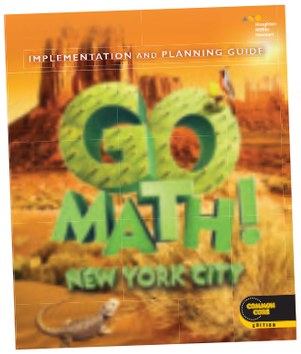


Go Math! Overview

GO Math! lessons are designed to fully facilitate conceptual development, as students work from introduction to mastery of each content standard listed in the Common Core. Throughout the lessons, students will use manipulatives, models, quick pictures, and symbols as they apply Mathematical Practices to build understanding. Students are expected to actively engage in reasoning during instruction, so they are prepared to transition from concept or skills comprehension to solving problems in contextual situations.

1 ENGAGE

Found at the beginning of each lesson, the purpose of the **Engage** section is to provide an opportunity for the teacher to establish a common conceptual foundation before approaching the lesson content. Here, students recall and apply prior knowledge and use prerequisite skills to participate in a short discussion or to complete a short activity.

The **Access Prior Knowledge** activity typically takes less than 5 minutes, and is not intended to be instructional. The value of this activity lies in focusing students' attention on concepts and skills that will motivate them to approach the new content of the lesson with vigor. You can use evidence of students' understanding and approaches to learning to decide how deeply to discuss the concept presented here. Students found lacking in these prerequisite skills could benefit from intervention or remediation.

LESSON 1.1

COMMON CORE

1 ENGAGE GO Online *i*Tools

Materials *i*Tools: Base-Ten Blocks

Access Prior Knowledge Use *i*Tools to review representing numbers using base-ten blocks. Remind students that the words they will use are *small cube*, *long*, and *flat*. Show a group of blocks and ask students to name the number that is represented.

2 TEACH AND TALK

Teach and Talk contains the core instruction for the lesson, in which conceptual development is key. Here, students are expected to represent, record, solve, and explain as they build an understanding of the lesson concept or skill.

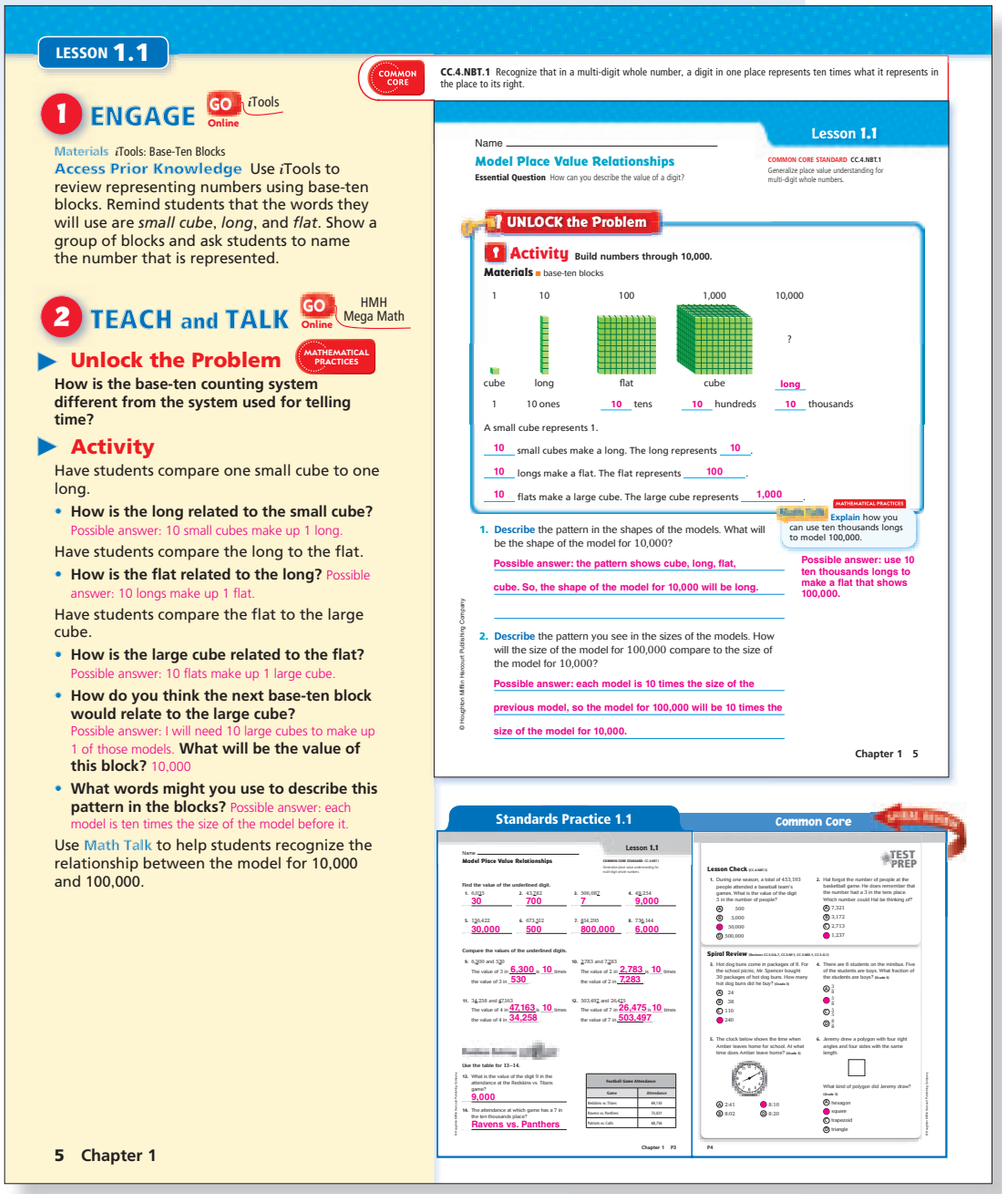
The instruction is scaffolded and guided in a way that encourages students to apply Mathematical Practices as they solve a new type of problem, or a familiar problem in a new way. It is very important that students continually apply Mathematical Practices as they learn new concepts. Students will encounter unfamiliar and abstract problems for which they have the content knowledge to solve, and the ability to effectively apply Mathematical Practices will be essential to successfully approaching those problems.

The problems in this section are typically contextual. Teachers can use the scaffolding in the Student Edition and Teacher Edition to guide instruction. The contextualization of the problems also allow teachers to use students prior real-world experience as much as prior mathematical experience as they think about how to approach the problem.

Read the problem with the class. Then give students a few minutes to think about how they will progress toward a solution. This enables students to immediately invest themselves in the problem-solving process.

Teachers can use the questions in the Teacher Edition to help students think critically about the models and problem-solving processes they are using. Students will apply Mathematical Practices as they communicate why the models are appropriate, and how each step in the problem-solving process helps lead them to the solution. Make sure students are actively recording on the Student Edition page.

Once students have worked through the example, they can engage in a short discussion around **Math Talk**. By communicating their understanding of essential concepts, teachers can gauge student knowledge and students can deepening their understanding. It is this deeper understanding that will allow students to transition from the contextual to the abstract.



LESSON 1.1

COMMON CORE **CC.4.NBT.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.

1 ENGAGE GO Online iTools

Materials iTools: Base-Ten Blocks

Access Prior Knowledge Use iTools to review representing numbers using base-ten blocks. Remind students that the words they will use are *small cube*, *long*, and *flat*. Show a group of blocks and ask students to name the number that is represented.

2 TEACH and TALK GO Online HMH Mega Math

Unlock the Problem MATHEMATICAL PRACTICES

How is the base-ten counting system different from the system used for telling time?

Activity

Have students compare one small cube to one long.

- **How is the long related to the small cube?** Possible answer: 10 small cubes make up 1 long.

Have students compare the long to the flat.

- **How is the flat related to the long?** Possible answer: 10 longs make up 1 flat.

Have students compare the flat to the large cube.

- **How is the large cube related to the flat?** Possible answer: 10 flats make up 1 large cube.
- **How do you think the next base-ten block would relate to the large cube?** Possible answer: I will need 10 large cubes to make up 1 of those models. **What will be the value of this block?** 10,000
- **What words might you use to describe this pattern in the blocks?** Possible answer: each model is ten times the size of the model before it.

Use Math Talk to help students recognize the relationship between the model for 10,000 and 100,000.

5 Chapter 1

Lesson 1.1

Name _____

Model Place Value Relationships

COMMON CORE STANDARD CC.4.NBT.1 Generalize place value understanding for multi-digit whole numbers.

Essential Question How can you describe the value of a digit?

UNLOCK the Problem

Activity Build numbers through 10,000.

Materials ■ base-ten blocks

1	10	100	1,000	10,000
cube	long	flat	cube	long
1	10 ones	10 tens	10 hundreds	10 thousands

A small cube represents 1.

10 small cubes make a long. The long represents 10.

10 longs make a flat. The flat represents 100.

10 flats make a large cube. The large cube represents 1,000.

Math Talk MATHEMATICAL PRACTICES Explain how you can use ten thousands longs to model 100,000.

1. **Describe** the pattern in the shapes of the models. What will be the shape of the model for 10,000?

Possible answer: the pattern shows cube, long, flat, cube. So, the shape of the model for 10,000 will be long.

Possible answer: use 10 ten thousands longs to make a flat that shows 100,000.

2. **Describe** the pattern you see in the sizes of the models. How will the size of the model for 100,000 compare to the size of the model for 10,000?

Possible answer: each model is 10 times the size of the previous model, so the model for 100,000 will be 10 times the size of the model for 10,000.

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Chapter 1 5

Standards Practice 1.1 Common Core

Lesson 1.1

Name _____

Model Place Value Relationships

COMMON CORE STANDARD CC.4.NBT.1 Generalize place value understanding for multi-digit whole numbers.

Find the value of the underlined digit.

1. 6,923 — 30
2. 43,282 — 700
3. 306,987 — 7
4. 42,354 — 9,000
5. 126,422 — 30,000
6. 673,123 — 500
7. 834,295 — 800,000
8. 736,164 — 6,000

Compare the values of the underlined digits.

9. 6,200 and 530
The value of 2 is 6,300 × 10 times the value of 3 is 530

10. 2,783 and 7,283
The value of 2 is 2,783 × 10 times the value of 2 is 7,283

11. 34,258 and 37,163
The value of 4 is 37,163 × 10 times the value of 4 is 34,258

12. 303,492 and 26,421
The value of 7 is 26,475 × 10 times the value of 7 is 503,497

Use the table for 13–14.

Football Game Attendance	
Game	Attendance
Redskins vs. Titans	48,160
Ravens vs. Panthers	73,001
Falcons vs. Colts	66,736

13. What is the value of the digit 9 in the attendance at the Redskins vs. Titans game?
9,000

14. The attendance at which game has a 7 in the ten thousands place?
Ravens vs. Panthers

Chapter 1 P3

TEST PREP

Lesson Check (CC.4.NBT.1)

1. During one season, a total of 453,193 people attended a baseball team's games. What is the value of the digit 5 in the number of people?
A 500
B 5,000
C 50,000
D 500,000

2. Hal forgot the number of people at the basketball game. He does remember that the number had a 3 in the tens place. Which number could Hal be thinking of?
A 7,321
B 3,172
C 3,713
D 1,237

Spiral Review (Previous CC.4.NBT.1, CC.4.MD.1, CC.4.G.1)

3. Hot dog buns come in packages of 8. For the school picnic, Mr. Spencer bought 30 packages of hot dog buns. How many hot dog buns did he buy? (Grade 3)
A 24
B 38
C 110
D 240

4. There are 8 students on the minibus. Five of the students are boys. What fraction of the students are boys? (Grade 3)
A 1/8
B 5/8
C 3/5
D 3/8

5. The clock below shows the time when Amber leaves home for school. At what time does Amber leave home? (Grade 3)
A 2:41
B 8:02
C 8:10
D 8:20

6. Jeremy drew a polygon with four right angles and four sides with the same length.
What kind of polygon did Jeremy draw? (Grade 3)
A hexagon
B square
C trapezoid
D triangle

P4

As teachers transition to instruction that is less scaffolded, you may find it helpful to reference the **COMMON ERRORS** box shown in your Teacher Edition. This provides a quick an immediate intervention opportunity for students who are making errors that are typically to a certain concept or skill.

Go Math! Overview

3 PRACTICE

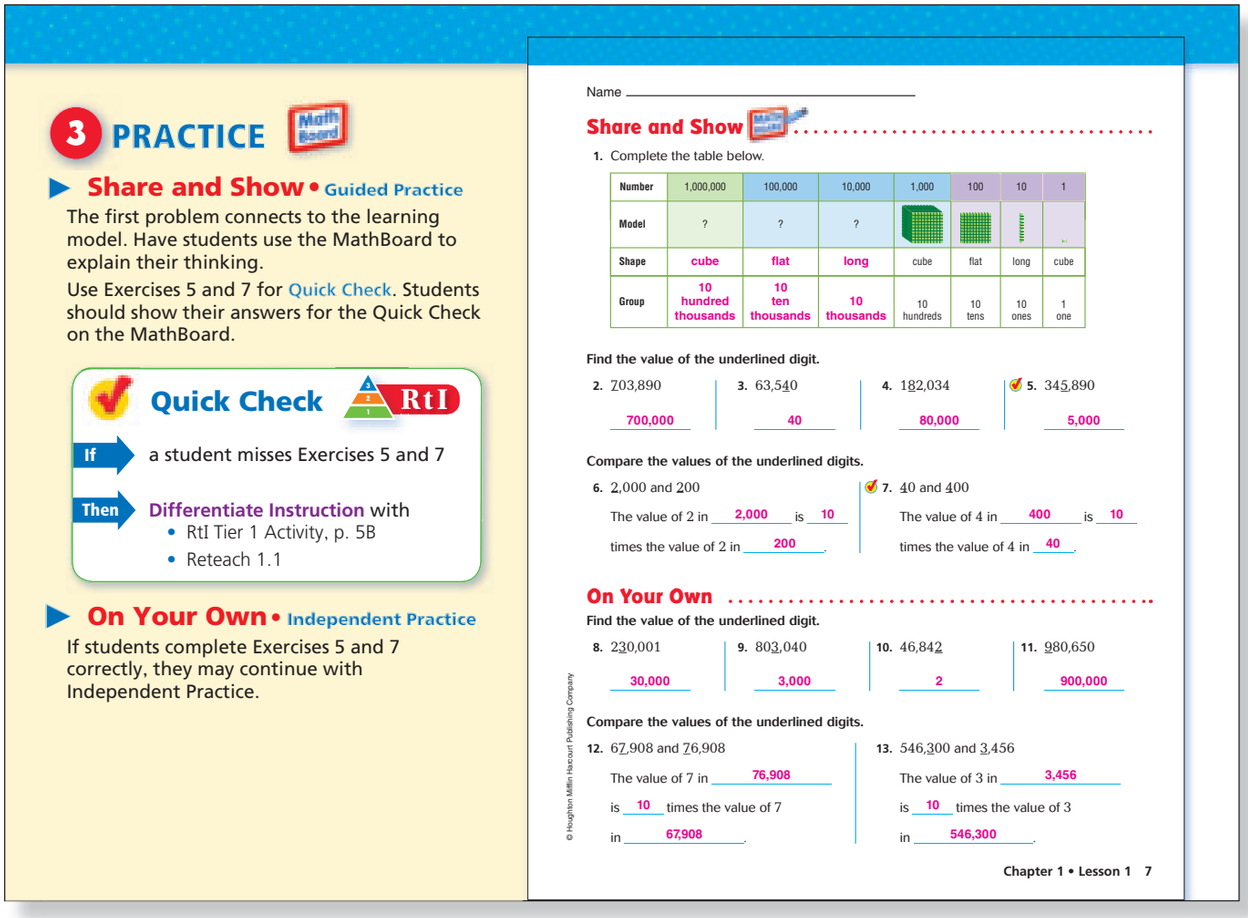
Instruction is complete, and students are ready to practice what they have learned.

Teachers can assess student understanding of lesson content through **Share and Show.** Intended as guided practice, this part of the lesson begins with a bridge problem (Exercise 1). The bridge problem connects to the models used in the lesson, and provides scaffolding to help students as they begin to formalize recording. Give students a minute to work through the bridge problem, before discussing the problem and its solution.

The next few exercise are skill based, and are important both as practice and as a diagnostic tool. There are two checked items in this section, which represent the lesson concepts students should have mastered. Have students complete this section on their own. Students who did not answer the checked items correctly because of a conceptual misunderstanding may require additional instructional support. The **Quick Check** box in the Teacher Edition provides suggestions for **Differentiated Instruction,** to help all of your students master the lesson concepts and skills.

Own Your Own exercises can be completed in class or at home. Although these exercises are intended for independent practice, you may choose to work through some problems as a class. You can make these decisions based on the depth of understanding among your students, as well as the types of problem-solving skills your students need to further develop.

Before students fully engage themselves in the independent practice, you may want to prompt a quick class discussion around the topic in **Go Deeper.** This is yet another opportunity for students to apply the lesson concept in a new way, so they can deepen their understanding.



3 PRACTICE

▶ **Share and Show** • Guided Practice

The first problem connects to the learning model. Have students use the MathBoard to explain their thinking.

Use Exercises 5 and 7 for Quick Check. Students should show their answers for the Quick Check on the MathBoard.

Quick Check RtI

If a student misses Exercises 5 and 7

Then **Differentiate Instruction** with
- RtI Tier 1 Activity, p. 5B
- Reteach 1.1

▶ **On Your Own** • Independent Practice

If students complete Exercises 5 and 7 correctly, they may continue with Independent Practice.

Name _____

Share and Show

1. Complete the table below.

Number	1,000,000	100,000	10,000	1,000	100	10	1
Model	?	?	?				
Shape	cube	flat	long	cube	flat	long	cube
Group	10 hundred thousands	10 ten thousands	10 thousands	10 hundreds	10 tens	10 ones	1 one

Find the value of the underlined digit.

2. 7̲03,890 — 700,000
3. 63,5̲40 — 40
4. 1̲82,034 — 80,000
5. 3̲45,890 — 5,000

Compare the values of the underlined digits.

6. 2,000 and 200
The value of 2 in 2,000 is 10 times the value of 2 in 200.

7. 4̲0 and 4̲00
The value of 4 in 400 is 10 times the value of 4 in 40.

On Your Own

Find the value of the underlined digit.

8. 2̲30,001 — 30,000
9. 80̲3,040 — 3,000
10. 46,84̲2 — 2
11. 9̲80,650 — 900,000

Compare the values of the underlined digits.

12. 6̲7,908 and 7̲6,908
The value of 7 in 76,908 is 10 times the value of 7 in 67,908.

13. 5̲46,300 and 3̲,456
The value of 3 in 3,456 is 10 times the value of 3 in 546,300.

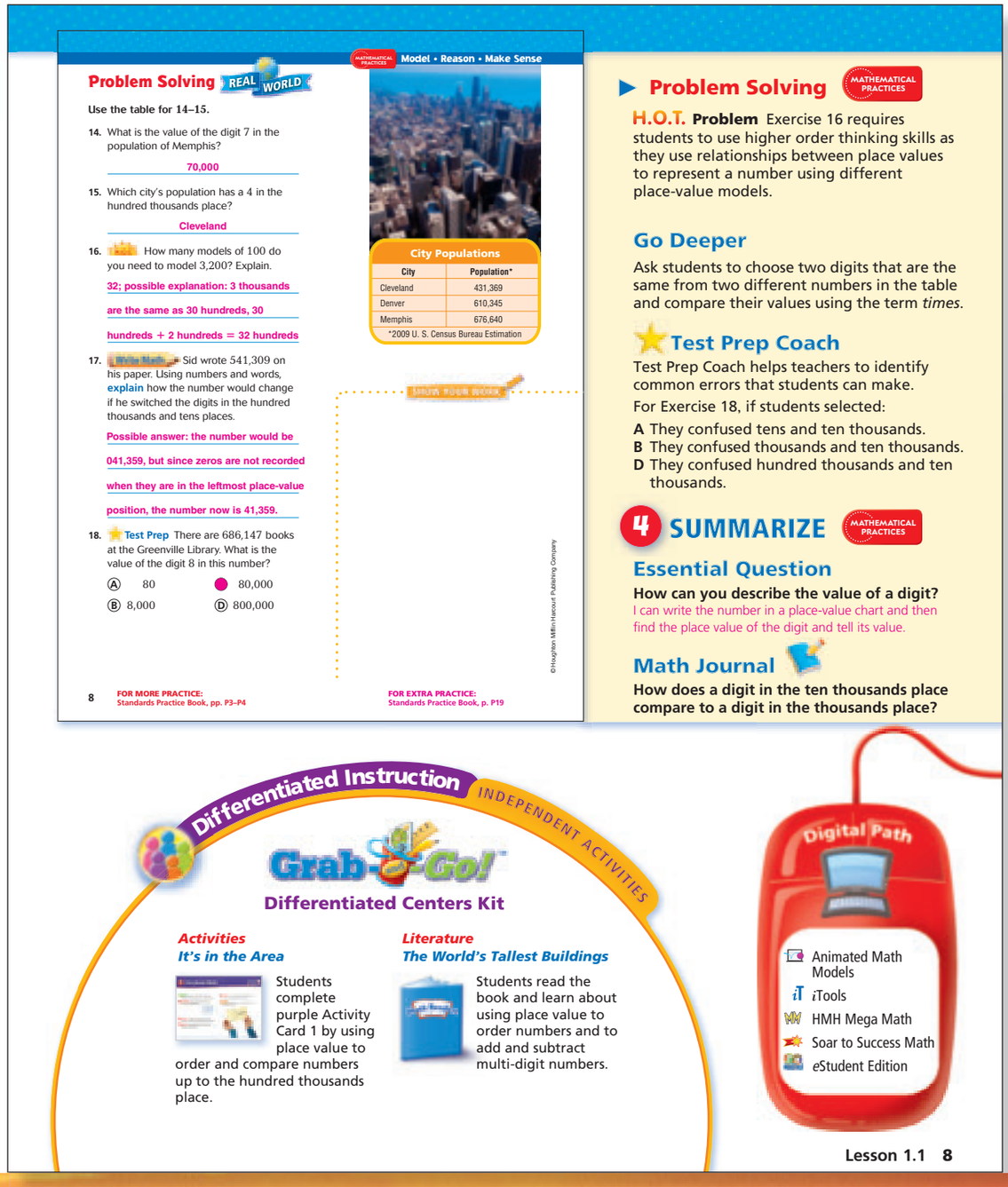
Chapter 1 • Lesson 1 7

4 SUMMARIZE

This section brings closure to the lesson and provides an objective review of the concept presented in the lesson. Based on how you organize your class time, you may choose to **Summarize** before students go home and complete homework, or you may choose to **Summarize** at the beginning of the next class, before beginning the next lesson.

Pose the **Essential Question** to the class. Students who have a deep understanding of the lesson concept will be able to answer this question accurately and concisely using appropriate math vocabulary, and will be able to justify their responses.

Have students record their understanding of the lesson concept by answering the **Math Journal** question. You can have students save their **Math Journal** entries for their portfolios.



MATHEMATICAL PRACTICES Model • Reason • Make Sense

Problem Solving REAL WORLD

Use the table for 14–15.

14. What is the value of the digit 7 in the population of Memphis?

70,000

15. Which city's population has a 4 in the hundred thousands place?

Cleveland

16. How many models of 100 do you need to model 3,200? Explain.

32; possible explanation: 3 thousands are the same as 30 hundreds, 30 hundreds + 2 hundreds = 32 hundreds

17. Write Math Sid wrote 541,309 on his paper. Using numbers and words, **explain** how the number would change if he switched the digits in the hundred thousands and tens places.

Possible answer: the number would be 041,359, but since zeros are not recorded when they are in the leftmost place-value position, the number now is 41,359.

18. Test Prep There are 686,147 books at the Greenville Library. What is the value of the digit 8 in this number?

Ⓐ 80 ● 80,000
Ⓑ 8,000 Ⓓ 800,000

City Populations

City	Population*
Cleveland	431,369
Denver	610,345
Memphis	676,640

*2009 U. S. Census Bureau Estimation

Show Your Work

8 FOR MORE PRACTICE: Standards Practice Book, pp. P3–P4

FOR EXTRA PRACTICE: Standards Practice Book, p. P19

Problem Solving MATHEMATICAL PRACTICES

H.O.T. Problem Exercise 16 requires students to use higher order thinking skills as they use relationships between place values to represent a number using different place-value models.

Go Deeper

Ask students to choose two digits that are the same from two different numbers in the table and compare their values using the term *times*.

Test Prep Coach

Test Prep Coach helps teachers to identify common errors that students can make.

For Exercise 18, if students selected:

A They confused tens and ten thousands.
B They confused thousands and ten thousands.
D They confused hundred thousands and ten thousands.

4 SUMMARIZE MATHEMATICAL PRACTICES

Essential Question

How can you describe the value of a digit?

I can write the number in a place-value chart and then find the place value of the digit and tell its value.

Math Journal

How does a digit in the ten thousands place compare to a digit in the thousands place?

Differentiated Instruction INDEPENDENT ACTIVITIES

Grab-and-Go™ Differentiated Centers Kit

Activities
It's in the Area

Students complete purple Activity Card 1 by using place value to order and compare numbers up to the hundred thousands place.

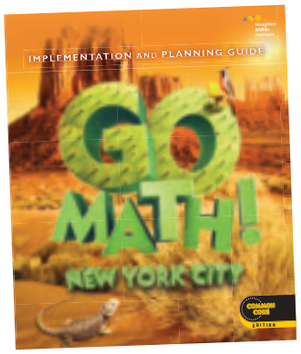
Literature
The World's Tallest Buildings

Students read the book and learn about using place value to order numbers and to add and subtract multi-digit numbers.

Digital Path

- Animated Math Models
- iTools
- HMH Mega Math
- Soar to Success Math
- eStudent Edition

Lesson 1.1 8



Go Math! Enhanced Lesson Overview

As described in the **Overview,** *GO Math!* lessons are designed to fully facilitate conceptual development. The teaching suggestions and scripting in the following lesson provides an enhanced step-by-step guide to teaching Common Core concepts and skills while integrating the Common Core's mathematical practices.

Throughout the lessons, the teaching suggestions in the Teacher Edition and in the accompanying Roadmaps will offer a consistent approach to instruction. Through these instructional companions, you will be able to incorporate Common Core instruction, complimented with questioning designed to engage in use of math practices.

1 ENGAGE

The purpose of the **Engage** section is to provide an opportunity for you to establish a common conceptual foundation before approaching the lesson content. Here, your students will recall and apply prior knowledge and use prerequisite skills to participate in a short activity.

The **Access Prior Knowledge** activity using base-10 blocks will typically takes less than 5 minutes. The intent is to focus your students' attention on place value concepts and skills. You can use evidence of students' understanding to decide how deeply to discuss the concept presented here – the chapter-opening *Show What You Know* quiz will assist in determining if and for how long you will need to spend on this activity.

2 TEACH AND TALK

Teach and Talk contains the core instruction for the lesson, in which conceptual development is key. Here, students are expected to represent, record, solve, and explain as they build an understanding of the lesson concept.

The instruction in the Teacher Edition is scaffolded and guided in a way that encourages students explore base 10 relationships. The initial questioning is designed to help ground students in a familiar number system – time. It is your choice to engage students in approach. However, the approach has the value of allowing for students to apply Mathematical Practices as they solve this next step in understanding number relationships.

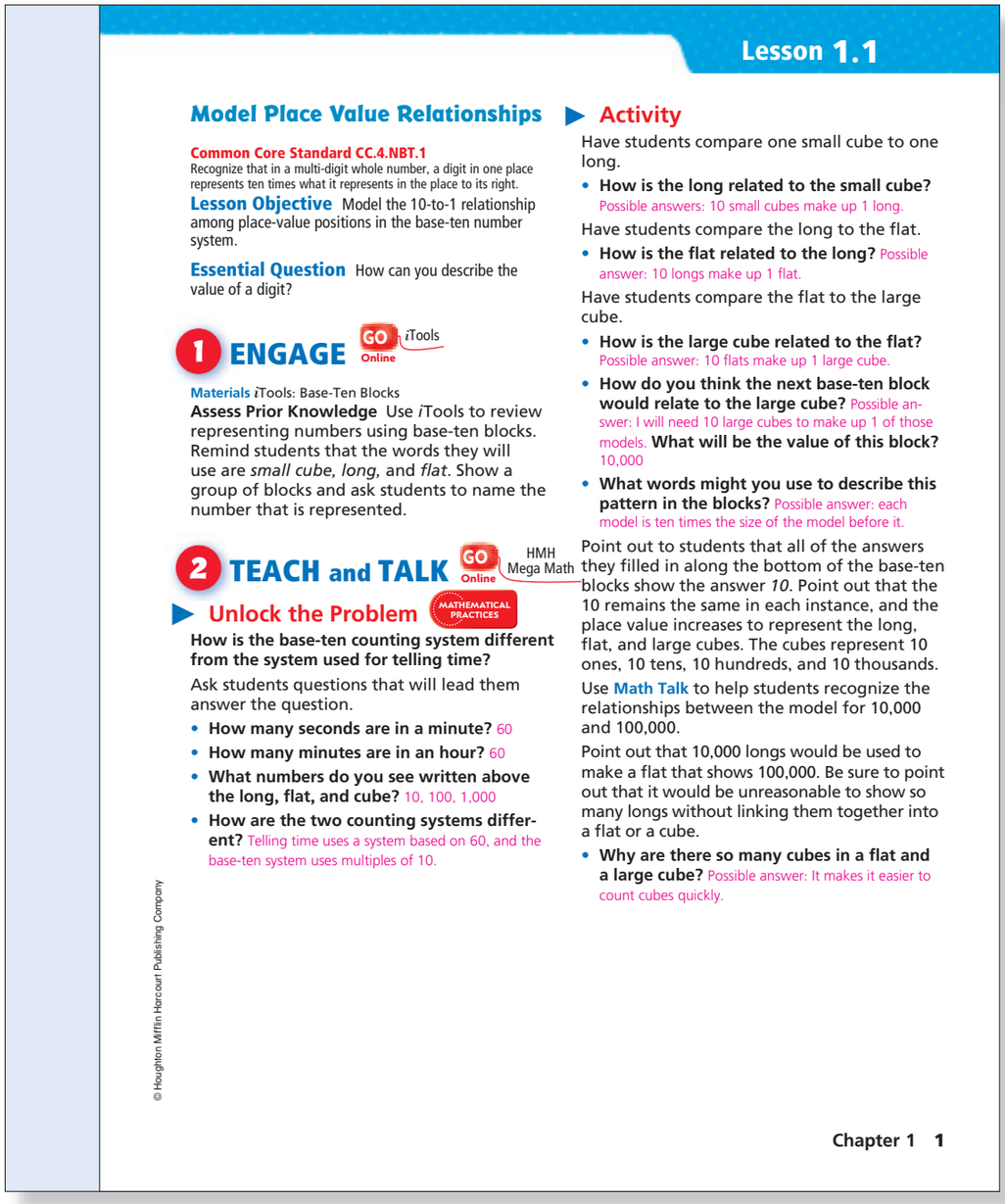
Read the problem with the class. Then give students a few minutes to think about how they will progress toward a solution. This enables students to immediately invest themselves in the problem-solving process.

As it is very important that students continually apply Mathematical Practices as they learn new concepts, questioning steeped in the practices helps to deepen conceptual understanding. These questions found in the Teacher Edition wrap and in the Roadmap for this lesson will allow you to seamlessly build in the practices.

You can use the questions in the Teacher Edition to help students think critically about the base-10 model they are using. Students will apply Mathematical Practices as they communicate why the models are appropriate. Make sure students are actively recording on the Student Edition page.

Once students have worked through the example and the **Value of a Digit activity,** they can engage in a short discussion around **Math Talk** question. Supporting the use of this activity are additional questions and scaffolding designed to draw out student thinking. By communicating their understanding of this essential concept, you can gauge student knowledge and their understanding.

As you transition to instruction that is less scaffolded, you may find it helpful to reference the COMMON ERRORS box shown in your Teacher Edition. This provides a quick and immediate intervention opportunity for students who are making errors that are typically to a certain concept or skill.



Lesson 1.1

Model Place Value Relationships

Common Core Standard CC.4.NBT.1
Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.

Lesson Objective Model the 10-to-1 relationship among place-value positions in the base-ten number system.

Essential Question How can you describe the value of a digit?

1 ENGAGE

GO Online *i*Tools

Materials *i*Tools: Base-Ten Blocks

Assess Prior Knowledge Use *i*Tools to review representing numbers using base-ten blocks. Remind students that the words they will use are *small cube*, *long*, and *flat*. Show a group of blocks and ask students to name the number that is represented.

2 TEACH and TALK

GO Online HMH Mega Math

Unlock the Problem

MATHEMATICAL PRACTICES

How is the base-ten counting system different from the system used for telling time?

Ask students questions that will lead them answer the question.

- **How many seconds are in a minute?** 60
- **How many minutes are in an hour?** 60
- **What numbers do you see written above the long, flat, and cube?** 10, 100, 1,000
- **How are the two counting systems different?** Telling time uses a system based on 60, and the base-ten system uses multiples of 10.

Activity

Have students compare one small cube to one long.

- **How is the long related to the small cube?** Possible answers: 10 small cubes make up 1 long.

Have students compare the long to the flat.

- **How is the flat related to the long?** Possible answer: 10 longs make up 1 flat.

Have students compare the flat to the large cube.

- **How is the large cube related to the flat?** Possible answer: 10 flats make up 1 large cube.
- **How do you think the next base-ten block would relate to the large cube?** Possible answer: I will need 10 large cubes to make up 1 of those models. **What will be the value of this block?** 10,000
- **What words might you use to describe this pattern in the blocks?** Possible answer: each model is ten times the size of the model before it.

Point out to students that all of the answers they filled in along the bottom of the base-ten blocks show the answer *10*. Point out that the 10 remains the same in each instance, and the place value increases to represent the long, flat, and large cubes. The cubes represent 10 ones, 10 tens, 10 hundreds, and 10 thousands.

Use **Math Talk** to help students recognize the relationships between the model for 10,000 and 100,000.

Point out that 10,000 longs would be used to make a flat that shows 100,000. Be sure to point out that it would be unreasonable to show so many longs without linking them together into a flat or a cube.

- **Why are there so many cubes in a flat and a large cube?** Possible answer: It makes it easier to count cubes quickly.

Chapter 1 1

Go Math! Enhanced Lesson Overview

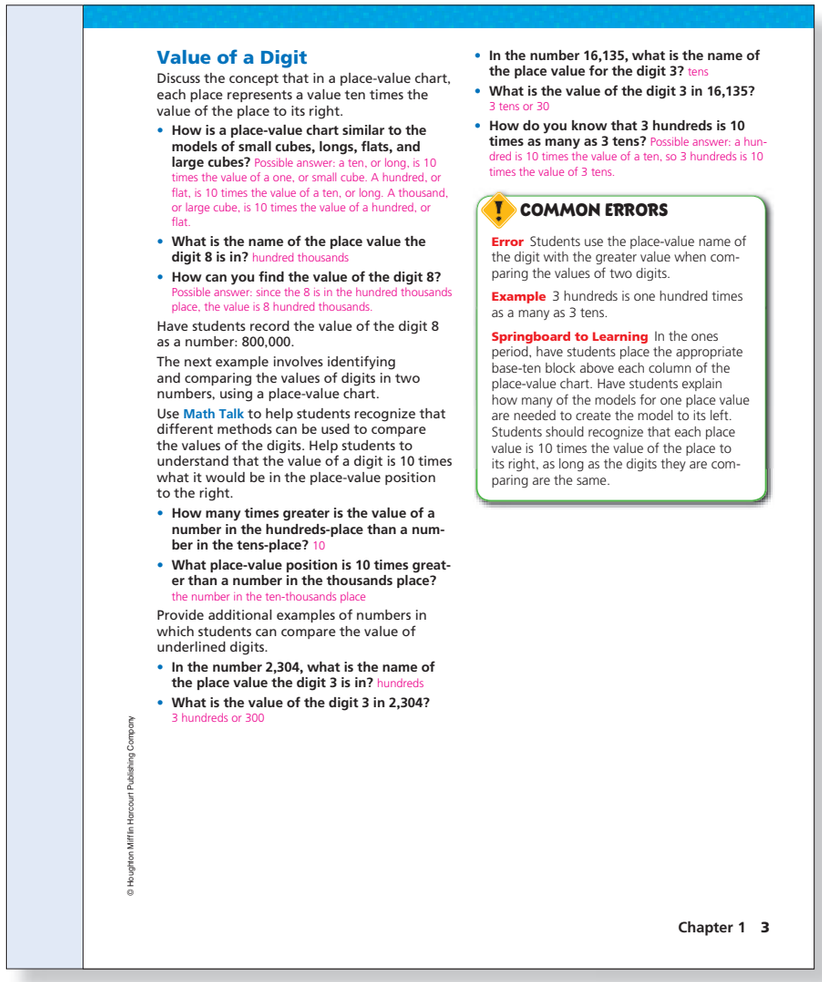
3 PRACTICE

Instruction is complete, and students are ready to practice what they have learned.

You can assess student understanding of lesson content through **Share and Show.** Intended as guided practice, this part of the lesson begins with a bridge problem (Exercise 1). The bridge problem connects to the base-10 block models used in the lesson, and provides scaffolding to help students answer the question. Give students a minute to work through the bridge problem, before discussing the problem and its solution.

The next few exercise are skill based, and are important both as practice and as a diagnostic tool. There are two checked items in this section (items 5 and 7), which represent the lesson concepts students should have mastered. Students who did not answer the checked items correctly because of a conceptual misunderstanding may require additional instructional support. The **Quick Check** box in the Teacher Edition provides suggestions for **Differentiated Instruction,** to help all of your students master the lesson concepts and skills.

Own Your Own exercises can be completed in class or at home. Although these exercises are intended for independent practice, you may choose to work through some problems as a class. You can make these decisions based on the depth of understanding among your students, as well as the types of problem-solving skills your students need to further develop. In this lesson, student reinforce the understanding of place value – items 8 through 13. If students performed well in the Share and Show section you may choose to assign these items as homework and, instead, focus on the **Problem Solving** section of the lesson. It is advisable to preview this section prior to instruction and select one or more items for in-class work and discussion. For example, item 16, the H.O.T. (higher order thinking) problem presents an opportunity to provide for additional depth in concept understanding and to build in mathematical practices. Additionally, item 17 could be selected as a means of developing whole class discussions as well as building in writing and communication skills.



Value of a Digit

Discuss the concept that in a place-value chart, each place represents a value ten times the value of the place to its right.

- **How is a place-value chart similar to the models of small cubes, longs, flats, and large cubes?** Possible answer: a ten, or long, is 10 times the value of a one, or small cube. A hundred, or flat, is 10 times the value of a ten, or long. A thousand, or large cube, is 10 times the value of a hundred, or flat.
- **What is the name of the place value the digit 8 is in?** hundred thousands
- **How can you find the value of the digit 8?** Possible answer: since the 8 is in the hundred thousands place, the value is 8 hundred thousands.

Have students record the value of the digit 8 as a number: 800,000.

The next example involves identifying and comparing the values of digits in two numbers, using a place-value chart.

Use **Math Talk** to help students recognize that different methods can be used to compare the values of the digits. Help students to understand that the value of a digit is 10 times what it would be in the place-value position to the right.

- **How many times greater is the value of a number in the hundreds-place than a number in the tens-place?** 10
- **What place-value position is 10 times greater than a number in the thousands place?** the number in the ten-thousands place

Provide additional examples of numbers in which students can compare the value of underlined digits.

- **In the number 2,304, what is the name of the place value the digit 3 is in?** hundreds
- **What is the value of the digit 3 in 2,304?** 3 hundreds or 300
- **In the number 16,135, what is the name of the place value for the digit 3?** tens
- **What is the value of the digit 3 in 16,135?** 3 tens or 30
- **How do you know that 3 hundreds is 10 times as many as 3 tens?** Possible answer: a hundred is 10 times the value of a ten, so 3 hundreds is 10 times the value of 3 tens.

COMMON ERRORS

Error Students use the place-value name of the digit with the greater value when comparing the values of two digits.

Example 3 hundreds is one hundred times as a many as 3 tens.

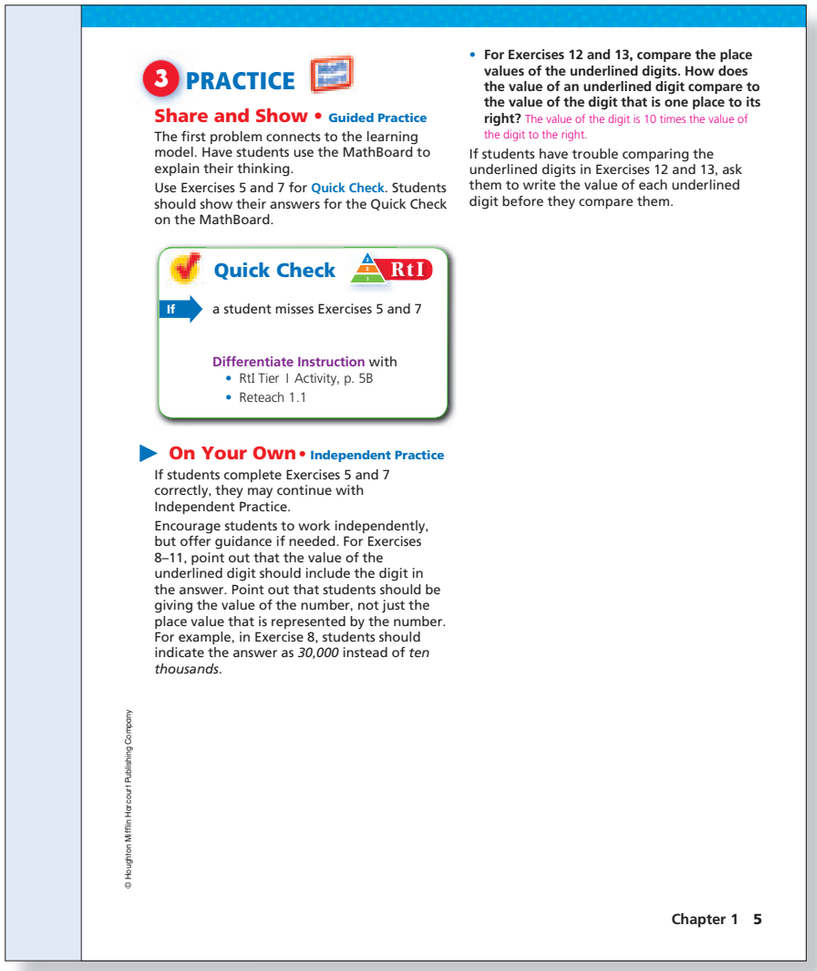
Springboard to Learning In the ones period, have students place the appropriate base-ten block above each column of the place-value chart. Have students explain how many of the models for one place value are needed to create the model to its left. Students should recognize that each place value is 10 times the value of the place to its right, as long as the digits they are comparing are the same.

4 SUMMARIZE

This section brings closure to the lesson and provides an objective review of the concept presented in the lesson. Based on how you organize your class time, you may choose to **Summarize** before students go home and complete homework, or you may choose to **Summarize** at the beginning of the next class, before beginning the next lesson. Depending on your class and your lesson goals, you may choose to assign the Essential Question or the Math Journal. Or you might decide to assign both.

As a class-concluding activity you can assign the **Essential Question.** Note that this is the same Essential Question provided in the Student Edition. Those who have a deep understanding of the lesson concept will be able to answer this question accurately and concisely using appropriate math vocabulary, and will be able to justify their responses.

You can also have students record their understanding of the lesson concept by answering the **Math Journal** question. You can have students save their **Math Journal** entries for their portfolios.



3 PRACTICE

Share and Show • Guided Practice

The first problem connects to the learning model. Have students use the MathBoard to explain their thinking.

Use Exercises 5 and 7 for **Quick Check**. Students should show their answers for the Quick Check on the MathBoard.

Quick Check RtI

If a student misses Exercises 5 and 7

Differentiate Instruction with
- RtI Tier I Activity, p. 5B
- Reteach 1.1

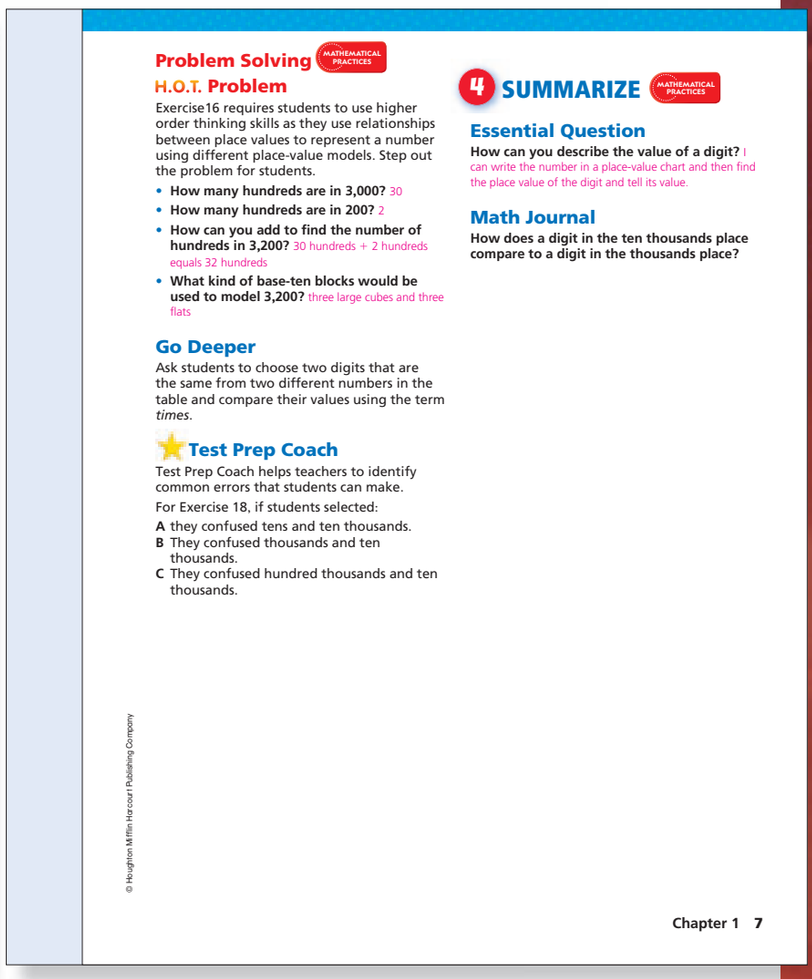
On Your Own • Independent Practice

If students complete Exercises 5 and 7 correctly, they may continue with Independent Practice.

Encourage students to work independently, but offer guidance if needed. For Exercises 8–11, point out that the value of the underlined digit should include the digit in the answer. Point out that students should be giving the value of the number, not just the place value that is represented by the number. For example, in Exercise 8, students should indicate the answer as *30,000* instead of *ten thousands*.

- **For Exercises 12 and 13, compare the place values of the underlined digits. How does the value of an underlined digit compare to the value of the digit that is one place to its right?** The value of the digit is 10 times the value of the digit to the right.

If students have trouble comparing the underlined digits in Exercises 12 and 13, ask them to write the value of each underlined digit before they compare them.



Problem Solving MATHEMATICAL PRACTICES

H.O.T. Problem

Exercise16 requires students to use higher order thinking skills as they use relationships between place values to represent a number using different place-value models. Step out the problem for students.

- **How many hundreds are in 3,000?** 30
- **How many hundreds are in 200?** 2
- **How can you add to find the number of hundreds in 3,200?** 30 hundreds + 2 hundreds equals 32 hundreds
- **What kind of base-ten blocks would be used to model 3,200?** three large cubes and three flats

Go Deeper

Ask students to choose two digits that are the same from two different numbers in the table and compare their values using the term *times*.

Test Prep Coach

Test Prep Coach helps teachers to identify common errors that students can make.

For Exercise 18, if students selected:

A they confused tens and ten thousands.
B They confused thousands and ten thousands.
C They confused hundred thousands and ten thousands.

4 SUMMARIZE MATHEMATICAL PRACTICES

Essential Question

How can you describe the value of a digit? I can write the number in a place-value chart and then find the place value of the digit and tell its value.

Math Journal

How does a digit in the ten thousands place compare to a digit in the thousands place?

Investigate • Place Value and Patterns

Common Core Standard CC.5.NBT.1
Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

Lesson Objective Recognize the 10 to 1 relationship among place-value positions.

Essential Question How can you describe the relationship between two place-value positions?

1 ENGAGE

GO Online *i*Tools

Materials *i*Tools: Base-Ten Blocks

Access Prior Knowledge Use the *i*Tools to model tens to 100. Ask students to explain how to recognize multiples of 10. Possible answers: Multiples of 10 have a 0 in the ones place.

Work with students to model hundreds to 1,000. Write the numbers on the board and ask students how they can recognize multiples of 100. Possible answer: Multiples of 100 have a 0 in the ones place and the tens place.

2 TEACH and TALK

GO Online *i*Tools

Investigate

MATHEMATICAL PRACTICES

Review with students the value of each type of base-ten block and the relationship from one type to the next.

Ask the following questions to help students fill in the blanks for Part A.

- **How many of the small cubes would it take to make 1 long?** 10
- **How many of the longs would it take to make 1 flat?** 10
- **How many of the flats would it take to make 1 large cube?** 10
- **Ten is how many times greater than 1?** 10 times greater

For Part B, students should recognize that each base-ten block is $\frac{1}{10}$ of the base-ten block to its left. If students are having difficulty understanding $\frac{1}{10}$, then point out that "$\frac{1}{10}$ of" is the same as dividing by 10.

- **What is $\frac{1}{10}$ of 30?** 3
- **What is $\frac{1}{10}$ of 400?** 40

Ask students to discuss the reason they might use base-ten blocks to solve math problems. Talk about the benefit of using visual models to conceptualize place value and patterns in math. Explain that comparing numbers with manipulatives such as base-ten blocks can help students visualize and understand the relationship between place-value positions.

Use **Math Talk** to focus on students' understanding of the relationship between two place-value positions. Encourage students to think about the question visually.

- **By how many times does each model increase to get to the size of the model after it?** 10 times
- **What does it mean when we say that the large cube is 1,000 times larger than the small cube?** It takes 1,000 small cubes to be the size of the large cube.