your values and write this number: 27,085.
T: Show the value of each digit at the bottom of your place value chart.
S: 20,000, 7,000, 80, and 5.
T: Why is there no term representing the hundreds?
S: Zero stands for nothing. → Zero added to a number doesn’t change the value.
T: With your partner write an addition sentence.
S: 20,000 + 7,000 + 80 + 5 = 27,085.
T: Now, read the expanded sentence with me.
S: Twenty thousand plus seven thousand plus eighty plus five equals twenty-seven thousand, eighty-five.
T: (Write the number as you speak.) You said “twenty-seven thousand, eighty five.”
T: What do you notice about where I placed a comma in both the standard form and word form?
S: It is placed after 27 to separate the thousands in both the standard form and word form.

Problem 3
Transcribe a number in word form to standard and expanded form.

Display two hundred seventy thousand, eight hundred fifty.

T: Read this number. (Students read.) Tell your partner how you can match the word form to the standard form?
S: Everything you say, you should write in words. → The comma helps to separate the numbers in the thousands from the numbers in the hundreds, tens, and ones.
T: Write this number in your place value chart. Now, write this number in expanded form. Tell your partner your equation.
S: 200,000 + 70,000 + 800 + 50 equals 270,850.
Repeat with sixty-four thousand, three.
Lesson 4

Lesson Objective: Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

Lesson 4

Problem 4

Convert a number in expanded form to word and standard form.

Display $700,000 + 8,000 + 500 + 70 + 3$

T: Read this number statement. (Students read.) On your own, write this number in your place value chart.

T: My sum is 78,573. Compare your sum with mine.

S: Your 7 is in the wrong place. The value of the 7 is 700,000. Your 7 has a value of 70,000.

T: Read this number in standard form with me.

S: Seven hundred eight thousand, five hundred seventy-three.

T: Write this number in words. Remember to check for correct use of commas and hyphens.

Repeat with $500,000 + 30,000 + 10 + 3$

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

Student Debrief (15 minutes)

Lesson Objective: Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

Invite students to review their solutions for the Problem Set and the totality of the lesson experience. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief.

Guide students in a conversation to debrief the Problem Set. You may choose to use any combination of the questions below to lead the discussion.

- Compare the numbers in Problems 1 and 2. What do you notice?
- As you completed the chart on Page 2, what number words were tricky to write? Which number words can be confused with other number words? Why? What strategies did you use to spell number words?

MP.3
Timothy and his dad read a number word in two ways. What other numbers can be read more than one way? Which way of reading a number best helps you solve? When?

Two students discussed the importance of zero. Nate said that zero is not important, while Jill said that zero is extremely important. Who is right? Why do you think so?

What role can zero play in a number?

How is expanded form related to the standard form of a number?

When might you use expanded form to solve?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
1. On the place value chart below, label the units and represent the number 90,523.

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a. Write the number in word form.

b. Write the number in expanded form.

2. Represent the number 905,203.

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a. Write the number in word form.

b. Write the number in expanded form.
3. Complete the following chart:

<table>
<thead>
<tr>
<th>Number</th>
<th>Word Form</th>
<th>Expanded Form</th>
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</thead>
<tbody>
<tr>
<td>two thousand, four hundred eighty</td>
<td></td>
<td>20,000 + 400 + 80 + 2</td>
</tr>
<tr>
<td>sixty-four thousand, one hundred six</td>
<td></td>
<td></td>
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<tr>
<td>604,016</td>
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<tr>
<td>1,060,060</td>
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</table>

4. Black Rhinos are endangered, with only 4,400 left in the world. Timothy read that number as “four thousand, four hundred.” But his father read the number as “44 hundred.” Who read the number correctly? Use pictures, numbers, or words to explain your answer.
Lesson 4 Exit Ticket

NYS COMMON CORE MATHEMATICS CURRICULUM

Name __________________________________________________________________________
Date __________________________

1. Use the place value chart below to complete the following:

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</table>

a. Label the units on the chart.

b. Write the number $800,000 + 6,000 + 300 + 2$ in the place value chart.

c. Write the number in word form.

2. Write one hundred sixty thousand, five hundred eighty-two in expanded form.
Lesson 4: Read and write multi-digit numbers using base ten numerals, number names, and expanded form.

Date: 5/9/13

1. On the place value chart below, label the units and represent the number 50,679.

   |   |   |   |   |

   a. Write the number in word form.

   b. Write the number in expanded form.

2. On the place value chart below, label the units and represent the number 506,709.

   |   |   |   |   |

   a. Write the number in word form.

   b. Write the number in expanded form.
3. Complete the following chart:

<table>
<thead>
<tr>
<th>Number</th>
<th>Word Form</th>
<th>Expanded Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>five thousand, three hundred seventy</td>
<td>50,000 + 300 + 70 + 2</td>
<td></td>
</tr>
<tr>
<td>thirty-nine thousand, seven hundred one</td>
<td>309,017</td>
<td></td>
</tr>
<tr>
<td>1,070,070</td>
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<td></td>
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</tbody>
</table>

4. Use pictures, numbers, and words to explain another way to say “sixty-five hundred.”