

MATH UNIT

Equal groups, and what is left over

Grade 2

7 lessons

7 × 30 minutes

3 source books

210 minutes in all

THE QUESTION THIS UNIT FOLLOWS

How many groups, and how many things?

ABOUT THIS UNIT

The commonest error in early equal-group work is not arithmetic. It is answering the wrong question: saying how many bags when the question asked how many peppers. This unit keeps both numbers on the table from the first lesson and makes children answer with a number and a word, never a bare number.

It then varies the two numbers on purpose, so children see which one moves. It puts the weight on the small word that creates the repetition in the first place. And it ends where equal groups run out: the pile that will not go into groups of ten, the count that leaves one standing, and the rule for what one more does to it.

THE MATHEMATICAL ARC

Each lesson does one job the lesson before it made possible.

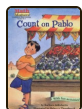
- 1 Two numbers live in one arrangement
- 2 Hold the number of groups steady and change the group size
- 3 The word each is what makes five repeat in every bag
- 4 Count on by a whole group from where the count stopped
- 5 Choose a skip count that fits, and find where one breaks

6 Pair them up: the leftover names a count odd or even

7 Add one more and watch it flip

SOURCE BOOKS

Every lesson in this unit is already published under Math lessons. Nothing here asks you to teach anything you cannot open today.



Count on Pablo

3 lessons in this unit



Where's Albert?

2 lessons in this unit



Ocean Counting Odd Numbers

2 lessons in this unit

HOW TO USE THIS GUIDE

Open the source lesson before you teach.

Each day names one lesson that already exists under Math lessons, with its book, its number and its title. This guide says what that lesson is doing in the sequence and what to collect from it; the lesson itself carries the steps, the printables and the answers.

Thirty minutes a day.

Five minutes to connect to yesterday, the twenty-minute source lesson, five minutes to close on something you can see. A day that runs long should lose the close, never the core.

Teach a lesson on its own if you need to.

Every day carries a one-sentence opening for a teacher who is using that lesson outside the sequence.

Stop after a checkpoint.

The unit holds together if you stop after either checkpoint and come back to it. Stopping between a checkpoint and the next one leaves a lesson without the evidence it was built on.

WHERE THIS FITS IN YOUR YEAR

When to teach it

Second half of the year, after two-digit addition. It is the unit that makes multiplication in Grade 3 possible.

What students need first

Children can skip count by twos, fives and tens, and can add two-digit numbers.

What this unit develops

Distinguishing the number of groups from the number of items; varying group size against group count; the distributive force of each; counting on by a group; choosing a count that fits a grouping; parity by pairing; the effect of one more on parity.

What it prepares them for

Multiplication as equal groups and division as sharing, both in Grade 3.

CURRICULUM CONNECTIONS

None claimed. The lessons in this unit carry their own standards classifications on their own pages, checked lesson by lesson. A unit-level expectation is a different claim, and none has been verified for this unit, so none is printed here. Use the placement guide above to site the unit in your year, and the individual lesson pages for the codes.

UNIT AT A GLANCE

#	MATHEMATICAL MOVE	SOURCE LESSON	COLLECT
1	Two numbers live in one arrangement — how many bags, and how many peppers	Count on Pablo lesson 2, Five in Each Bag	Four filled cups and each child's answers, each one carrying a number and a word.
2	Hold the number of groups steady and change the group size; say which number moved	Where's Albert? lesson 3, Nine Plates, Ninety Sticks	Two rows recorded, each as a pair of numbers, with the number that changed marked.
3	The word each is what makes five repeat in every bag <i>Checkpoint after this lesson</i>	Count on Pablo lesson 6, The Little Word That Moves the Peppers	Two builds side by side with their totals, and each child's sentence naming the word and both numbers.
4	Count on by a whole group from where the count stopped	Where's Albert? lesson 4, Forty-Five, and Five in Her Hand	The stopped count written and the reached number written beside it, with the two numbers said aloud.
5	Choose a skip count that fits the grouping, and find the pile where tens strand five <i>Checkpoint after this lesson</i>	Count on Pablo lesson 3, Is Tens Always Fastest	A tally table of word costs for the three counts, and the record of which counts landed on forty-five and which stranded counters.
6	Pair them up: the leftover is what names a count odd or even	Ocean Counting Odd Numbers lesson 2, Pair Them Up to Tell Odd from Even	A tally of which counts left somebody standing, with each build's leftover reported.
7	Add one more and watch it flip — the rule the leftover obeys	Ocean Counting Odd Numbers lesson 3, Add One More and Watch It Flip	Four before-and-after results kept side by side, each said as a full sentence.

UNIT VOCABULARY

Words students say, not words they are taught to define.

- group** One bag, plate or cup. Children say how many groups and how many things, never one alone.
- each** The word that puts the same amount in every group.
- in all** The total across all the groups.
- left over** The counters with no pair, and what they tell you about the number.

MATERIALS

From the source lessons

Each day's materials are listed on that day's page below and on the source lesson itself. Nothing is duplicated here.

New for this unit

- Checkpoint 1 page, one per child
- Checkpoint 2 page, one per child
- Performance task set: forty counters, ten paper plates and a tally sheet per pair, plus a card naming a group size
- Performance task page, one per child

ASSESSMENT PLAN

Daily evidence

Keep the two-number answer from lesson 1, the written pair of numbers from lesson 2, and the tally of word costs from lesson 5.

Checkpoint 1, after lesson 3: Two numbers, one arrangement

Five cups with four counters in each. The child says how many cups, how many counters in one cup, and how many counters in all.

Book-free. Plain cups and counters.

Look for. Five cups, four in each, twenty in all — each said with its word. A bare twenty is not the whole answer.

Checkpoint 2, after lesson 5: Which count fits?

Thirty-five counters. The child is asked to count them by tens, then by fives, and to say which count landed exactly and what the other one left.

Book-free. Plain counters.

Look for. Fives lands on thirty-five; tens leaves five stranded. The child names the leftover rather than ignoring it.

Culminating task: Build it, count it, and say what is left

Each pair is given a group size and a pile of counters. They build as many full groups as the pile allows and say how many groups and how many counters in all. They then count the whole pile by twos, by fives and by tens, tallying one mark per number word, and say which counts landed exactly and what each of the others left standing. They finish by saying whether the total is odd or even and how they know.

Collect. The built groups with both numbers, the three tallies of word cost, and the parity answer with its reason.

What it assesses. Groups against items, choosing a count, and the leftover as information — the three things this unit built, with no total above fifty.

DAILY LESSON PAGES

Lesson 1

Two numbers live in one arrangement — how many bags, and how many peppers

SKILL LESSON

Count on Pablo (/math-library/377.html) · lesson 2, Five in Each Bag · Grade 2 ·

20 minutes

Counting equal groups — groups and items

I CAN

I can say how many groups and how many things.

BIG IDEA

One arrangement carries two numbers, and confusing them is the error the whole unit is against.

SUCCESS

Every answer is a number and a word: four bags, twenty peppers.

CONNECT | 5 MIN

First lesson. Fill four cups with five counters each in front of the class and ask how many there are. Take both answers and do not settle it.

TAUGHT ON ITS OWN

Abuela's instruction is precise: put five peppers in each plastic bag, then say how many peppers there are.

SOURCE CORE | 20 MIN

Pairs fill four cups with exactly five counters each, then answer alternating questions — how many bags, how many peppers, how many in this one bag — with the number and the word every time.

COLLECT

Four filled cups and each child's answers, each one carrying a number and a word.

CLOSE | 5 MIN

Pairs add a fifth cup and fill it, predict both new answers before counting, and say which number grew by one and which grew by five.

From the source lesson:

Printed source passage in this step; 20 counters per pair of students; 4 cups per pair of students; 5 extra counters per pair of students; 1 extra cup per pair of students; Word cards: each, groups, items

Watch for:

A bare number as an answer. Rebuild rather than correct: hand the child the cups and ask the question again.

Lesson 2

Hold the number of groups steady and change the group size; say which number moved

SKILL LESSON **Where's Albert?** (</math-library/436.html>) · lesson 3, Nine Plates, Ninety Sticks ·

Grade 2 · 20 minutes

Counting equal groups — how many groups, how many in all

I CAN	I can change the group size and see what moves.
BIG IDEA	The number of groups and the number in each group vary independently, and the total follows the one that changed.
SUCCESS	The child writes two numbers for each row and can say which one changed between the rows.
CONNECT 5 MIN	Yesterday one arrangement had two numbers. Today the number of plates stays put and what is on them changes.
TAUGHT ON ITS OWN	Agnes hands out the same thing to every scout three times over, so the book holds the number of groups steady and changes only the group size.
SOURCE CORE 20 MIN	Pairs build nine plates of ten sticks and write the two numbers, then clear and rebuild the same nine plates with five counters each and write the two numbers again.
COLLECT	Two rows recorded, each as a pair of numbers, with the number that changed marked.
CLOSE 5 MIN	One partner builds a row of equal plates while the other looks away; the counter says how many plates, how many in all, and names the group size.

From the source lesson: 12 paper plates per pair of students; 100 craft sticks per pair of students; Recording paper and pencil per student; Printed source passage in this step; 50 counters per pair of students; Word cards: group, in all, equal

Watch for: A child changes the number of plates as well. Count the plates before and after and make them say the number aloud both times.

Lesson 3 **The word each is what makes five repeat in every bag**

MATH THROUGH THE READING **Count on Pablo** (</math-library/377.html>) · lesson 6, The Little Word

That Moves the Peppers · Grade 2 · 20 minutes

Students discover that one small word in Abuela's instruction decides whether Pablo bags five peppers or twenty, then prove it with counters both ways.

I CAN	I can hear the word that fills every bag.
BIG IDEA	Each is what makes five repeat in every bag; without it the same sentence puts five peppers on the table and stops.
SUCCESS	Two builds stand side by side, one holding twenty and one holding five, and the child names the word between them.
CONNECT 5 MIN	You have changed the group size on purpose. Today the sentence changes instead, by one word, and the total moves by fifteen.
TAUGHT ON ITS OWN	Abuela's instructions are the story's working orders, and their quantities only come out right if the little words are read exactly.
SOURCE CORE 20 MIN	Pairs build the sentence as written — four cups, five counters in each — and count by fives to twenty; then rebuild with the in place of each, giving one bag of five and three empty cups, and count again.
COLLECT	Two builds side by side with their totals, and each child's sentence naming the word and both numbers.
CLOSE 5 MIN	Each child arranges a small build of their own with the same count in every cup and says one true sentence about it using each, with both numbers in it.

From the source lesson: 20 counters per pair; 4 cups per pair; Printed sentence card with the original instruction; Two sentence strips: the original sentence and the swapped sentence, displayed side by side from segment 3

Watch for: A child fills all four cups under the swapped sentence out of habit. Read the sentence again slowly with a finger on the word.

Checkpoint after this lesson: Two numbers, one arrangement. The page is at the end of this guide.

Lesson 4 **Count on by a whole group from where the count stopped**

SKILL LESSON **Where's Albert?** (</math-library/436.html>) · lesson 4, Forty-Five, and Five in Her Hand

· Grade 2 · 20 minutes

Counting on by a group from a stopped count

I CAN	I can count on by a whole group.
BIG IDEA	A count that stops short tells you something is missing, and you can say where it would have landed without starting over.
SUCCESS	The child says the next number without recounting the plates, and says the two things that got them there.
CONNECT 5 MIN	Yesterday one word filled every bag. Today every bag is filled and the count stops one bag early.
TAUGHT ON ITS OWN	Every time Agnes counts, the count stops one group early, and that is how she learns Albert is gone.
SOURCE CORE 20 MIN	Pairs set nine plates of five, count by fives to forty-five as Agnes does, then hold five more counters in hand and say the number the count would reach without laying them down.
COLLECT	The stopped count written and the reached number written beside it, with the two numbers said aloud.
CLOSE 5 MIN	One partner builds a row of plates of ten and secretly removes one; the other counts by tens and says how many plates are missing and how many sticks with them.

From the source lesson: Recording paper and pencil per student; Printed source passage in this step; 12 paper plates per pair of students; 50 counters per pair of students; Word cards: missing, more, reach

Watch for: A child lays the last group down and recounts from the start. Ask for the number first, with the counters still in their hand.

Lesson 5

Choose a skip count that fits the grouping, and find the pile where tens strand five

SKILL LESSON

Count on Pablo (/math-library/377.html) · lesson 3, Is Tens Always Fastest · Grade 2 · 20 minutes

Choosing a skip count that fits the grouping

I CAN	I can choose a count that fits the pile.
BIG IDEA	A skip count only works when the pile splits into equal groups with nothing left over, and the fastest count is not always the one that fits.
SUCCESS	The class writes a rule in its own words naming both when a count works and when it does not.
CONNECT 5 MIN	You can count on by a group. Today three different counts are tried on one pile and one of them will not land.
TAUGHT ON ITS OWN	Pablo escalates through the book, calling twos fast, fives faster, and tens very fast.
SOURCE CORE 20 MIN	Pairs count the same forty counters three times, regrouped by twos, by fives and by tens, tallying one mark per number word and recording the three word costs; then add five counters and try all three counts again.
COLLECT	A tally table of word costs for the three counts, and the record of which counts landed on forty-five and which stranded counters.
CLOSE 5 MIN	The class returns to its opening votes and completes a sentence frame aloud, then settles one shared wording and writes it under the tally table.

From the source lesson: Printed source passage in this step; 40 counters per pair of students; Tally sheet per pair of students; 5 extra counters per pair of students; Word cards: claim, leftover

Watch for: A child ignores the stranded five and says tens worked. Mark the leftover counters where everyone can see them before the rule is written.

Checkpoint after this lesson: Which count fits?. The page is at the end of this guide.

Lesson 6 **Pair them up: the leftover is what names a count odd or even**

SKILL LESSON **Ocean Counting Odd Numbers** (/math-library/87.html) · lesson 2, Pair Them Up to

Tell Odd from Even · Grade 2 · 20 minutes

Deciding whether a count within 50 is odd or even by pairing

I CAN	I can pair them up to tell odd from even.
BIG IDEA	A leftover is information: the counter with no partner is what names a count odd.
SUCCESS	The child reports the leftover before saying odd or even.
CONNECT 5 MIN	Yesterday a count left five counters stranded. Today the groups are pairs and the leftover has a name.
TAUGHT ON ITS OWN	The book asks how you can tell an even number from an odd one, and then counts fifty pages of ocean animals past the reader.
SOURCE CORE 20 MIN	Pairs count nine counters for the crabs and push them two at a time into the boxes, count the filled boxes by twos and say what is sitting outside; then build twenty-one, twenty-three and twenty-seven the same way, reporting the leftover each time before saying odd or even.
COLLECT	A tally of which counts left somebody standing, with each build's leftover reported.
CLOSE 5 MIN	Pairs turn number cards one at a time and place each on the odd or even pile, saying how many pairs the number makes and whether anyone is left standing before it moves.

From the source lesson: Two-color counters, 50 per pair; Pairing mat with twenty-five two-counter boxes; Number cards from the book's pages: 3, 5, 9, 21, 23, 27, 37, 50; Word cards: even, left over, odd

Watch for: A child names odd or even from the last digit without pairing. That rule comes later; here the pairs are the evidence.

Lesson 7 **Add one more and watch it flip — the rule the leftover obeys**

SKILL LESSON **Ocean Counting Odd Numbers** (/math-library/87.html) · lesson 3, Add One More and Watch It Flip · Grade 2 · 20 minutes

Reasoning about one more than an odd or even number within 50

I CAN	I can say what one more does.
BIG IDEA	Adding one closes the gap or opens it, so parity flips every time, and one build can be tested against four others.
SUCCESS	The child writes a rule that holds for every build on their table, including the one that starts at zero.
CONNECT 5 MIN	Yesterday the leftover named the number. Today one counter is added and the leftover changes hands.
TAUGHT ON ITS OWN	The odd run ends at forty-nine, one more animal is added, and the count lands on fifty, a number the book calls even.
SOURCE CORE 20 MIN	Pairs build nine and pair it, add one counter and pair again, saying both numbers and exactly what changed; then run the same test from twenty-one, twenty-three and twenty-seven and keep all four results visible.
COLLECT	Four before-and-after results kept side by side, each said as a full sentence.
CLOSE 5 MIN	Pairs fill in a sentence strip with the rule their builds support, read it to another pair, then test it by starting from zero and adding one, changing the strip if the test breaks it.

From the source lesson: Two-color counters, 50 per pair; Ten-frames, five per pair; Sentence frame strip: One more than an odd number is ____.; Word cards: even, odd, one more

Watch for: A rule that is true for the four builds and fails at zero. The last case is the point; do not let it be skipped.

CULMINATING PERFORMANCE TASK

Build it, count it, and say what is left

Each pair is given a group size and a pile of counters. They build as many full groups as the pile allows and say how many groups and how many counters in all. They then count the whole pile by twos, by fives and by tens, tallying one mark per number word, and say which counts landed exactly and what each of the others left standing. They finish by saying whether the total is odd or even and how they know.

Collect. The built groups with both numbers, the three tallies of word cost, and the parity answer with its reason.

What it assesses. Groups against items, choosing a count, and the leftover as information — the three things this unit built, with no total above fifty.

TEACHER KEY AND RUBRIC

Key

- Checkpoint 1: five cups, four in each, twenty in all.
- Checkpoint 2: fives lands exactly at thirty-five; tens reaches thirty and leaves five.
- Task: set piles between thirty and fifty and check each one yourself. A pile that lands exactly on all three counts makes the last step empty; choose one that does not.

Rubric

STRAND	SECURE LOOKS LIKE	DEVELOPING	NOT YET
Representation	Every group holds the same number, and the leftover is left visible rather than tidied away.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Calculation	Each skip count is one number word per group, and the totals agree with the count by ones.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Meaning	Every number is said with what it counts: groups, or things, or the leftover.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Explanation	The child says which counts fit and why the others did not.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.

PRINT-READY STUDENT PAGES

CHECKPOINT 1 • GRADE 2

Two numbers, one arrangement

Name

Date

Five cups, four counters in each. How many cups? How many in one cup? How many counters in all? Say each number with its word.

CHECKPOINT 2 • GRADE 2

Which count fits?

Name

Date

Thirty-five counters. Count them by tens. Now count them by fives. Which count landed exactly? What did the other one leave?

CULMINATING TASK • GRADE 2**Build it, count it, and say what is left**

Name _____

Date _____

Build as many full groups as your pile allows, using the group size on your card. Say how many groups and how many counters in all. Now count the whole pile three ways — by twos, by fives, by tens — making one tally mark for every number word. Which counts landed exactly? What did each of the others leave standing? Last, is your total odd or even, and how do you know?

TEACHER PLANNING AND HANDOFF

- Children who answered with a bare number in the task will need lesson 1 again before multiplication.
- Lessons 6 and 7 are the parity work; they carry into Grade 3 only lightly, but they are the reason the leftover stops being an error.
- Ocean Counting Odd Numbers and Even or Odd both teach the pair test; only one is used, so the other stays available for reading.

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