TumbleTA · REGIONAL EDITION

ILLINOIS

Multiplication as Equal Groups

Grade 3 · 7 lessons · canonical teaching pages unchanged

VERIFIED STANDARDS LAYER

Illinois Learning Standards for Mathematics

STRAND / DOMAIN

Operations and Algebraic Thinking

Verified standard this unit teaches

3.OA.A.1

Interpret a product of whole numbers as equal groups

Why this is a complete match Across the unit, students repeatedly build and label equal groups, connect the two factor roles to models and equations, represent the same products with arrays, and justify what a product means. The culminating task again requires an equal-groups model, multiplication equations, and labelled factor roles.

Strict regional audit repaired 2026-09-08. Source alignment record: 16
-multiplication
-as
-equal
-groups
-grade
-3
-illinois.json. Canonical 18-page unit follows unchanged.

Illinois · regional cover

MATH UNIT · REVISED EDITION

Multiplication as equal groups

Grade 3 · 7 lessons · 7 × 30 minutes · 3 source books · 210 minutes

What are the two numbers doing?

About this unit

Children can learn multiplication facts before they can explain what a product represents. This unit keeps the meaning visible. Every equation sits beside an arrangement students built, and students repeatedly identify which factor counts the groups and which counts how many are in each group.

The unit then shows the same quantity as equal groups and as an array, contrasts multiplication with addition when one word changes, draws a multiplier from a measurement, builds a times column as a repeated move, and checks one product by a genuinely separate route. It closes with zero groups—a rule students defend from the model rather than merely recite.

The mathematical arc

1	Equal groups: each makes the groups equal
2	One quantity, two orientations: groups and arrays
3	Times or plus: the sentence decides the operation

4	Four times as much: a multiplier from measurement
5	A times column: one repeated move
6	Two independent routes to one product
7	Multiply by zero: predict and defend the rule

Source books

Every lesson is already published under Math lessons. Open the named source lesson before teaching; it contains the complete steps, printables and answers.

2 X 2 = Boo!	2 lessons
Multiplying Menace: The Revenge of Rumpelstiltskin	3 lessons
Multiply By Hand	2 lessons

How to use this guide

OPEN THE SOURCE LESSON

Each day names one published lesson. This guide explains what that lesson contributes to the sequence and what evidence to collect; the source lesson carries the full teaching procedure.

KEEP THE DAILY RHYTHM

Connect for 5 minutes, teach the 20-minute source lesson, and close for 5 minutes. If time is short, keep the source core intact and shorten the close.

TEACH A LESSON ON ITS OWN

Every day includes a brief book-based opening for teachers using that lesson outside the unit.

STOP AFTER A CHECKPOINT

The unit can pause after Lesson 3 or Lesson 6. Use the checkpoint evidence before moving on.

Where this fits in your year

WHEN TO TEACH IT

Early in the multiplication year, before fact fluency becomes the main goal. The seven lessons fit comfortably across two weeks.

STUDENTS NEED FIRST

Students can skip-count by twos, fives and tens, organize objects into equal groups, and describe both the number of groups and the number in each group.

THIS UNIT DEVELOPS

Multiplication as equal groups; arrays and the commutative relationship; choosing multiplication or addition from meaning; multiplicative comparison; a times column as repeated addition; checking by a second route; and multiplying by zero.

IT PREPARES STUDENTS FOR

Division as sharing and grouping, properties of operations, distributive strategies, and later work in which language—not a symbol—determines the operation.

Curriculum connection

No unit-level standard is claimed.

The source lessons carry standards classifications on their own pages, checked lesson by lesson. A unit-level expectation is a separate claim; none has been verified for this edition. Use the placement guide to situate the unit and the individual lesson pages for regional codes.

Unit at a glance

#	MATHEMATICAL MOVE	SOURCE LESSON	COLLECT
1	Equal groups; the two factors do different jobs	2 X 2 = Boo! · L1	Two builds, equations, and factor labels
2	One array read in two orientations	Multiplying Menace · L2	Array drawing with both equations
3	Times or plus: meaning decides	Multiplying Menace · L6	Two-part mat with both results
4	Four times as much from measurement	2 X 2 = Boo! · L5	Four-times column; two entries checked
5	Nine more each time	Multiply By Hand · L3	Ten bars of nine with running totals
6	Two independent routes to 45	Multiply By Hand · L2	Prediction and two solutions
7	Zero groups of any amount	Multiplying Menace · L4	Three models, equations, and a prediction

Unit vocabulary

each — signals that every group receives the same amount factor — a number being multiplied; here, one factor counts groups and the other counts how many are in each group array — objects arranged in equal rows and columns product — the total represented by a multiplication equation

Materials and assessment

FROM THE SOURCE LESSONS

Use the materials listed on each daily page and in the source lesson. Check quantities before teaching; the culminating task requires a larger counter supply for every pair.

NEW FOR THIS UNIT

- Checkpoint 1 page, one per student - Checkpoint 2 page, one per student - Culminating task: 60 counters and five group mats per pair, grid paper, and one included task card per pair - Culminating task page, one per student

Assessment plan

DAILY EVIDENCE

Keep the labelled equal-groups equation from Lesson 1, the two equations for one array from Lesson 2, and the running-total strip from Lesson 5.

CHECKPOINT 1 · AFTER LESSON 3

Students see 24 counters arranged as four groups of six. They write 4 × 6 = 24, then identify 4 as the number of groups and 6 as the number in each group. The printed diagram is included on the student page.

CHECKPOINT 2 · AFTER LESSON 6

Students solve 5 × 9 with the nine-times hand procedure. With that result hidden, they separately build five groups of nine and record repeated addition. They compare the two results and explain why both routes represent the same product.

CULMINATING TASK

Pairs build the equal groups on a task card, write the equation, rearrange the same counters into an array, and write the commuted equation. Each student draws and labels the array, checks the product independently, and explains why zero groups have a product of zero.

The checkpoints assess meaning before speed.

LESSON 1 · GRADE 3 · 30 MINUTES

Equal groups: each makes them equal

Source: 2 X 2 = Boo! · lesson 1, Three Scarecrows, Same Parts Each

Focus:	Multiplication as equal groups

I can build equal groups and explain what each factor counts.

BIG IDEA

The word each makes the groups equal. In this unit, the first factor counts the groups and the second counts how many are in each group.

SUCCESS EVIDENCE

The student circles each factor and points to what it counts in the model.

CONNECT ·	5 MIN

Set out three mats with two counters on each. Write 3 × 2 = 6. Ask: Which number counts the groups? Which counts the counters in each group?

IF TAUGHT ON ITS OWN

Chapter three provides a clear equal-groups image: three scarecrows, each receiving the same set of parts.

SOURCE CORE ·	20 MIN

Pairs set out three mats, place two counters on each, verify that the groups are equal, count by twos, and write 3 × 2 = 6 beside the build.

COLLECT

Two builds with equations; each factor circled and connected by an arrow to what it counts.

CLOSE ·	5 MIN

Build three mouths with three teeth on each mat. Count by threes, write 3 × 3 = 9, and explain what stayed the same and what changed.

Materials:	10 counters and five group mats per pair; whiteboards and markers; word cards: each, equal, groups, times

Watch for: Students reverse the factor labels. Keep the convention visible: groups first, number in each group second.

LESSON 2 · GRADE 3 · 30 MINUTES

One array, two orientations

Source: Multiplying Menace · lesson 2, Twenty-Seven Pebbles

Focus:	Equal groups shown as an array

I can read the same array in two ways.

BIG IDEA

An array can show 9 groups of 3 or 3 groups of 9. Turning it changes the orientation, not the total.

SUCCESS EVIDENCE

The student says both group descriptions and writes both equations for the same array.

CONNECT ·	5 MIN

Revisit the two factor jobs. Explain that today the same counters will swap those jobs without changing the product.

IF TAUGHT ON ITS OWN

Peter organizes 27 pebbles into equal groups; the arrangement reveals how many groups he has.

SOURCE CORE ·	20 MIN

Pairs arrange 27 counters as 9 rows of 3, count by threes, and write 9 × 3 = 27. Turn the array a quarter turn, count by nines, and write 3 × 9 = 27.

COLLECT

One array drawn on grid paper, one row circled, with both equations underneath.

CLOSE ·	5 MIN

Partners point to what each factor counts in both equations without moving the counters.

Materials:	30 counters per pair; grid paper; pencils; word cards: array, row, column, groups Watch for: Students rebuild for the second equation. Keep the array intact so the commutative relationship remains visible.

LESSON 3 · GRADE 3 · 30 MINUTES

Times or plus: meaning decides

Source: Multiplying Menace · lesson 6, Times or Plus

Focus:	Distinguishing multiplication from addition

I can choose multiplication or addition from what the sentence means.

BIG IDEA

Three groups of nine and three plus nine use the same numbers but represent different quantities: 27 and 12.

SUCCESS EVIDENCE

Both models remain visible, and the student explains which matches the river scene.

CONNECT ·	5 MIN

Yesterday one array supported two multiplication equations. Today the same two numbers will represent two different operations.

IF TAUGHT ON ITS OWN

The river repair depends on interpreting the spell correctly; the story supplies a concrete reason to test both meanings.

SOURCE CORE ·	20 MIN

Pairs model 3 groups of 9 on the top half of a mat and 3 plus 9 on the bottom. They count each model and write 3 × 9 = 27 and 3 + 9 = 12.

COLLECT

A two-part mat with both models, equations and totals.

CLOSE ·	5 MIN

Students explain which equation restores the river and cite the needed total. Avoid teaching a bare ‘keyword rule’; the whole sentence and model determine the operation.

Materials:	40 counters per pair; two-part mat; repair card; lined strips; printed story lines Watch for: Students stop after reaching 27. Require both models before deciding which sentence fits.

Checkpoint 1 follows this lesson.

LESSON 4 · GRADE 3 · 30 MINUTES

Four times as much from measurement

Source: 2 X 2 = Boo! · lesson 5, Four Feet of Wings

Focus:	Multiplicative comparison

I can use a comparison to find a multiplier.

BIG IDEA

The multiplier comes from comparing two measurements: a four-foot span is four times a one-foot span.

SUCCESS EVIDENCE

The student explains the factor 4 before building the matching cookie quantities.

CONNECT ·	5 MIN

Yesterday meaning selected the operation. Today comparing two lengths supplies the multiplier.

IF TAUGHT ON ITS OWN

The story compares a one-foot wingspan with a four-foot wingspan, then applies that relationship to cookies.

SOURCE CORE ·	20 MIN

Pairs compare a one-cube length with a four-cube strip and state that the larger is four times the smaller. They then build cookie quantities for 1, 2 and 3 cookies and match each with four times as many.

COLLECT

A four-times table for inputs 1–3, with at least two entries verified by models.

CLOSE ·	5 MIN

Students explain why adding four is not the same as making a quantity four times as large.

Materials:	16 counters (reuse them between examples), five cubes and five group mats per pair; whiteboards; word cards: each, equal, times, wide

LESSON 5 · GRADE 3 · 30 MINUTES

The times column is one repeated move

Source: Multiply By Hand · lesson 3, Nine More Each Time

Focus:	Running totals for multiples of nine

I can use nearby multiples to recover a missing total.

BIG IDEA

A times column is built by repeating the same addition, so neighbouring totals reveal a covered entry.

SUCCESS EVIDENCE

The student recovers a hidden multiple from a neighbour and explains the move used.

CONNECT ·	5 MIN

The last lesson repeated a multiplier across several inputs. Today one group of nine is added repeatedly.

IF TAUGHT ON ITS OWN

The book presents the nine-times count as a running list and states what changes from one line to the next.

SOURCE CORE ·	20 MIN

Pairs join bars of nine end to end, recording 9, 18, 27 … 90 as each bar is added. They say each running total aloud.

COLLECT

A strip with ten bars of nine and a running total at each endpoint.

CLOSE ·	5 MIN

Cover one middle total. Students recover it by adding 9 to the previous total or subtracting 9 from the next, then reveal and check.

Materials:	nine-times column card; 90 cubes per pair; long paper strip; covering cards

LESSON 6 · GRADE 3 · 30 MINUTES

Two independent routes to one product

Source: Multiply By Hand · lesson 2, Two Routes to Forty-Five

Focus:	Checking 5 × 9

I can check a product using a different method.

BIG IDEA

Two independent routes that agree provide stronger evidence than repeating the same procedure.

SUCCESS EVIDENCE

The student records both routes and explains why each represents five groups of nine.

CONNECT ·	5 MIN

Yesterday neighbouring totals helped recover a multiple. Today 45 is found twice so either route can catch an error.

IF TAUGHT ON ITS OWN

The book asks readers to solve 5 × 9 with its hand procedure and then verify by adding five nines.

SOURCE CORE ·	20 MIN

Pairs predict the answer, use the hand procedure to obtain 45, then separately build five groups of nine and record 9 + 9 + 9 + 9 + 9 = 45.

COLLECT

A folded strip showing the prediction, hand-procedure result, and equal-groups check.

CLOSE ·	5 MIN

Compare the answers and explain why both routes represent 5 × 9.

Materials:	prediction strip; pencils; both hands; 45 counters and five group mats per pair

LESSON 7 · GRADE 3 · 30 MINUTES

Multiply by zero: predict and defend

Source: Multiplying Menace · lesson 4, Times a Zero

Focus:	Zero groups

I can explain why a product is zero when either factor is zero.

BIG IDEA

Zero groups of any amount contain no objects. Any number of groups with zero in each also contains no objects. The two equations have different factor meanings but the same product: zero.

SUCCESS EVIDENCE

The student distinguishes 0 × n from n × 0 and justifies both with the corresponding group description.

CONNECT ·	5 MIN

Revisit the groups-first convention. Ask what 0 × 4 and 4 × 0 each mean before discussing their products.

IF TAUGHT ON ITS OWN

The ending states the zero rule, and the story's final examples provide quantities students can test with groups.

SOURCE CORE ·	20 MIN

Pairs model three story quantities as zero groups and record 0 × n = 0. They then reverse each factor order, make n empty groups, and record n × 0 = 0. For every equation, students name what each factor counts.

COLLECT

Three zero-group equations, three reversed equations, and one written comparison of their meanings.

CLOSE ·	5 MIN

Without counters, students predict 0 × 100 and 100 × 0. They explain that the first has zero groups and the second has 100 groups with zero in each; both contain no objects.

Materials:	20 counters and five group mats per pair; whiteboards; word cards: none, zero groups, zero in each, times

Culminating performance task

One arrangement, two equations and two routes

Give each pair one card from page 18. Every card uses two to five groups and a product no greater than 60, so five group mats and 60 counters per pair are sufficient.

- Build the equal groups and write the groups-first equation.
- Rearrange the same counters as an array and write the commuted equation.
- Draw the array on grid paper and circle one row or column as a group.
- Find the product by a second route and compare the answers.
- Predict the product when the number of groups is zero and justify it from the meaning of zero groups.

COLLECT

The labelled array, both multiplication equations, the independent check, and the zero-groups explanation.

WHAT IT ASSESSES

Equal groups, the distinct jobs of the factors, arrays and commutativity, independent verification, and the zero property of multiplication.

Teacher key

Checkpoint 1: $4 \times 6 = 24$. Four counts groups; six counts counters in each group.

Checkpoint 2: hand procedure = 45; $9 + 9 + 9 + 9 + 9 = 45$; $5 \times 9 = 45$.

Culminating task: Verify the assigned factors and product. The zero-groups product is 0; a secure explanation refers to having no groups, not only to a memorized rule.

Rubric

STRAND	SECURE	DEVELOPING	NOT YET
Representation	Accurate equal-groups model and array; one group identified.	Model is accurate with prompting or minor correction.	Model is unequal, incomplete, or absent.
Equations	Both multiplication equations match the same array and factor roles.	Product is right but one equation or factor label needs support.	Equations do not match the arrangement.
Calculation	Correct product; second route is independent and recorded.	Correct with materials or prompting; route is partly recorded.	Product is incorrect and no usable check is shown.
Meaning	Explains which factor counts groups and which counts each group.		

Identifies one factor role or explains only with the model present.

Cannot connect either factor to the model.

Zero reasoning

Explains the result using the meaning of zero groups.

States the rule and gives a partial model-based reason.

States an unsupported rule or gives a nonzero product.

Teacher planning and handoff

- Students who cannot name the two factor roles at Checkpoint 1 should repeat Lesson 1 before continuing.
- If students can model products but cannot verify them independently, revisit Lessons 5 and 6.
- Lesson 7 is the bridge into properties of operations because students justify a general rule from the equal-groups meaning.
- The unused equal-groups opener in Multiplying Menace is a suitable extra practice lesson when needed.

CHECKPOINT 1 · GRADE 3

Which number counts what?

Name _____ Date _____

Here are 24 counters in 4 equal groups of 6.

1. Write the multiplication equation.
2. Circle the factor that counts the groups. Draw a box around the factor that counts how many are in each group.

CHECKPOINT 2 · GRADE 3

Two independent routes

Name _____ Date _____

Find 5 × 9 in two genuinely different ways. Keep Route 1 covered while you complete Route 2.

ROUTE 1 · NINE-TIMES HAND PROCEDURE

ROUTE 2 · EQUAL GROUPS AND REPEATED ADDITION

Multiplication equation: _____

Do the two routes agree? Explain how you know.

CULMINATING TASK · GRADE 3

One arrangement, two equations and two routes

Name _____ Date _____

My task card says _____ groups with _____ in each group.

1. Build the equal groups. Write the groups-first equation.
2. Rearrange the same counters into an array. Write the commuted equation.
3. Draw the array below. Circle one group and label what each factor counts.

Check and explain

Name _____ Date _____

4. Find the product a second way. Show the route.
5. Do your two answers agree? _____
6. What would the product be if there were zero groups? Explain without building it.

Culminating task cards

Cut apart. Give one card to each pair. Every task fits five group mats and 60 counters.

TASK 1	TASK 2
2 groups with 8 in each group	3 groups with 7 in each group
Build · Write · Rearrange · Check · Explain	Build · Write · Rearrange · Check · Explain
TASK 3	TASK 4
4 groups with 6 in each group	5 groups with 6 in each group
Build · Write · Rearrange · Check · Explain	Build · Write · Rearrange · Check · Explain
TASK 5	TASK 6
3 groups with 9 in each group	4 groups with 8 in each group
Build · Write · Rearrange · Check · Explain	Build · Write · Rearrange · Check · Explain
TASK 7	TASK 8
5 groups with 9 in each group	2 groups with 10 in each group
Build · Write · Rearrange · Check · Explain	Build · Write · Rearrange · Check · Explain

TEACHER KEY

1: $2 \times 8 = 16$
2: $3 \times 7 = 21$
3: $4 \times 6 = 24$
4: $5 \times 6 = 30$
5: $3 \times 9 = 27$
6: $4 \times 8 = 32$
7: $5 \times 9 = 45$
8: $2 \times 10 = 20$