Multiplication

Unit 4 Overview: 9 lessons

Students multiply by 10, 100 and 1,000 and see each digit move one place to the left for each 10, then multiply multiples of 10, 100 and 1,000 with a basic fact (6 × 600 is 36 hundreds). They multiply 2-, 3- and 4-digit numbers by a 1-digit number with base-ten blocks, area models and partial products, then with the standard algorithm, and two 2-digit numbers with a four-part area model, partial products and the standard algorithm. They round each factor to estimate a product and decide whether an answer is reasonable, and they solve equal groups and times as many stories with an equation. Ask "what is each part worth?" every day: every method in the unit splits a number by place value. Lesson 4.7 (3-digit times 2-digit) is for the states that teach it in 4th grade.

THE UNIT, DAY BY DAY

Day 1	**Pre-Check**	What students already know, before the first lesson.
Day 2	**4.1** Multiply by 10, 100 and 1,000	I can multiply by tens, hundreds and thousands.
Day 3	**4.2** 2-digit times 1-digit	I can multiply a 2-digit number by a 1-digit number.
Day 4	**4.3** 3- and 4-digit times 1-digit	I can multiply a 3- or 4-digit number with an area model.
Day 5	**4.4** The standard algorithm	I can use the standard algorithm to multiply.
Day 6	**4.5** 2-digit times 2-digit: area models	I can multiply two 2-digit numbers with an area model.
Day 7	**4.6** 2-digit times 2-digit in a column	I can multiply two 2-digit numbers in a column.
Day 8	**4.7** 3-digit times 2-digit ★	I can multiply a 3-digit number by a 2-digit number.
Day 9	**4.8** Estimate products	I can estimate a product to check an answer.
Day 10	**4.9** Multiplication stories	I can solve multiplication and times as many stories.
Day 11	**Unit Review**	The review, to go over together.
Day 12	**Unit Test**	Form A; Form B (other numbers) is for a retest.

★ Taught in 4th grade in some states. Skip these lessons if yours teaches them in another grade; animalmath.com/standards shows your state's list.

GET READY FOR THE UNIT

- Base-ten blocks for each pair, and a place value chart to ten thousands for each student
- Grid paper (1 centimeter) for area models and for lining up columns
- Whiteboards and dry erase markers, and colored pencils
- Multiplication charts for students who need the facts at hand
- Chart paper for anchor charts: times 10, area models, partial products, the standard algorithm

HOW EACH LESSON GOES

1. Warm up (5 min)
2. Teach (10 min)
3. Try it together (10 min)
4. Practice (15 min)
5. Exit ticket (5 min): a quick check on the lesson.

Each lesson page ends with the Animal Math sheets, makers, tools and quizzes for it. "Sheet 3" is the third worksheet of a pack; a color pack prints each sheet again in black and white.

CHECKING AS YOU GO

PRINTABLE **Pre-Check**: Day 1, with a key

PRINTABLE **Unit Review**: the day before the test

EXIT TICKET **Exit Tickets**: one a lesson, two to a page

PRINTABLE **Unit Test**: Forms A and B, with keys

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Multiplication

Lesson 4.1: Multiply by 10, 100 and 1,000

GOAL Students multiply by 10, 100 and 1,000, seeing each digit move one place to the left for each 10, and multiply multiples of 10, 100 and 1,000 with a basic fact: 6 × 600 is 36 hundreds, or 3,600.

I can multiply by tens, hundreds and thousands.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) How many cubes make a rod? How many rods make a flat? Count by 100s from 700 to 1,300.
2. **Teach** (10 min) Write 34 in the chart. Times 10, the 3 tens become 3 hundreds and the 4 ones become 4 tens: 340. Times 100 moves each digit two places (3,400), times 1,000 three (34,000). Then 6 × 600 is 6 × 6 hundreds, 36 hundreds: 3,600. Write 9 × 9, 9 × 90, 9 × 900 and 9 × 9,000 and look at the zeros. Last, 5 × 200 = 1,000: the fact 5 × 2 = 10 has a zero of its own.

   > **Say:** "Times 10, every digit moves one place to the left. 6 × 600 is 6 times 6 hundreds: 36 hundreds."

3. **Try it together** (10 min) Pairs take turns: one writes a fact (8 × 9), the other writes it with tens, hundreds and thousands and reads each in units ("72 hundreds"). Then 30 × 40 as 3 × 4 × 10 × 10, and the missing factor in 70 × □ = 1,400.
4. **Practice** (15 min) Students do sheets 1-3 of Multiplying and Dividing by 10, 100 and 1,000. For a step back, sheet 3 of Multiplying by Multiples of 10 keeps to a 1-digit number times tens.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.1** and circle a face beside the "I can" line. On question 1, look for 580, 2,100 and 36,000; 210 or 3,600 means a lost zero. On question 2, look for 52 and 80; 8 means the fact 3 × 8 was used and a zero lost.

Need help? Build 3 rods, say "3 tens times 10 is 3 hundreds", and trade them for 3 flats.

Ready for more? Write 25,000 three ways, such as 5 × 5,000.

GET READY

- A place value chart for each student
- Base-ten blocks to show
- Whiteboards and markers

WORDS TO USE

ten times as much: what a digit is worth one place to the left

multiple of 100: whole hundreds, like 600 or 2,400

basic fact: a fact like 9 × 9 that you know by heart

ASK

- How many places does each digit move times 100?
- What fact helps with 9 × 900?
- Why does 5 × 200 have three zeros?

WATCH FOR

Writes 100 for 5 × 200. Say it in units: 5 × 2 hundreds is 10 hundreds, 1,000.

Writes 120 for 30 × 40. Break it apart: 3 × 4 × 10 × 10.

Writes 304 or 3,040 for 34 × 10. In the chart, each digit moves one place left and a 0 fills the ones.

ON ANIMAL MATH

- PRINTABLE **Multiplying and Dividing by 10, 100 and 1,000**: sheets 1-3
- PRINTABLE **Multiplying by Multiples of 10**: sheet 3 (3rd grade), a step back
- MAKER **Multiplication Fact Drills**: Times Tables: Multiples of 10, 100 and 1,000
- QUIZ **Multi-Digit Multiplication Quiz**: the Times 10, 100 and 1,000 level
- EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.1

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Multiplication

Lesson 4.2: 2-digit times 1-digit

GOAL Students multiply a 2-digit number by a 1-digit number by splitting it into tens and ones, with base-ten blocks, an area model and partial products in a column.

I can multiply a 2-digit number by a 1-digit number.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Quick facts with tens: 4 × 20, 7 × 30, 5 × 40. Then write 38 as 30 + 8.
2. **Teach** (10 min) Build 23 × 4 with blocks: 4 groups of 2 rods and 3 cubes. The rods make 8 tens (80), the cubes 12 ones (12): 92. Then draw an area model for 38 × 7, one part 30 wide and one 8 wide: 30 × 7 = 210 and 8 × 7 = 56, so 266. Write the two partial products in a column and add.

   > **Say:** "I split the number into tens and ones, multiply each part, then add the parts."

3. **Try it together** (10 min) Pairs build 15 × 6 with blocks, trading 10 ones for a ten. Then each draws an area model for 64 × 5 and writes the partial products in a column. The blocks, the model and the column all give 320.
4. **Practice** (15 min) Students do sheets 1-3 of Multiply 2-Digit by 1-Digit, then sheet 1 of Multiplying by 1-Digit Numbers. Early finishers make a maker sheet.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.2** and circle a face beside the "I can" line. On question 1, look for 150 and 27 in the model and 177. On question 2, look for 280 + 42 = 322; 286 means the 6 was added, not multiplied, and 70 means 4 × 7 in place of 40 × 7.

Need help? Build the number with blocks first, then draw each part of the area model from the blocks.

Ready for more? Find 99 × 6 two ways: 90 × 6 + 9 × 6, and 100 × 6 take away 6.

GET READY

- Base-ten blocks for each pair
- Grid paper and colored pencils
- Whiteboards and markers

WORDS TO USE

area model: a rectangle with one part for each place

partial product: the product of one part, like 30 × 7

expanded form: 38 written as 30 + 8

ASK

- What is the 3 in 38 worth?
- How do the blocks show the two partial products?
- Which part of the model is bigger? Why?

WATCH FOR

Writes 21 for the tens part of 38 × 7. Say the value: 3 tens times 7 is 21 tens, 210.

Multiplies only the ones. Shade the two parts of the model: each one is multiplied.

Adds the parts wrong past a hundred. Line the partial products up by place value.

ON ANIMAL MATH

- PRINTABLE — **Multiply 2-Digit by 1-Digit**: sheets 1-3
- PRINTABLE — **Multiplying by 1-Digit Numbers**: sheet 1
- MAKER — **Column Multiplication**: Factors 2-Digit × 1-Digit
- TOOL — **Base Ten Blocks**
- QUIZ — **Multi-Digit Multiplication Quiz**: the 2-Digit × 1-Digit level
- EXIT TICKET — **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.2

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Multiplication

Lesson 4.3: 3- and 4-digit times 1-digit

GOAL Students multiply a 3- or 4-digit number by a 1-digit number: they split it by place value in an area model, multiply each part and add the partial products.

I can multiply a 3- or 4-digit number with an area model.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Write 2,136 and 315 in expanded form. Then 4 × 300 and 3 × 2,000.
2. **Teach** (10 min) Draw an area model for 315 × 4 with three parts, 300, 10 and 5: 1,200, 40 and 20, so 1,260. Then 2,136 × 3 with four parts: 6,000, 300, 90 and 18. Write the partial products in a column, one row a place, and add: 6,408.

   > **Say:** "One part for each place. I multiply each part, line the products up by place value, then add."

3. **Try it together** (10 min) Pairs draw the area model for 247 × 6 (1,200 + 240 + 42 = 1,482), then 3,105 × 2: the 0 tens make a part of 0, so they leave it out. Partners compare their columns.
4. **Practice** (15 min) Students do sheet 1 of Multi-Digit Multiplication, then sheet 2 of Multiplying by 1-Digit Numbers (area models, then partial products a row a place).
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.3** and circle a face beside the "I can" line. On question 1, look for 1,000, 300 and 15, and 1,315. On question 2, look for 6,000, 2,400, 180 and 12, and 8,592; 240 for 400 × 6 means a lost place.

Need help? Write the number in expanded form above the area model before drawing the parts.

Ready for more? Multiply 4,321 × 5, then check it as 4,321 × 10 ÷ 2.

GET READY

- Grid paper and colored pencils
- A place value chart for each student
- Whiteboards and markers

WORDS TO USE

place value: what a digit is worth: the 3 in 315 is 3 hundreds

partial product: the product of one part, like 300 × 4

expanded form: 2,136 written as 2,000 + 100 + 30 + 6

ASK

- How many parts does the area model need?
- What happens to the part for a 0 digit?
- What is 2,000 × 3 in thousands?

WATCH FOR

Writes 24 for 400 × 6. Say it in units: 4 hundreds times 6 is 24 hundreds, 2,400.

Misses a place when adding. Write each partial product on its own row, lined up by place.

Splits 2,136 into 2 + 1 + 3 + 6. Write each digit with its value: 2,000 + 100 + 30 + 6.

ON ANIMAL MATH

- PRINTABLE **Multi-Digit Multiplication**: sheet 1
- PRINTABLE **Multiplying by 1-Digit Numbers**: sheet 2
- MAKER **Column Multiplication**: Factors 3-Digit × 1-Digit or 4-Digit × 1-Digit
- QUIZ **Multi-Digit Multiplication Quiz**: the 3- and 4-Digit × 1-Digit level
- EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.3

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Multiplication

Lesson 4.4: The standard algorithm

GOAL Students multiply 2-, 3- and 4-digit numbers by a 1-digit number with the standard algorithm, writing each regrouped digit above the next place and adding it after they multiply that place.

I can use the standard algorithm to multiply.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Find 278 × 4 with partial products: 800 + 280 + 32 = 1,112.
2. **Teach** (10 min) Now 278 × 4 in the standard algorithm. 8 × 4 = 32: write 2, regroup 3 tens. 7 × 4 = 28, plus 3 is 31 tens: write 1, regroup 3 hundreds. 2 × 4 = 8, plus 3 is 11 hundreds: 1,112, the same as before. Then 3,062 × 5 = 15,310: the 0 hundreds still get the regrouped 3.

   > **Say:** "Multiply the place, then add the regrouped digit. Write one digit and regroup the rest."

3. **Try it together** (10 min) Pairs solve 563 × 7 two ways side by side, partial products and the standard algorithm, and match each regrouped digit to a partial product. Then 1,409 × 6 on whiteboards.
4. **Practice** (15 min) Students do sheets 3-4 of Multiplying by 1-Digit Numbers (the standard algorithm, then finding the mistake), then sheet 4 of Multiply 2-Digit by 1-Digit.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.4** and circle a face beside the "I can" line. On question 1, look for 2,238; 2,128 means the regrouped digits were written but never added. On question 2, look for 9,428; 8,208 is the same mistake.

Need help? Keep the partial products beside the column and point to the part each step makes.

Ready for more? Find a 3-digit number times 9 whose product has a 0 in the tens place.

GET READY

- Grid paper for lining up columns
- The partial products chart from lesson 4.3
- Whiteboards and markers

WORDS TO USE

standard algorithm: a short way to multiply in a column, a place at a time

regroup: trade 10 of a place for 1 of the next place

regrouped digit: the small number above the next place

ASK

- What does the small 3 above the tens stand for?
- Do you add the regrouped digit before or after you multiply?

WATCH FOR

Adds the regrouped digit first: (7 + 3) × 4. Multiply the digit, then add what was regrouped.

Forgets the regrouped digit at a 0. 0 times 5 is 0, but the regrouped digit still goes there.

Writes the whole 32 in the ones. One digit fits in a place: write 2, regroup 3 tens.

ON ANIMAL MATH

- PRINTABLE **Multiplying by 1-Digit Numbers**: sheets 3-4
- PRINTABLE **Multiply 2-Digit by 1-Digit**: sheet 4
- MAKER **Column Multiplication**: Factors 2-Digit × 1-Digit, 3-Digit × 1-Digit or 4-Digit × 1-Digit
- QUIZ **Multi-Digit Multiplication Quiz**: the 3- and 4-Digit × 1-Digit level
- EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.4

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Multiplication

Lesson 4.5: 2-digit times 2-digit: area models

GOAL Students multiply two 2-digit numbers with a four-part area model: they split both factors into tens and ones, multiply each pair of parts and add the four partial products.

I can multiply two 2-digit numbers with an area model.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Quick tens: 20 × 30, 20 × 5, 6 × 30 and 6 × 5. Then add the four answers.
2. **Teach** (10 min) Draw an area model for 26 × 35: 20 and 6 down the side, 30 and 5 across the top. Fill in the four parts: 600, 100, 180 and 30. Add them: 910. Then 14 × 14 the same way (100 + 40 + 40 + 16 = 196): a square number, so the model is a square.

   > **Say:** "I split both numbers into tens and ones. Four parts, four partial products, then I add them."

3. **Try it together** (10 min) Pairs draw the area model for 47 × 18 (400 + 70 + 320 + 56 = 846), then check it by splitting one factor only: 47 × 10 + 47 × 8.
4. **Practice** (15 min) Students fill in the area models and add the four parts on sheet 2 of Multi-Digit Multiplication. Early finishers find 11 × 11 and 12 × 12 with area models.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.5** and circle a face beside the "I can" line. On question 1, look for 400, 30, 240 and 18, and 688; 418 means only tens times tens and ones times ones were found. On question 2, look for 420 + 28 = 448.

Need help? Shade the four boxes in four colors and write each product inside its box before adding.

Ready for more? Find two 2-digit numbers whose product is between 900 and 1,000.

GET READY

- Grid paper and colored pencils
- Rulers
- Whiteboards and markers

WORDS TO USE

area model: a rectangle with one part for each pair of places

partial product: the product of two parts, like 20 × 30

four parts: tens times tens, tens times ones, ones times tens, ones times ones

ASK

- Which part is the biggest? Why?
- What are the four products you need?
- How can you check with another split?

WATCH FOR

Finds only two parts: 20 × 30 and 6 × 5. Point to each box of the model: every box needs a product.

Writes 18 for 6 × 30. Say the value: 6 times 3 tens is 18 tens, 180.

Adds the four parts wrong. Add them in a column, lined up by place value.

ON ANIMAL MATH

- PRINTABLE — **Multi-Digit Multiplication**: sheet 2
- MAKER — **Graph Paper**: Paper Type Square Grid, Square Size 1 Centimeter
- QUIZ — **Multi-Digit Multiplication Quiz**: the 2-Digit × 2-Digit level
- EXIT TICKET — **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.5

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Multiplication

Lesson 4.6: 2-digit times 2-digit in a column

GOAL Students multiply two 2-digit numbers in a column, as four partial products and then with the standard algorithm: a row for the ones, a row for the tens (it ends in 0), then the sum.

I can multiply two 2-digit numbers in a column.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Draw the area model for 63 × 47 and find the four parts: 2,400, 120, 420 and 21.
2. **Teach** (10 min) Write 63 × 47 in a column and add the four partial products: 2,961. Then the standard algorithm: first row 63 × 7 = 441; second row 63 × 40 = 2,520 (write the 0, then 63 × 4); add: 2,961. The two rows are the two rows of the area model.

   > **Say:** "The first row is times the ones. The second row is times the tens, so I write a 0 first. Then I add."

3. **Try it together** (10 min) Solve 29 × 53 together on whiteboards (87 and 1,450, so 1,537). Then partners each do 71 × 46 and compare their second rows before adding.
4. **Practice** (15 min) Students multiply by the ones, then the tens, and add the two rows on sheet 3 of Multi-Digit Multiplication. Early finishers make a maker sheet.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.6** and circle a face beside the "I can" line. On question 1, look for 348 and 1,740, and 2,088. On question 2, look for 740 circled; 74 means the second row was taken as times 2, not 20, and 148 is the first row.

Need help? Draw the area model beside the column and color each row of the model to match a row of the column.

Ready for more? Multiply 85 × 85 and 75 × 75. What do you notice about the last two digits?

GET READY

- Grid paper for lining up columns
- The area model chart from lesson 4.5
- Whiteboards and markers

WORDS TO USE

first row: the top number times the ones

second row: the top number times the tens; it ends in 0

placeholder zero: the 0 in the ones of the second row

ASK

- What does the second row stand for?
- Why does the second row end in 0?
- Which rows of the area model are these?

WATCH FOR

Leaves out the 0 in the second row. Say it: 63 times 4 tens is 252 tens, 2,520.

Uses the first row's regrouped digits again. Cross them out before starting the second row.

Adds the rows without lining them up. Use grid paper so each digit stays in its place.

ON ANIMAL MATH

PRINTABLE **Multi-Digit Multiplication**: sheet 3

MAKER **Column Multiplication**: Factors 2-Digit × 2-Digit

QUIZ **Multi-Digit Multiplication Quiz**: the 2-Digit × 2-Digit level

EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.6

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Multiplication

Lesson 4.7: 3-digit times 2-digit

GOAL Students multiply a 3-digit number by a 2-digit number with the standard algorithm, the same two rows as in lesson 4.6, and round each factor to check that the product is reasonable.

I can multiply a 3-digit number by a 2-digit number.

About 45 minutes

★ Taught in 4th grade in some states

THE LESSON

1. **Warm up** (5 min) Estimate: round 236 and 45 to their greatest place and multiply (200 × 50 = 10,000).
2. **Teach** (10 min) Write 236 × 45 in a column. First row: 236 × 5 = 1,180. Second row: write the 0, then 236 × 4, so 9,440. Add: 10,620. It is close to the estimate of 10,000, so it is reasonable. The steps are the same as for two 2-digit numbers; only the top number is longer.

   > **Say:** "Times the ones, then times the tens with a 0 first, then add. My estimate tells me if it makes sense."

3. **Try it together** (10 min) Partners estimate, then solve 173 × 28 (1,384 and 3,460, so 4,844) and 608 × 34, where the 0 in 608 still gets a regrouped digit. Compare each with its estimate.
4. **Practice** (15 min) Students multiply 3-digit numbers by 2-digit numbers in problems 1 to 4 on sheet 4 of Multi-Digit Multiplication, estimating each one first. Early finishers try problems 5 to 8, with 4-digit numbers.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.7** and circle a face beside the "I can" line. On question 1, look for 3,084 and 10,280, and 13,364; 4,112 means the second row lost its 0. On question 2, look for 400 × 40 = 16,000.

Need help? Draw an area model with three parts across and two down before writing the column.

Ready for more? Multiply 999 × 99. Then find it a quicker way: 999 × 100 take away 999.

GET READY

- Grid paper for lining up columns
- The two-row chart from lesson 4.6
- Whiteboards and markers

WORDS TO USE

first row: the top number times the ones

second row: the top number times the tens; it ends in 0

estimate: a close answer from rounded numbers

ASK

- What is your estimate? Is your answer close to it?
- Where does the second row start?
- Where do the regrouped digits of the second row go?

WATCH FOR

Leaves out the 0 in the second row. Compare with the estimate: an answer far below it shows a lost 0.

Lines the second row up under the ones. Use grid paper: the second row starts after its 0.

Mixes up the regrouped digits of the two rows. Cross out the first row's small digits before the second row.

ON ANIMAL MATH

PRINTABLE **Multi-Digit Multiplication**: sheet 4, problems 1 to 4

QUIZ **Multi-Digit Multiplication Quiz**: the Estimate Products level

EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.7

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Multiplication

Lesson 4.8: Estimate products

GOAL Students round each factor to its greatest place to estimate a product and decide whether an answer is reasonable: an answer about ten times too big or too small means a place slipped.

I can estimate a product to check an answer.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Round each number to its greatest place: 48, 92, 913, 2,915.
2. **Teach** (10 min) Is 48 × 92 = 4,416 reasonable? Round each factor: 50 × 90 = 4,500. The answer is close, so yes. Is 913 × 8 = 73,040 reasonable? 900 × 8 = 7,200, and 73,040 is about ten times as much: a place slipped, so no. The product is 7,304.

   > **Say:** "I round each factor to its greatest place and multiply. If the answer is far from my estimate, I check my work."

3. **Try it together** (10 min) Show answer cards; pairs estimate on whiteboards and hold up yes or no: 487 × 5 = 2,435, 23 × 69 = 15,870 and 2,915 × 3 = 8,745. Fix the wrong one together.
4. **Practice** (15 min) Students decide whether each answer is reasonable in problems 1 to 3 on sheet 5 of Multi-Digit Multiplication, then estimate and solve the stories on sheet 5 of Multiplying by 1-Digit Numbers.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.8** and circle a face beside the "I can" line. On question 1, look for 70 × 30 = 2,100 and No: 20,440 is about ten times the estimate (73 × 28 is 2,044). On question 2, look for 700 × 7 = 4,900.

Need help? Put each factor on a number line between its nearest tens or hundreds before rounding.

Ready for more? Write a wrong product that is still close to its estimate. How could you catch it?

GET READY

- Answer cards with right and wrong products
- Whiteboards and markers

WORDS TO USE

estimate: a close answer from rounded numbers

reasonable: close to the estimate, so it makes sense

greatest place: the place of the first digit: 913 rounds to 900

ASK

- What did you round each factor to?
- How far is the answer from your estimate?
- What mistake makes an answer ten times too big?

WATCH FOR

Rounds only one factor. Round both factors to their greatest place, then multiply.

Calls an answer with the right digits reasonable. Count the digits: 73,040 has five, 7,200 has four.

Rounds 48 down to 40. Put 48 on a number line: it is closer to 50.

ON ANIMAL MATH

PRINTABLE **Multi-Digit Multiplication**: sheet 5, problems 1 to 3

PRINTABLE **Multiplying by 1-Digit Numbers**: sheet 5

QUIZ **Multi-Digit Multiplication Quiz**: the Estimate Products level

EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.8

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Multiplication

Lesson 4.9: Multiplication stories

GOAL Students solve equal groups and times as many stories with larger numbers: they draw a strip diagram, write an equation with a letter for the unknown, multiply and answer with the unit.

I can solve multiplication and times as many stories.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) A box holds 12 eggs. How many eggs are in 6 boxes? Students write 6 × 12 = e and solve.
2. **Teach** (10 min) Read: A farm packs 36 cartons of 12 eggs. How many eggs? Equal groups: 36 × 12 = e, so 432 eggs. Then: A small bag holds 136 grams of rice; a big bag holds 4 times as much. Draw one bar of 136 and four bars of 136. 4 × 136 = g, so 544 grams.

   > **Say:** "Is it equal groups or times as many? I draw it, write an equation with a letter, then answer with the unit."

3. **Try it together** (10 min) Pairs sort story cards into equal groups and times as many, then solve one of each with a diagram and an equation: 26 rows of 35 chairs; a whale swims 9 times as far as a seal that swims 135 miles.
4. **Practice** (15 min) Students solve the stories on sheet 5 of Multiply 2-Digit by 1-Digit, then draw a strip diagram for each story on sheet 4 of Times as Many.
5. **Exit ticket** (5 min) Students do **Exit Ticket 4.9** and circle a face beside the "I can" line. On question 1, look for 24 × 48 = c and 1,152 crayons; 72 means the numbers were added. On question 2, look for 560; 117 means 5 more, not 5 times as many.

Need help? Act out a small version first (3 bags of 5), then use the same diagram with the story's numbers.

Ready for more? Write one story where you multiply 15 × 24 and one where you add 15 + 24.

GET READY

- Story cards
- Whiteboards and markers
- Grid paper for the multiplying

WORDS TO USE

equal groups: the same number in each group

times as many: 4 times as much is 4 copies of the smaller amount

letter: stands for the number we do not know yet

ASK

- Is this equal groups or times as many?
- Which bar is the bigger amount?
- What does your letter stand for?

WATCH FOR

Adds when the story says times as many. Draw the bars: 4 times as much is 4 bars of the same size.

Leaves off the unit. Read the question again: how many what?

Multiplies when the story asks how many more. Ask: times as many, or how many more? Draw both bars.

ON ANIMAL MATH

- PRINTABLE **Multiply 2-Digit by 1-Digit**: sheet 5
- PRINTABLE **Times as Many**: sheet 4
- MAKER **Word Problems**: Multiplication only, Number Range 50-200 (factors to 12, a review)
- QUIZ **Multi-Digit Multiplication Quiz**: the 2-Digit × 2-Digit level
- EXIT TICKET **4th Grade Multiplication Exit Tickets**: Exit Ticket 4.9

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