Topic B

Multiplication by 10, 100, and 1,000

4.NBT.5, 4.OA.1, 4.OA.2, 4.NBT.1

Focus Standard: 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Instructional Days: 3

Coherence - Links from: G3–M1 Properties of Multiplication and Division and Problem Solving with Units of 2–5 and 10
- Links to: G5–M1 Place Value and Decimal Fractions

In Topic B, students examine multiplication patterns when multiplying by 10, 100, and 1,000. Reasoning between arrays and written numerical work allows students to see the role of place value units in multiplication (as pictured below). Students also practice the language of units to prepare them for multiplication of a single-digit factor by a factor with up to four digits. Teachers also continue using the phrase “____ is ____ times as much as ____” (e.g., 120 is 3 times as much as 40). This carries forward multiplicative comparison from Topic A in the context of area to Topic B in the context of both calculations and word problems.

In preparation for two-digit by two-digit multiplication, students practice the new complexity of multiplying 2 two-digit multiples of 10. For example, students have multiplied 20 by 10 on the place value chart and know that it shifts the value one place to the left, 10 × 20 = 200. To multiply 20 by 30, the associative property allows for simply tripling the product, 3 × (10 × 20), or multiplying the units, 3 tens × 2 tens = 6 hundreds (alternatively, (3 × 10) × (2 × 10) = (3 × 2) × (10 × 10)).

[Image of multiplication diagrams showing patterns for multiplying by 10, 100, and 1,000]
Introducing this early in the module allows students to practice this topic during fluency so that by the time it is embedded within the two-digit by two-digit multiplication in Topic H, both understanding and procedural fluency have been developed. Specifically, the lessons build understanding in the following way. In Lesson 4, students interpret and represent patterns when multiplying by 10, 100, and 1,000 in arrays and numerically. Next, in Lesson 5, students draw disks to multiply single-digit numbers by multiples of 10, 100, and 1,000. Finally, in Lesson 6, students use disks to multiply two-digit multiples of 10 by two-digit multiples of 10 (4.NBT.5) with the area model.

A Teaching Sequence Towards Mastery of Multiplication by 10, 100, and 1,000

Objective 1: Interpret and represent patterns when multiplying by 10, 100, and 1,000 in arrays and numerically. (Lesson 4)

Objective 2: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns. (Lesson 5)

Objective 3: Multiply two-digit multiples of 10 by two-digit multiples of 10 with the area model. (Lesson 6)
Lesson 4

Objective: Interpret and represent patterns when multiplying by 10, 100, and 1,000 in arrays and numerically.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (4 minutes)
- Concept Development (34 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (12 minutes)

- Rename the Unit 4.NBT.1 (3 minutes)
- Group Count by Multiples of 10 and 100 4.NBT.1 (5 minutes)
- Find the Area and Perimeter 4.MD.3 (4 minutes)

Rename the Unit (3 minutes)

Materials: (S) Personal white boards

Note: Renaming units will help prepare students for the next fluency drill and this lesson's content.

Repeat the process from G4–M3–Lesson 2 using the following suggested sequence: 8 tens, 9 tens, 11 tens, 14 tens, 14 hundreds, 14 thousands, 18 tens, 28 tens, 28 hundreds, and 28 thousands.

Group Count by Multiples of 10 and 100 (5 minutes)

Note: Changing units helps prepare students to recognize patterns of place value in multiplication.

T: Count by threes to 30.
S: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30.
T: Now count by 3 tens. When I raise my hand, stop counting.
S: 3 tens, 6 tens, 9 tens.
T: (Raise hand.) Say the number.
S: 90.
T: Continue.
S: 12 tens, 15 tens.
T: (Raise hand.) Say the number.
S: 150.

Repeat the process for 21 tens, 27 tens, and 30 tens.

Repeat the process, counting by 4 hundreds, stopping to convert at 12 hundreds, 20 hundreds, 32 hundreds, and 40 hundreds.

Repeat the process, counting by 6 hundreds, stopping at 18 hundreds, 30 hundreds, 48 hundreds, and 60 hundreds.

Find the Area and Perimeter (4 minutes)

Materials: (S) Personal white boards

Note: This will review content from G4–M3–Lessons 1 and 2.

Repeat the process from G4–M3–Lesson 2 for the following possible suggestions:

- Rectangles with dimensions of 9 cm × 2 cm, 7 cm × 5 cm, and 3 cm × 8 cm.
- Squares with lengths of 7 cm and 8 m.
- Rectangles with a given area of 10 square cm, length 2 cm, and width $x$; area of 35 square cm, length 5 cm, and $x$ for the length; and area of 54 square m, width 6 cm, and $x$ for the length.

Application Problem (4 minutes)

Samantha received an allowance of $3 every week. By babysitting, she earned $30 every week. How much money did Samantha have in four weeks combining her allowance and her babysitting?

Note: The multiplication of two-digit multiples of 10 by single-digit numbers is a Grade 3 Standard (3.NBT.3). Problem 2 relates to the Concept Development in Lesson 4. Students may solve it one way here and may find a simplifying strategy to solve after the lesson has been taught.
Lesson 4: Interpret and represent patterns when multiplying by 10, 100, and 1,000 in arrays and numerically.

Date: 8/28/13

Concept Development (34 minutes)

Materials: (S) Personal white boards

Problem 1: Draw number disks to represent products when multiplying by a one-digit number.

T: (Draw 3 ones on the place value chart.) How many do you see?
S: 3 ones.
T: How many groups of 3 ones do you see?
S: Just 1.
T: (Write 3 ones \( \times 1 \)) Suppose I wanted to multiply 3 ones by ten instead. (Underneath, write 3 ones \( \times 10 \)) How would I do that?
S: We can just move each disk over to the tens place and get 3 tens.
T: (Draw an arrow indicating that the disks shift one place to the left, label it \( \times 10 \) and write 3 ones \( \times 10 = 3 \) tens.) What if I wanted to multiply that by 10?
S: Do the same thing. Move them one more place into the hundreds and get 3 hundreds.
T: (Repeat the procedure on the place value chart, but now write 3 ones \( \times 10 \times 10 = 3 \) hundreds.) Look at my equation. I started with 3 ones. What did I multiply 3 ones by to get 3 hundreds? Turn and talk.
S: We multiplied by 10 and then multiplied by 10 again. \( \rightarrow \) We multiplied by 10 \( \times 10 \), but that's really 100. \( \rightarrow \) I can group the 10 \( \times 10 \), so this is really \( 3 \times (10 \times 10) \). That's just 3 \( \times 100 \).
T: Work with your partner to figure out how to do 3 \( \times 1,000 \).
S: I showed 3 times 1,000 by showing 3 ones \( \times 10 \) to get 3 tens. Then I did times 10 again to get 3 hundreds and times 10 again to show 3 thousands. \( \rightarrow \) I drew an arrow representing times 1,000 from 3 ones to the thousands column.
T: What is 3 \( \times 10 \times 10 \times 10 \) or 3 \( \times 1,000 \) ?
S: 3,000.
Repeat with 4 \( \times 10 \), 4 \( \times 100 \), 4 \( \times 1,000 \).
Problem 2: Draw number disks to represent products when multiplying by a two-digit number.

Display $15 \times 10$ on the board.

T: Use number disks to represent 15 and draw $15 \times 10$.

S: I drew an arrow to the next column. \( \rightarrow \) I drew an arrow to show times 10 for the 1 ten and also for the 5 ones.

T: Right, we need to show \( \times 10 \) for each of our units.

T: What is 1 ten \( \times 10 \)?

S: 1 hundred.

T: What is 5 ones \( \times 10 \)?

S: 5 tens.

T: $15 \times 10$ equals?

S: 150.

Display $22 \times 100$ on the board.

T: With your partner, represent $22 \times 100$ using number disks.

S: I drew 2 tens and 2 ones and showed times 10. Then I did times 10 again. \( \rightarrow \) I drew 2 tens and 2 ones and showed times 100 by moving two place values to the left.

T: How can we express your solution strategies as multiplication sentences?

S: $22 \times 10 \times 10$.

\( \rightarrow \) $22 \times 100$.

T: What is $22 \times 100$?

S: 2,200.

Problem 3: Decomposing multiples of 10 before multiplying.

Display $4 \times 20$ on the board.

T: Just like $3 \times 100$ could be expressed as $3 \times 10 \times 10$, there are different ways to show $4 \times 20$ to help us multiply. What is another way that I could express $4 \times 20$?

S: $4 \times 2$ tens. \( \rightarrow \) $4 \times 2 \times 10$. \( \rightarrow \) $8 \times 10$.

T: Discuss with your partner which of these methods would be most helpful to you to solve $4 \times 20$.

Allow one minute to discuss.

S: $4 \times 2$ tens is the most helpful for me because I know $4 \times 2$. \( \rightarrow \) $4 \times 2 \times 10$ is the most helpful because it is similar to $4 \times 2$ tens. I can do $4 \times 2$ first, which I know is 8. Then I can do 8 times 10, which I know is 80.

T: When multiplying with multiples of 10, you can decompose a factor to help you solve. In this example, we expressed $4 \times 20$ as $(4 \times 2) \times 10$.

Display $6 \times 400$ on the board.
Lesson 4: Interpret and represent patterns when multiplying by 10, 100, and 1,000 in arrays and numerically.

T: With your partner, solve $6 \times 400$. Use a simplifying strategy so that you are multiplying by 10, 100, or 1,000.

Allow one minute to work. Have students share their decomposition and simplifying strategies.

S: $6 \times 4$ hundreds. $\rightarrow (6 \times 4) \times 100$. $\rightarrow 24 \times 100$.

T: Using the expression of your choice, solve for $6 \times 400$.

S: $6 \times 400$ is 24 hundreds or 2,400.

Display $4 \times 500$ on the board.

T: Use a simplifying strategy to solve $4 \times 500$.

Allow one minute to work. Have students share their decomposition and simplifying strategies.

S: $4 \times 5$ hundreds. $\rightarrow (4 \times 5) \times 100$. $\rightarrow 20 \times 100$. $\rightarrow (2 \times 10) \times 100$. $\rightarrow 2 \times 1,000$.

T: Using the expression of your choice, solve for $4 \times 500$.

S: $4 \times 500$ is 2 thousands or 20 hundreds or 2,000.

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.
Lesson 4

Lesson Objective: Interpret and represent patterns when multiplying by 10, 100, and 1,000 both in arrays and numerically.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. 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 and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

- What is the difference between saying 10 more and 10 times as many?
- What is another expression that has the same value as 10 × 800 and 1,000 × 8?
- Think about the problems we solved during the lesson and the problems you solved in the Problem Set. When does the number of zeros in the factors not equal the number of zeros in the product?
- For Problem 4, 12 × 10 = 120, discuss with your partner whether or not this equation is true: 12 × 10 = 3 × 40. (Problem 7 features 3 × 40.)
- How did the Application Problem connect to today’s lesson?

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 5

Objective: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

Suggested Lesson Structure

- Fluency Practice (8 minutes)
- Concept Development (42 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (8 minutes)

- Group Count by Multiples of 10 and 100 4.NBT.1 (4 minutes)
- Multiply Units 4.NBT.1 (4 minutes)

Group Count by Multiples of 10 and 100 (4 minutes)

Note: Changing units will help prepare students to recognize patterns of place value in multiplication.

Repeat the process from G4–M3–Lesson 4 using the following suggested sequence:

- Sevens, stopping to convert at 14 tens, 35 tens, 63 tens, and 70 tens
- Eights, stopping to convert at 24 hundreds, 40 hundreds, 64 hundreds, and 80 hundreds
- Nines, stopping to convert at 27 hundreds, 45 hundreds, 63 hundreds, and 90 hundreds

Multiply Units (4 minutes)

Materials: (S) Personal white boards

Note: This fluency drill will give students practice reviewing content from G4–M3–Lesson 4.

T: (Write 3 × 2 = ____.) Say the multiplication sentence in unit form.
S: 3 ones × 2 = 6 ones.
T: Write the answer in standard form.
S: (Write 6.)
T: (Write 30 × 2 = ____.) Say the multiplication sentence in unit form.
S: 3 tens × 2 = 6 tens.
T: Write the answer in standard form.
S: (Write 60.)
Lesson 5

Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

Date: 8/28/13

Concept Development (42 minutes)

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

Problem 1: Use number disks to represent multiplication patterns.

Write the following on the board:

2 ones × 4  2 tens × 4  2 hundreds × 4  2 thousands × 4

T: Show 2 ones × 4 on your place value chart. Circle each group of 2 ones.
T: Show 2 tens × 4 on your place value chart. Circle each group of 2 tens.
T: 2 ones × 4 is?
S: 8 ones.
T: 2 tens × 4 is?
S: 8 tens. → 80.
T: With your partner, represent 2 hundreds × 4. Circle each group of 2 hundreds.
T: (Allow about one minute.) What did you notice about multiplying 2 hundreds × 4 compared to 2 tens × 4?
S: There was the same number of number disks. → It was almost the same except I used disks that represented 1 hundred instead of 10. → The value of the disks is in the hundreds, so my answer is larger.
T: 2 hundreds × 4 is?
S: 8 hundreds. → 800.
T: What do you think would happen if we multiplied 2 thousands × 4?
S: It would look the same again! But instead of disks representing 100, we would use disks representing 1,000. → The answer would be 8 thousands because we multiplied 2 times 4 in the thousands column.

Repeat with 30 × 3, 300 × 3, and 3,000 × 3.
Lesson 5: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

Problem 2: Numerically represent single-digit numbers times a multiple of 10.

Display \(8 \times 2, 8 \times 20, 8 \times 200,\) and \(8 \times 2,000\) horizontally on the board.

- **T:** With your partner, solve these multiplication problems in unit form.

Allow students two minutes to work in pairs.

- **T:** What patterns do you notice?
- **S:** All of the problems have 8 as a factor. → The units are in order of the place value chart, smallest to largest. → The unit we multiply is the same unit we get in our answer. Like \(8 \times 2\) tens equals 16 tens and \(8 \times 2\) hundreds is 16 hundreds.

- **T:** What happens if we change the unit from \(8 \times 2\) hundreds to \(8\) hundreds \(\times 2\)? Does the answer change?
- **S:** Nothing happens. → The answer stays the same even though the unit changed. → \(8 \times 2\) hundreds can be written \(8 \times (2 \times 100)\) and 8 hundreds \(\times 2\) can be written \((8 \times 100) \times 2\). Both statements are equivalent.

Repeat with \(5 \times 2, 5 \times 20, 5 \times 200,\) and \(5 \times 2,000\) horizontally on the board. Note the hidden zero when multiplying 5 times 2.

Problem 3: Solve a word problem involving finding the sum of two different products of a single-digit number by a two- and three-digit multiple of 10.

1. Francisco plays a video game and earns 60 points for every coin he collects. He collected 7 coins. How many points did he earn for the coins that he collected?
2. Francisco also earns 200 points for every level he completes in the game. He completed 7 levels. How many points did he earn for the levels that he completed?
3. What was the total number of points that Francisco earned?

Introduce each step of the problem separately, instructing students to follow the RDW process. Students should ask themselves what they know and draw a bar diagram as needed before solving. Encourage students to show how they decompose each multiplication problem and promote simplifying strategies for the addition.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:
Teach English language learners and others to track information from the word problem as notes or as a model as they read sentence by sentence.
Problem 4: Solve a word problem involving 1,000 times as many.

At a concert, there were 5,000 people in the audience. That was 1,000 times the number of performers. How many performers were at the concert?

T: Write an equation to solve for how many performers were at the concert. Solve using a method of your choice.

S: I know 1,000 times the number of performers is 5,000, so to solve the equation of \( p \times 1,000 = 5,000 \), I know that there were 5 performers. \( \rightarrow \) There are 1,000 times as many people in the audience, so I can divide 5,000 by 1,000 to find 5 performers.

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 (10 minutes)

Lesson Objective: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. Invite students to review their solutions for the Problem Set. 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 and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

- What pattern did you notice while solving Problems 1, 2, and 3?
- Sometimes, we decompose using addition, such as saying 30 = 10 + 10 + 10, and sometimes we decompose using multiplication, such as saying 30 = 3 \( \times \) 10. What are some possible decompositions of 24 using addition? Multiplication?
Lesson 5: Multiply multiples of 10, 100, and 1,000 by single digits, recognizing patterns.

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 6

Objective: Multiply two-digit multiples of 10 by two-digit multiples of 10 with the area model.

Suggested Lesson Structure

- Fluency Practice (12 minutes)
- Application Problem (5 minutes)
- Concept Development (33 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (12 minutes)

- Multiply by Different Units 4.NBT.1 (4 minutes)
- Take Out the 10, 100, or 1,000 4.NBT.1 (2 minutes)
- Multiply by Multiples of 10, 100, and 1,000 4.NBT.1 (6 minutes)

Multiply by Different Units (4 minutes)

Note: This will review concepts practiced in G4–M3–Lesson 5.

T: (Write 3 × 2 = ____.) Say the multiplication sentence in unit form.
S: 3 ones × 2 = 6 ones.

Repeat the process for 30 × 2, 300 × 2, 3,000 × 2, 30 × 3, 300 × 5, 70 × 5, 400 × 8, 40 × 5, and 800 × 5.

Take Out the 10, 100, or 1,000 (2 minutes)

Note: This will help prepare students to multiply by multiples of 10, 100, or 1,000.

T: I’ll say a number. I want you to restate the number as a multiplication sentence, taking out the 10, 100, or 1,000. Ready. 20.
S: 2 × 10

T: 200.
S: 2 × 100.

T: 2,000.
S: 2 × 1,000.

Repeat the process for possible sequence: 5,000, 30, 700, 8,000, 90.
Lesson 6: Multiply two-digit multiples of 10 by two-digit multiples of 10 with
the area model.

Date: 8/28/13

Multiply by Multiples of 10, 100, and 1,000 (6 minutes)

Materials: (S) Personal white boards

Note: This will review concepts practiced in G4–M3–Lesson 5.

T: (Write 5 × 300.) Say the multiplication problem.
S: 5 × 300.
T: Rewrite the multiplication sentence taking out the 100 and solve.
S: (Write 5 × 3 × 100 = 1,500.)

Repeat process for 70 × 3, 8 × 4,000, 6 × 200, and 50 × 8.

Application Problem (5 minutes)

There are 400 children at Park Elementary School. Park High School has 4 times as many students.

a. How many students in all attend both schools?

b. Lane High School has 5 times as many students as Park Elementary. How many more students attend Lane High School than Park High School?

Park Elem [400]
Park High [400 400 400 400 4000]
Lane High [400 400 400 400 4000 4000]

1 unit = 400
5 units = 2000

2,000 students attend Park Elementary + High Schools.
400 more students attend Lane High than Park High.

Note: These problems are a review of work from G4–M3–Lesson 5.
Lesson 6

Concept Development (33 minutes)

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

Problem 1: Use the place value chart to multiply a two-digit multiple of 10 by a two-digit multiple of 10.

Display 30 × 20 on the board.

T: Here we are multiplying a two-digit number by another two-digit number. What are some other ways we could express 30 × 20?
S: 3 tens × 2 tens.
    10 × 20 × 3.
    10 × 30 × 2.
    2 × 30 × 10.
    3 × 20 × 10.

T: Let’s use 10 × 20 × 3 in a place value chart to help us solve 30 × 20.

T: What is 2 tens times 10?
S: 2 tens times 10 is 2 hundreds.
T: So the value of 10 × 20 is?
S: 200.
T: And then 200 × 3?
S: Triple that group. → 200 times 3. → 3 times 2 hundreds. → 3 groups of 2 hundred.

T: 10 × 20 × 3 is?
S: 600.

T: With your partner, represent one of the following on your place value chart:
- 10 × 30 × 2 as 10 groups of 30 times 2
- 2 × 30 × 10 as 2 groups of 30 times 10
- 3 × 20 × 10 as 3 groups of 20 times 10

Allow students two minutes to work.

T: Did you get the same answer?
S: Yes, we got 6 hundreds again.
T: When we multiply a two-digit number by another two-digit number, there are many equivalent ways to express it as a product. Decomposing our multiplication problem into more units can help us solve.
Lesson 6

Problem 2: Create an area model to represent a two-digit multiple of 10 by two-digit multiple of 10.

T: (Display 40 × 20.) Let’s model 40 × 20 as an area. Tell your partner what 40 × 20 is.
S: 4 tens times 20. That’s 80 tens or 800.
T: (Record student statement.) What is 20 in unit form?
S: 2 tens.
T: So then, what is 4 tens times 2 tens?
S: I know 4 times 2 is 8. I don’t know what to do with the units. → I know 4 times 2 is 8. That leaves both tens. 10 tens. It’s like saying 4 times 2 times 10 tens!
T: Let’s prove how we can multiply the units. (Draw a 40 by 20 rectangle.) Partition the horizontal side into 2 tens and the vertical side into 4 tens. Label each side. What is the area of the square? (Point to a 10 by 10 square.)
S: 10 times 10 is 100.
T: Say a multiplication sentence for how many of the squares there are.
S: 2 times 4 equals 8.
T: Tell your partner how this rectangle shows 4 tens times 2 tens equals 8 hundreds.
S: Each square is 10 by 10. That makes 100. There are 8 hundreds.

Problem 3: Use an area model to represent a two-digit multiple of 10 by two-digit multiple of 10.

Display 50 × 40 horizontally on the board.
T: Name 50 × 40 in unit form.
S: 5 tens times 4 tens.
T: With your partner, draw a rectangle to represent 5 tens times 4 tens.
S: I can draw the vertical side as 5 tens and the horizontal side as 4 tens. 10 times 10 is 100. 5 times 4 is 20. 20 is the same as 2 tens. 2 tens times 100 is 2,000.
T: Use a place value chart to prove 2 tens times 100 is 2,000.
Students draw a place value chart.
T: What is 50 × 40?
S: 50 times 40 is 2,000.
T: What conclusion can be made about multiplying a unit of 10 times a unit of 10?
S: 10 times 10 is always 100. So I can decompose any unit of 10, multiply how many units of 10 there are, and it will be that many hundreds. 7 tens times 8 tens is 56 of some unit. I just have to find the unit. Ten times ten is 100. So it’s 56 hundreds or 5,600.
Repeat with 60 × 30.
Lesson 6: Multiply two-digit multiples of 10 by two-digit multiples of 10 with the area model.

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 (10 minutes)

Lesson Objective: Multiply two-digit multiples of 10 by two-digit multiples of 10 with the area model.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. 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 and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

- What patterns did you notice while solving Problem 1?
- Explain to your partner how to solve the problem 80 × 50 from Problem 10. What does the answer have to do with thousands when the units in 80 and 50 are 8 tens and 5 tens?
- To solve 4 × 10 × 2 × 10, you can multiply 4 × 2 to get 8, then multiply 10 × 10 to get 100, then multiply the 8 times 100. Is it always possible to rearrange numbers like this when multiplying?
- Talk to your partner about how you each solved Problem 2. Can you come up with a different way to solve this problem?
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.