



LESSON 2.1

Algebra • Multiplication
Comparisons

Reteach Tier 1

Visual
Whole Class / Small Group

Materials Coins (dimes) (see *eTeacher Resources*), large sheet of paper

- Present this problem: **Joy has 4 times as many dimes in her pocket as Martin. Martin has 3 dimes in his pocket. How many dimes does Joy have?**
- **How can we represent Martin’s dimes?** Give students time to respond. Then draw a rectangle and put 3 dimes inside.
- **How can we represent Joy’s dimes?** Give students time to respond. Then draw 4 same-size rectangles and put 3 dimes in each.
- **What equation can we write and solve?** $4 \times 3 = n$,
or $4 \times 3 = 12$ **How many dimes does Joy have?** 12 dimes
- Read the comparison sentence for the equation: 4 times as many as 3 is 12.

Tier 2

Kinesthetic / Visual
Small Group

Materials counters, large sheet of paper

- Present this problem: **Lee has 4 pins. Kaya has 2 times as many pins. How many pins does Kaya have?**
- Have students draw a rectangle to represent Lee’s pins. **How many pins does Lee have?** 4 Have students put 4 counters inside the rectangle.
- Have students draw two connected rectangles to represent Kaya’s pins. **Why are there 2 rectangles?** Kaya has 2 times as many pins.
- **How many pins go in each of Kaya’s rectangles?** 4 Have students put 4 counters inside each rectangle. **How many pins does Kaya have?** 8
- Explain how the equation $2 \times 4 = 8$ represents the model. Read the comparison sentence for the equation: “2 times as many as 4 is 8.”

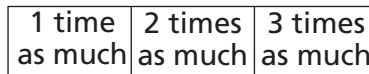
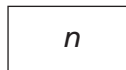
LESSON 2.2
Algebra • Comparison Problems
Reteach
Tier 1

**Visual
Whole Class / Small Group**

- Present the following comparison:

Sam’s dog weighs 3 times as much as Billy’s dog.

- Have students focus on the phrase *3 times as much as*. Draw a box, labeled n . Tell students that the box represents the weight of Billy’s dog. Then draw a row below of 3 boxes that are each the same size as box n . Label the boxes from left to right: “1 time as much,” “2 times as much,” “3 times as much.”



- Model how to use the bar model to write an expression for the combined weight of Sam’s and Billy’s dogs: $4 \times n$.

Tier 2

**Visual / Kinesthetic
Small Group**

Materials counters, large sheet of paper

- Present the following problem.

Maya has 3 times as many books as Tony. Together, they have 12 books. How many books does Maya have?

- Draw a box. Tell students that it represents Tony’s books.
- **How many boxes should we draw to represent Maya’s books? Explain.** *3; She has 3 times as many books.*
- Complete the model. Have students use 12 counters to represent the books. Guide them to place 1 counter in Tony’s box and 1 counter in each of Maya’s boxes until all 12 counters have been used.
- Ask how many counters are in Maya’s boxes and how many books she has. **9**



LESSON 2.3

Multiply Tens, Hundreds, and Thousands

Reteach Tier 1  **Visual / Kinesthetic**
Whole Class / Small Group

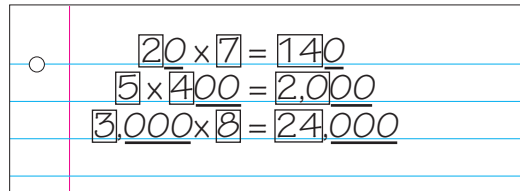
- Have students write these three problems.

$$20 \times 7 = 140$$

$$5 \times 400 = 2,000$$

$$3,000 \times 8 = 24,000$$

- Have students draw a box around the basic fact and underline the zeros in the factor and the product. Explain that there should not be a digit both underlined and boxed.



Tier 2  **Visual / Logical**
Small Group

Materials MathBoard

- Work with students to model 3×1 , 3×10 , and 3×100 on their MathBoards.

$3 \times 1 = 3$ • • •

$3 \times 10 = 30$ _____ _____ _____

$3 \times 100 = 300$

- Have students explain how each model represents the multiplication sentence next to it.



LESSON 2.4

Estimate Products

Reteach Tier 1



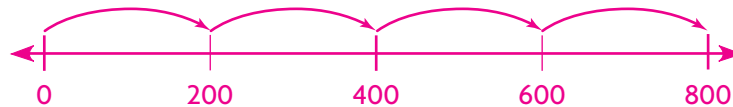
Kinesthetic / Visual
Whole Class / Small Group

Have students estimate $= 4 \times 215$.

- Have them draw a number line to help them round 215 to the nearest hundred.



- What is 215 rounded to the nearest hundred? 200
- Draw another number line to find 4×200 . 800



- Give students additional problems to solve that involve estimating products. Check students' work.

Tier 2



Kinesthetic
Small Group

Materials Number Lines (by tens and hundreds) (see *eTeacher Resources*)

- Write 2×123 on the board. Explain that to estimate the product, students can round 123 to the nearest hundred.
- Have students plot a point for 123 on a hundreds number line. Help them see that 123 is between 100 and 200, but closer to 100. Explain that they will find 2×100 to estimate the product.
- How can we use a number line to find 2×100 ? Possible answer: I can skip count by 100 two times to get 200.
- Repeat the activity for 3×235 .

LESSON 2.5
Investigate • Multiply Using the Distributive Property
Reteach
Tier 1


Visual / Kinesthetic

Whole Class / Small Group

Materials 1-Centimeter Grid Paper (see *eTeacher Resources*)

- Present the following problem to students.

$$3 \times 17$$

- **What two numbers will 17 break apart into that would be easy to multiply?** 10 and 7
- Have students model the multiplication problem using grid paper to make a 3 by 17 rectangle. The rectangle should be broken apart into two smaller rectangles, 3 by 10 and 3 by 7.
- Students should find and record the partial products represented by each smaller rectangle. 30; 21 Then have students find the sum of the partial products.
- **What is 3×17 ?** 51

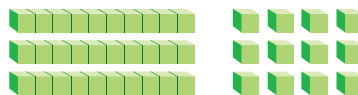
Tier 2


Visual / Kinesthetic

Small Group

Materials base-ten blocks

- Write 3×14 on the board. Have students use base-ten blocks to model the problem.



- **Multiply the tens: 3 groups of ten or 3×10 . What is the product?** 3 tens or 30
- **Multiply the ones: 3 groups of 4 or 3×4 . What is the product?** 12
- **Now we can add the partial products. What is $30 + 12$?** 42
- Repeat the activity by having students model 4×13 , 2×16 , and 5×15 .

LESSON 2.6

Multiply Using Expanded Form

Reteach Tier 1



Kinesthetic / Visual
Whole Class / Small Group

Materials 1-Inch Grid Paper (see *eTeacher Resources*)

- Students may have trouble lining up place values when adding the partial products. Write the problem 4×517 on the board.
- **What is 517 written in expanded form?** $(500 + 10 + 7)$
- Have students use the Distributive Property to multiply.
 $(4 \times 500) + (4 \times 10) + (4 \times 7)$
- Then ask students to find each partial product.
 $2,000 + 40 + 28$
- Have students write each partial product on grid paper, lining up place values.
- Then have students add the partial products. $2,068$
- Repeat with similar problems.

	2,	0	0	0
			4	0
+			2	8
	2,	0	6	8

Tier 2



Visual
Small Group

- Write 2×123 on the board. **What is 123 written in expanded form?** $100 + 20 + 3$ Write it on the board.
- Show students how to represent 2×123 using expanded form and the area model.
- **What multiplication expression can we write to represent the large rectangle?** 2×100
What expression can we write for the next rectangle? 2×20 **And the last rectangle?** 2×3
- Show students how to add the expressions to represent the entire area: $(2 \times 100) + (2 \times 20) + (2 \times 3)$. Explain that $2 \times (100 + 20 + 3) = (2 \times 100) + (2 \times 20) + (2 \times 3)$.
- Then find the partial products and add them to find the answer. $200 + 40 + 6 = 246$

	100	20	3
2	<input type="text"/>	<input type="text"/>	<input type="text"/>



LESSON 2.7

Multiply Using Partial Products

Reteach Tier 1



Kinesthetic / Visual
Whole Class / Small Group

Materials 1-Centimeter Grid Paper (see *eTeacher Resources*)

- Students may have trouble lining up place values. Write the problem 6×527 on the board.
- Have students label columns of a grid with place value names to record partial products.

th	h	t	o	
3,	0	0	0	6×5 hundreds
	1	2	0	6×2 tens
+		4	2	6×7 ones
3,	1	6	2	

- Multiply the value of each place by the single-digit factor.
- Add the partial products.
- Have students repeat the process using the problem 8×462 . **3,696**

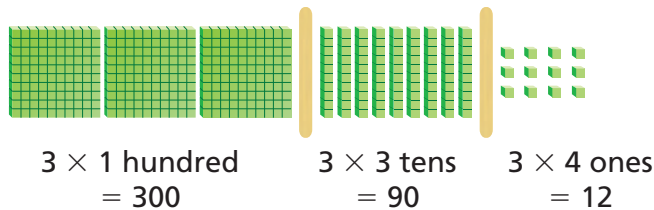
Tier 2



Visual / Kinesthetic
Small Group

Materials base-ten blocks, craft sticks

- Write 3×134 on the board. Show 134 written as 1 hundred, 3 tens, and 4 ones.
- Have students model 3×134 . They can then record the partial products in vertical form beneath their models.



- Add the partial products to find 3×134 . What is the product? **402**
- Repeat the activity with similar multiplication problems.



LESSON 2.8

Multiply Using Mental Math

Reteach Tier 1



Logical / Mathematical
Whole Class / Small Group

- Write 3×525 on the board.
- Tell students that if they think of 525 as $500 + 25$, they can find the product of 3×525 mentally.
- Now write the following on the board: $(3 \times 500) + (3 \times 25)$
- Ask students to find 3×500 and 3×25 . 1,500; 75
- Explain that $1,500 + 75$, or 1,575, is equivalent to the product of 3×525 .

Tier 2



Logical / Mathematical
Small Group

- Write 4×300 on the board.
- **How can you find half of a number?** Divide by 2.
- **How can you double a number?** Multiply by 2.
- Tell students they are going to find the product by *halving and doubling*.

Half of 4 is _____. 2

Half of 4×300 is $2 \times 300 =$ _____. 600

To find 4×300 , double 600.

Double 600 is $2 \times 600 =$ _____. 1,200

- Repeat the activity with other multiplication problems suitable for halving and doubling.

**RtI****Response to Intervention****LESSON 2.9****Problem Solving • Multistep
Multiplication Problems****Reteach****Tier 1****Kinesthetic / Visual
Whole Class / Small Group****Materials** two-color counters

A theater has 5 rows of 9 seats. Three seats in the middle of the first two rows are more expensive than the others. How many of the less expensive seats are there?

- Students should first arrange 5 rows of 9 counters with the yellow side facing up.
- Have students multiply to find the total number of seats. **45**
- Have the students indicate the seats that are more expensive by flipping over the appropriate counters. **2 rows of 3 should be turned over, or red**
- Have the students count the number of counters that are now red and those that are now yellow. **6; 39**
- Elicit ideas from students for ways to find the number of less-expensive seats without using counters. **Possible answer: find the total number of seats, find the number of seats that are more expensive, subtract.**

Tier 2**Visual / Kinesthetic
Small Group****Materials** two-color counters

The library has 2 rows of 7 seats. People are sitting in the first two seats in each row. How many seats are empty?

- **What are you asked to find?** **how many seats are empty**
- **Use your red counters to show all the seats. How will you arrange the counters?** **2 rows, each with 7 counters**
- **Now flip the counters over to show seats that are taken. What counters will you flip?** **the first two counters in each row**
- Remind students that the red counters in their models show empty seats and the yellow counters show seats that are taken.
- **How can you find the number of empty seats? How many are there?** **Possible answer: count the red counters; 10 empty seats**



LESSON 2.10

Multiply 2-Digit Numbers with Regrouping

Reteach Tier 1



Kinesthetic / Visual
Whole Class / Small Group

- Guide students through this regrouping problem:

$$\begin{array}{r} 47 \\ \times 3 \\ \hline \end{array}$$

- **What is 3×7 ? 21**
- **How do you write that in your problem?**

I put the 1 in the ones place under the 7 and the 3. I put the 20 or 2 tens over the tens place above the problem.

$$\begin{array}{r} 2 \\ 47 \\ \times 3 \\ \hline 1 \end{array}$$

- **What is the next step?**

I multiply 3 times 4 tens, which is 12 tens, and then add the regrouped 2 tens. $12 + 2 = 14$

$$\begin{array}{r} 2 \\ 47 \\ \times 3 \\ \hline 141 \end{array}$$

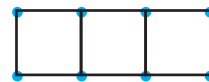
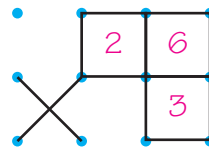
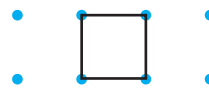
Tier 2



Visual / Kinesthetic
Small Group

Materials Dot Paper (overall, 1 cm apart) (see *eTeacher Resources*), base-ten blocks

- Show students how to draw multiplication frames on grid paper. Then guide them as they write 26×3 in the frames.
- **What numbers will you multiply? 3×6 What is the product? 18**
- **Model 18 with 18 ones blocks. Can we regroup the ones? yes**
Have students regroup the blocks and explain how to record the regrouping in the frame.
- Continue the multiplication.



LESSON 2.11

Multiply 3-Digit and 4-Digit Numbers with Regrouping

Reteach Tier 1



Visual / Kinesthetic
Whole Class / Small Group

Materials Place-Value Charts (see *eTeacher Resources*)

- Before beginning the activity, create place-value charts like the one below.
- Present students with the problem 2×346 . Monitor students as they place each factor in the chart.
- **Multiply the ones first. What is 2×6 ones? 12 ones Do you need to regroup? yes After you regroup, how many tens do you have and how many ones do you have? 1 ten, 2 ones**
- Have students explain where they recorded 2 and 1 in the chart.

thousands	,	hundreds	tens	ones
		3	¹ 4	6
	×			2
		6	9	2

- Continue to guide students through the problem. At each step, make sure students are recording the multiplication correctly.

Tier 2



Kinesthetic / Visual
Small Group

Materials 1-Centimeter Grid Paper (see *eTeacher Resources*), color pencils

- Have students write $3 \times 3,257$ on grid paper.
- Multiply the ones and write the answer in red.
- Multiply the tens and write the answer in blue.
- Multiply the hundreds and write the answer in purple.
- Multiply the thousands and write the answer in green.
- Add the four products and write the answer in black.

	3, 2 5 7																	
x				3														
			2 1	(7 × 3)														
		1 5 0	(5 0 × 3)															
		6 0 0	(2 0 0 × 3)															
+	9, 0 0 0	(3, 0 0 0 × 3)																
	9, 7 7 1																	


LESSON 2.12
Algebra • Solve Multistep Problems Using Equations
Reteach
Tier 1

**Kinesthetic / Visual
Whole Class / Small Group**
Materials two-color counters

- Have students solve the following problem using counters.

$$3 \times 2 + 4 \times 6 - 12$$

- Give each group at least 30 counters.
- Have students model each multiplication separately using yellow counters. **Model 3×2 , and then model 4×6 .**
- Have students model the subtraction by turning 12 counters over.
- Have students find the solution by counting the number of yellow counters remaining.
- Have students repeat the process for $2 \times 4 + 3 \times 3 - 7$.

Tier 2

**Kinesthetic / Visual
Small Group**
Materials two-color counters

You buy 4 bags of oranges with 3 oranges each. You buy 2 bags of apples with 5 apples each. How many apples and oranges do you have?

- Give each group 25 counters.
- Have students model the number of oranges using yellow counters and write the multiplication. 4×3
- Have students model the number of apples using yellow counters and write the multiplication. 2×5
- Have students find the total number of apples and oranges by counting the yellow counters. Ask them to write the addition. $12 + 10 = 22$
- **If you give 1 bag of oranges to a friend, how many apples and oranges would you have left?** Have students turn over the counters representing the number of oranges they gave away, and have them write the subtraction. $22 - 3 = 19$