

## Lesson M-10

Preparation: You will need the overhead transparency of the graph and charts found on the front inside cover of the multiplication student book.  
 You will need a timer.  
 Each student will need his or her multiplication student book, a pencil, a red pen, and a blue pen.

### Introducing Multiplying with a Two-Digit Multiplier

#### Introducing the Lesson:

(Give students their student books. If your students need more practice with the routine for getting ready to do a lesson, use the procedures from the beginning of Lessons 1-3.)

#### Exercise 1: (Modeling and Guided Practice)

You are ready to start working on the multiplication lesson. Later, I will set the timer each time you do a page. If you finish before the timer rings, you will work on the extra practice sheet. Everybody, what will you do if you finish before the timer rings? (Signal.) *Work on the extra practice sheet.*

We will work the first three problems together on the board. After we do the three problems on the board, I will set the timer and you will solve the problems in your book.

(Write the first three problems on the board.)

		4	
		5	7
X	3	2	
	1	1	4

		3	
		2	4
X	5	8	
	1	9	2

		4	
		4	3
X	8	5	
	2	1	5

You will now learn and practice doing multiplication problems that have a two-digit multiplier.

(Touch the first problem. Point to the multiplier.) **Everybody, what do we call this number?** (Signal.) *The multiplier.*

(Point to the top number.) **Everybody, what do we call the top number?** (Signal.) *The multiplicand.*

(Point to the product.) **Everybody, what do we call the answer to a multiplication problem?** (Signal.) *The product.*

(Point to the partial product.) **This number is called the partial product. Everybody, what do we call this number?** (Signal.) *The partial product. We call this number the partial product because it is the first part of the answer. Everybody, why do we call this number the partial product?* (Signal.) *It is the first part of the answer.*

**When we multiply a number by a two-digit multiplier, we first multiply all the top numbers by the multiplier in the ones column. Everybody, which multiplier do we use first?** (Signal.) *The multiplier in the ones column.*

(Touch the carrying boxes above 5.) **These are carrying boxes. Everybody, what do we call these boxes?** (Signal.) *Carrying boxes. Carrying boxes help you stay organized when you do a multiplication problem with a two-digit multiplier.*

**The multiplication for the multiplier in the ones column has been done for you.**

(\*Note: Touch each number when students read the problem and say the answer.)

#### Example 1:

**Everybody, read the first problem.** (Signal.) *57 times 32.*

**Everybody, say the problem and the answer in the ones column for the first multiplier. Remember to say the multiplier first.** (Signal.) *2 times 7 equals 14. Yes. 2 times 7 equals 14. So 4 was put in the ones column and 1 in the bottom carrying box. Later, I will add in the 1.*

**Everybody, say the problem and the answer in the tens column for the first multiplier. Remember to say the multiplier first.** (Signal.) *2 times 5 equals 10 plus 1 equals 11. We used up the 1 in the carrying box, so it has a line drawn through it.*

**We finished multiplying by 2, so I draw a line through it.** (Draw a line through 2.) **Everybody, why did I draw a line through 2?** (Signal.) *To show we're finished multiplying by 2.*

**Let's do the next step by multiplying using the multiplier in the tens column. First, I put a zero in the ones column to show we are using the multiplier in the tens column.** (Put a zero as a place holder in the ones column of the partial product.) **Everybody, what did I put in the ones column to show we are using the multiplier in the tens column?** (Signal.) *A zero.*

**I'm ready to multiply using the multiplier in the tens column. Say the first problem and the answer. 3 times 7 equals 21. I put 1 in the tens column and put 2 in the top carrying box. I'll add the 2 in later.** (Write 1 in the tens column and put 2 in the top carrying box.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *3 times 5 equals 15 plus 2 equals 17. We used up the 2 in the carrying box, so I draw a line through it.* (Draw a line through 2. Write the answer in the appropriate columns.)

**Next, we add the two partial products. Everybody, what do we do we do next?** (Signal.) *Add the two partial products.*

**I put a plus sign to help me remember to add the partial products.** (Write a plus sign in front of the partial products.) **Everybody, why did I put a plus sign?** (Signal.) *To help you remember to add the partial products.*

**Everybody, say the problem and the answer in the ones column.** (Signal.) *4 plus 0 equals 4.* (Write the answer.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *1 plus 1 equals 2.* (Write the answer.)

**Everybody, say the problem and the answer in the hundreds column.** (Signal.) *1 plus 7 equals 8.* (Write the answer.)

**Everybody, what is the answer in the thousands column?** (Signal.) *1.* (Write the answer.)

**Everybody, what does 57 times 32 equal?** (Signal.) *1824.*

### **Example 2:**

**Everybody, read the next problem.** (Signal.) *24 times 58.*

**When we multiply a number by a two-digit multiplier, we first multiply all the top numbers by the multiplier in the ones column. Everybody, which multiplier do we use first?** (Signal.) *The multiplier in the ones column.*

**The multiplication for the multiplier in the ones column has been done for you.**

(\*Note: Touch each number when students read the problem and say the answer.)

**Everybody, say the problem and the answer in the ones column for the first multiplier. Remember to say the multiplier first.** (Signal.) *8 times 4 equals 32. Yes. 8 times 4 equals 32. So 2 was put in the ones column and 3 in the bottom carrying box. Later, I will add in the 3.*

**Everybody, say the problem and the answer in the tens column for the first multiplier. Remember to say the multiplier first.** (Signal.) *8 times 2 equals 16 plus 3 equals 19. We used up the 3 in the carrying box, so it has a line drawn through it.*

**We finished multiplying by 8, so I draw a line through it.** (Draw a line through 8.) **Everybody, why did I draw a line through 8?** (Signal.) *To show we're finished multiplying by 8.*

**Let's do the next step by multiplying using the multiplier in the tens column. First, I put a zero in the ones column to show we are using the multiplier in the tens column.** (Put a zero as a place holder in the ones column of the partial product.) **Everybody, what did I put in the ones column to show we are using the multiplier in the tens column?** (Signal.) *A zero.*

**I'm ready to multiply using the multiplier in the tens column. Say the first problem and the answer. 5 times 4 equals 20. I put zero in the tens column and put 2 in the top carrying box. I'll add the 2 in later.** (Write zero in the tens column and put 2 in the top carrying box.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *5 times 2 equals 10 plus 2 equals 12. We used up the 2 in the carrying box, so I draw a line through it.* (Draw a line through 2. Write the answer in the appropriate columns.)

**Next, we add the two partial products. Everybody, what do we do we do next?** (Signal.) *Add the two partial products.*

**I put a plus sign to help me remember to add the partial products.** (Write a plus sign in front of the partial products.) **Everybody, why did I put a plus sign?** (Signal.) *To help you remember to add the partial products.*

**Everybody, say the problem and the answer in the ones column.** (Signal.) *2 plus 0 equals 2.* (Write the answer.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *9 plus 0 equals 9.* (Write the answer.)

**Everybody, say the problem and the answer in the hundreds column.** (Signal.) *1 plus 2 equals 3.* (Write the answer.)

**Everybody, what is the answer in the thousands column?** (Signal.) *1.* (Write the answer.)

**Everybody, what does 24 times 58 equal?** (Signal.) *1392.*

### **Example 3:**

**Everybody, read the next problem.** (Signal.) *43 times 85.*

**When we multiply a number by a two-digit multiplier, we first multiply all the top numbers by the multiplier in the ones column. Everybody, which multiplier do we use first?** (Signal.) *The multiplier in the ones column.*

**The multiplication for the multiplier in the ones column has been done for you.**

(\*Note: Touch each number when students read the problem and say the answer.)

**Everybody, say the problem and the answer in the ones column for the first multiplier. Remember to say the multiplier first.** (Signal.) *5 times 3 equals 15. Yes. 5 times 3 equals 15. So 5 was put in the ones column and 1 in the bottom carrying box. Later, we will add in the 1.*

**Everybody, say the problem and the answer in the tens column for the first multiplier. Remember to say the multiplier first.** (Signal.) *5 times 4 equals 20 plus 1 equals 21. We used up the 1 in the carrying box, so it has a line drawn through it.*

**We finished multiplying by 5, so I draw a line through it.** (Draw a line through 5.) **Everybody, why did I draw a line through 5?** (Signal.) *To show we're finished multiplying by 5.*

**Let's do the next step by multiplying using the multiplier in the tens column. First, I put a zero in the ones column to show we are using the multiplier in the tens column.** (Put a zero as a place holder in the ones column of the partial product.) **Everybody, what did I put in the ones column to show we are using the multiplier in the tens column?** (Signal.) *A zero.*

**I'm ready to multiply using the multiplier in the tens column. Say the first problem and the answer. 8 times 3 equals 24. I put 4 in the tens column and put 2 in the top carrying box. I'll add the 2 in later.** (Write 4 in the tens column and put 2 in the top carrying box.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *8 times 4 equals 32 plus 2 equals 34. We used up the 2 in the carrying box, so I draw a line through it.* (Draw a line through 2. Write the answer in the appropriate columns.)

**Next, we add the two partial products. Everybody, what do we do we do next?** (Signal.) *Add the two partial products.*

**I put a plus sign to help me remember to add the partial products.** (Write a plus sign in front of the partial products.) **Everybody, why did I put a plus sign?** (Signal.) *To help you remember to add the partial products.*

**Everybody, say the problem and the answer in the ones column.** (Signal.) *5 plus 0 equals 5.* (Write the answer.)

**Everybody, say the problem and the answer in the tens column.** (Signal.) *1 plus 4 equals 5.* (Write the answer.)

**Everybody, say the problem and the answer in the hundreds column.** (Signal.) *2 plus 4 equals 6.* (Write the answer.)

**Everybody, what is the answer in the thousands column?** (Signal.) *3.* (Write the answer.)

**Everybody, what does 43 times 85 equal?** (Signal.) *3655.*

## **Exercise 2: (Completing the Worksheet)**

**Find Lesson M-10.** (Check to make sure every student has the correct page.)

**You are ready to solve the problems for Lesson M-10. Remember to show your work for each problem.**

**You have 12 min. to complete this page. When I say, “go!” pick up your pencil and start working.**

**If you finish before the timer rings, work on Extra Practice Sheet M-10 at the back of your student book. Everybody, what will you do if you finish before the timer rings?** (Signal.) *Work on Extra Practice Sheet M-10.*

(\*Note: If students complete Extra Practice Sheet M-10, they may work on any previous extra practice pages not completed. They must not work ahead, as they may not have the necessary skills to successfully solve the problems independently.

 Set timer for 12 min.) **Ready.** (Pause.) **Set.** (Pause.) **Go!**

(Circulate as students work giving encouragement. When the timer rings, have students put their pencils down.

Students need their red pens for marking. Make sure all students have their pencils and blue pens at home base.

Use the following procedure for marking:)

**We will say each problem and the answer two times. If an answer is incorrect or not done, circle it. Everybody, what will you do if an answer is incorrect or not done?** (Signal.) *Circle it. Yes, circle it.*

**You will go back later to fix incorrect answers with your blue pen. Everybody, when will you fix incorrect answers?** (Signal.) *Later.*

**57 times 32 equals 1824. Everybody, what does 57 times 32 equal?** (Signal.) *1824.* (Repeat procedure for remaining problems on the page. Have students write the number of problems they have correct in the box at the top of the page.

\*Note: students will be working with the second chart, the one designed for 12 problems, from this point until the end of the module.

Display the overhead transparency of the charts from inside the front cover of the student book. Ask students to turn to the page inside the front cover of their student book.) **You will record your progress on a chart like this found inside the front cover of your student book.**

(Point to the chart with 12 problems.) **For example, let’s say I have 11 problems correct on Lesson M-10. I write the number 11 in the box labeled M-10.** (Demonstrate.)

**Record the number of problems you have correct in the box labeled M-10 in your student book.** (Check.)

**For the rest of the lessons in your multiplication student book, you will use the chart titled M-10—M-24 to figure out the percentage of problems you have correct. Which chart will you use?** *The one titled M-10—M-24.*

**Next, I figure out the percentage of problems I had correct. I had 11 problems correct so I had 92% of the problems correct.**

(Demonstrate finding the percentage on the chart.)

**Find the percentage of problems you had correct. Make sure you are using the chart titled M-10—M-24, the one for 12 problems. Touch this percentage on the chart in your student book. (Check.)**

**Finally, I put a dot on the graph to show my percentage of problems correct. (Demonstrate.)**

**Put a dot on your graph to show the percentage of problems you had correct. (Check.)**

Have students record their percent of correct problems on the chart inside the front cover of the student book.

 Set the timer for 5 min. for corrections. Circulate and mark corrections. Write a star or your initials at the top of the page when all corrections are complete. Students who are finished with corrections should work on Extra Practice Sheet M-10, and then any previous extra practice pages not completed.)



M-10

$$\begin{array}{r} \square \\ 4 \\ 57 \\ \times 32 \\ \hline 114 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 3 \\ 24 \\ \times 58 \\ \hline 192 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 4 \\ 43 \\ \times 85 \\ \hline 215 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 2 \\ 29 \\ \times 43 \\ \hline 87 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 4 \\ 92 \\ \times 26 \\ \hline 552 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 4 \\ 52 \\ \times 69 \\ \hline 468 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 4 \\ 83 \\ \times 75 \\ \hline 415 \\ \hline \end{array}$$

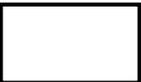
$$\begin{array}{r} \square \\ 4 \\ 62 \\ \times 97 \\ \hline 434 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 3 \\ 15 \\ \times 37 \\ \hline 105 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 2 \\ 48 \\ \times 43 \\ \hline 144 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 4 \\ 86 \\ \times 53 \\ \hline 258 \\ \hline \end{array}$$

$$\begin{array}{r} \square \\ 2 \\ 94 \\ \times 86 \\ \hline 564 \\ \hline \end{array}$$



Extra Practice M-10

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 \times 15 \\
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 \times 16 \\
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 \times 25 \\
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 \times 42 \\
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 138 \\
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 \times 23 \\
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