

MATH UNIT

Two-digit adding and taking away, and knowing the answer is right

Grade 2

7 lessons

7 × 30 minutes

3 source books

210 minutes in all

THE QUESTION THIS UNIT FOLLOWS

How do you know that is the answer?

ABOUT THIS UNIT

This unit teaches the two computations Grade 2 owes — adding across a ten and subtracting across one — but it spends as much time on knowing the answer is right. Children estimate a floor before computing, they show one sum two ways and match the parts, and they check a total against a printed one and go hunting for the line they dropped.

It ends on the thing that decides everything before any arithmetic starts. The book that runs through these lessons prints columns of numbers with no operation sign anywhere, and one ordinary word is the only instruction there is.

THE MATHEMATICAL ARC

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

- 1 Add by splitting the second number into tens and ones
- 2 When the ones column passes ten, trade
- 3 Know a floor for the answer before the answer
- 4 One sum as blocks and as two jumps
- 5 Taking away, and trading a ten the other way

6 The whole and its two parts, written both ways

7 One word, two totals: the sentence chooses the operation

SOURCE BOOKS

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



Mac & Cheese, Pleeeeze!

3 lessons in this unit



Collection for Kate, A

2 lessons in this unit



Shark Swimathon

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

The middle of the year, once the class is secure to one hundred. Lessons 5 and 6 want the addition work behind them.

What students need first

Children can read and build two-digit numbers as tens and ones and can add within twenty.

What this unit develops

Adding by decomposing the second addend; regrouping ten ones into a ten; estimating a lower bound from place value; two representations of one sum; subtracting with a trade; part-part-whole within one hundred; identifying the operation a sentence names.

What it prepares them for

Three-digit computation, and the Grade 4 work where an operation has to be recovered from prose before anything is calculated.

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	Add by splitting the second number into its tens and its ones	Mac & Cheese, Pleeeeze! lesson 1, Tens First, Then Ones	Four sums answered in two spoken stages, with the hardest one written out as an equation and its two stages underneath.
2	When the ones column passes ten, trade ten ones for one ten	Collection for Kate, A lesson 1, Rachel's Five Boxes: Adding Until the Ones Make a Ten	A place-value mat showing the trade completed, with the new rod pointed at and its source named.
3	Know a floor for the answer before the answer: each addend is more than ten <i>Checkpoint after this lesson</i>	Collection for Kate, A lesson 2, Bigger Than Ten, So Bigger Than Thirty: Kate Predicts John's Total	A number line with the floor marked and shaded and the total placed on it.
4	One sum as blocks and as two jumps — and the landing point that is not an object	Mac & Cheese, Pleeeeze! lesson 4, Two Ways to Show One Sum	A number line with two labelled jumps beside the built blocks, with the matching parts pointed at.
5	Taking away, and trading one ten for ten ones when the ones will not give	Shark Swimathon lesson 1, Take the Day's Laps Off the Sign	Three written subtractions with the two that needed a trade ringed.
6	The whole and its two parts, written once as a subtraction and once as an addition <i>Checkpoint after this lesson</i>	Shark Swimathon lesson 4, Laps Swum and Laps to Go Make Seventy-Five	The shaded bar strip and three recorded pairs, each headed by the whole.
7	One word, two totals: the sentence, not the numeral, chooses the operation	Mac & Cheese, Pleeeeze! lesson 6, One Word, Two Totals	A split mat holding two totals built from the same numeral, with both said aloud.

UNIT VOCABULARY

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

tens and ones How a two-digit number is built and how a sum is taken apart.

trade	Ten ones for one ten, or one ten for ten ones.
floor	Lesson 3: a number the answer has to beat, known before the answer is.
part, whole	Lesson 6: the two parts that make the whole, in either order.

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: base ten rods and cubes, a goal board ruled into four rows, and a card of four daily amounts, per pair
- Performance task page, one per child

ASSESSMENT PLAN

Daily evidence

Keep the two-stage answers from lesson 1, the floor and the sum from lesson 3, and the pair of sentences from lesson 6.

Checkpoint 1, after lesson 3: Predict, then add

Three numbers: 24, 18 and 31. The child writes a floor before adding, then adds and says whether the total beat the floor and by how much.

Book-free. Numbers on a card, no book.

Look for. A floor of sixty, reached because each addend is more than ten and three tens is thirty — or thirty, if the child reasons more simply. Either is right if the reasoning names the tens. The sum is seventy-three.

Checkpoint 2, after lesson 6: The whole and the parts

A whole of eighty and one part of fifty-three. The child finds the other part and writes both sentences about the split.

Book-free. Blank paper and blocks if wanted.

Look for. Twenty-seven, with $80 - 53 = 27$ and $27 + 53 = 80$ both written about the same split.

Culminating task: Keep the board for four days

Each pair posts a goal of seventy-five on a board ruled into four day rows. For each of four days they total the day's amounts from the card, subtract that total from the number standing on the board, and write the new number, starting every row from the number the row above finished with. Before each subtraction they say a floor for the answer. At the end they read the whole board top to bottom in four sentences and write the addition that shows the four days' totals rebuild the seventy-five.

Collect. The completed goal board, the four spoken floors, and the closing addition.

What it assesses. Adding, trading both ways, estimating a bound, and part-part-whole across four steps — everything the unit built, with nothing above one hundred.

DAILY LESSON PAGES

Lesson 1 Add by splitting the second number into its tens and its ones**SKILL LESSON** Mac & Cheese, Pleeeeeze! (/math-library/393.html) · lesson 1, Tens First, Then Ones ·

Grade 2 · 20 minutes

Adding a two-digit number by adding its tens, then its ones

I CAN

I can add the tens first and then the ones.

BIG IDEA

A two-digit number can be added in two stages, and the order matters: the tens go on before the ones.

SUCCESS

The child gives every answer in two spoken stages, without blocks by the end of the lesson.

CONNECT | 5 MIN

First lesson. Put thirty and twenty-nine on the board and ask for the answer. Take it, then ask how they got there, and collect the routes.

TAUGHT ON ITS OWN

The book hands over two clean worked think-steps and says both of them out loud in the middle of the story.

SOURCE CORE | 20 MIN

Pairs build thirty with rods, add two more rods saying fifty and then nine cubes saying fifty-nine; then build seventy-two and slide three rods on before the single cube, saying both stages every time.

COLLECT

Four sums answered in two spoken stages, with the hardest one written out as an equation and its two stages underneath.

CLOSE | 5 MIN

Blocks are pushed away and sum cards are turned one at a time; each partner answers two cards in two stages, and anyone stuck gets one rod back for that sum only.

From the source lesson: Base ten rods and ones cubes, twenty rods and twenty cubes per pair; Tens-and-ones mat, one per pair; Sum cards showing 10 plus 20, 30 plus 29, 59 plus 13, 72 plus 31; Recording strip, one per student; Pencil; Word cards: equals, split, strategy

Watch for: A child adds the ones first and loses the ten. Insist the rods move before the cubes, out loud, until it is automatic.

Lesson 2**When the ones column passes ten, trade ten ones for one ten****SKILL LESSON****Collection for Kate, A** (</math-library/376.html>) · lesson 1, Rachel's Five Boxes: Adding

Until the Ones Make a Ten · Grade 2 · 20 minutes

Adding five two-digit and one-digit addends with regrouping

I CAN

I can trade ten ones for one ten.

BIG IDEA

When the ones column reaches ten, a trade has to happen before the tens can be read.

SUCCESS

The child can point at the rod they made and say which addends it came from.

CONNECT | 5 MIN

Yesterday you added the tens first. Today the ones are going to pile up past ten and something has to be done about them.

TAUGHT ON ITS OWN

The book lists Rachel's collection as five separate counts and arrives at forty-nine twice, once by regrouping and once on a calculator.

SOURCE CORE | 20 MIN

Pairs build the five counts as separate piles, push every loose cube into the ones column and count them past ten, trade ten for one rod and move it across, then read the tens and the ones and say the whole number.

COLLECT

A place-value mat showing the trade completed, with the new rod pointed at and its source named.

CLOSE | 5 MIN

Pairs enter the five numbers on a calculator in the book's order and compare the screen with the mat, then say which method told them a trade happened.

From the source lesson: Interlocking ones cubes and ten rods; Place-value mat, one per pair; Simple four-function calculator, one per pair; Word cards: regroup, sum**Watch for:** A child writes the answer with more than nine in the ones column. Send them back to the loose cubes and ask them to count them.

Lesson 3**Know a floor for the answer before the answer: each addend is more than ten****SKILL LESSON** **Collection for Kate, A** (</math-library/376.html>) · lesson 2, Bigger Than Ten, So Bigger

Than Thirty: Kate Predicts John's Total · Grade 2 · 20 minutes

Estimating a sum from the size of its addends, then adding three two-digit numbers

I CAN

I can say how big the answer has to be before I work it out.

BIG IDEA

A bound can be known before an answer is, and it comes from place value rather than from guessing.

SUCCESS

The child writes a floor with a reason that names the ten, and then tests the answer against it.

CONNECT | 5 MIN

You can add and you can trade. Today you say roughly where the answer has to land before you touch it.

TAUGHT ON ITS OWN

Before she adds John's three counts, Kate reasons about the answer's size from the size of the addends alone.

SOURCE CORE | 20 MIN

Pairs check each of three numbers against ten, write the floor sentence only if all three really are more than ten, mark the floor on a number line and shade where the answer has to land, then add the three and place the total.

COLLECT

A number line with the floor marked and shaded and the total placed on it.

CLOSE | 5 MIN

Each pair says by how much the total beat the floor, and says whether the prediction was right, using the words more than.

From the source lesson: Number line to 50, one per pair; Recording sheet with a floor line and a sum line; Word cards: predict, floor**Watch for:** A floor guessed rather than reasoned. The reason must name the ten, not the postcards.**Checkpoint after this lesson: Predict, then add. The page is at the end of this guide.**

Lesson 4**One sum as blocks and as two jumps — and the landing point that is not an object****SKILL LESSON****Mac & Cheese, Pleeeeeze!** (</math-library/393.html>) · lesson 4, Two Ways to Show One

Sum · Grade 2 · 20 minutes

Showing one two-digit sum as tens and ones and as jumps on a number line

I CAN

I can show one sum two ways.

BIG IDEA

The blocks and the jumps are two records of one sum, and one number on the line is a landing point rather than an object.

SUCCESS

The child can put a finger on the same twenty in both records, and can say which part of the blocks is not on the line at all.

CONNECT | 5 MIN

Yesterday you predicted a floor. Today the same sum is drawn twice and the two drawings have to be matched part by part.

TAUGHT ON ITS OWN

Thirty plus twenty-nine is fifty-nine, and the book shows the working as two moves, twenty first and nine after.

SOURCE CORE | 20 MIN

Pairs build thirty and twenty-nine in rods and cubes and count what they have, then mark thirty on an open line and draw exactly two jumps, one long and one short, labelling each landing number.

COLLECT

A number line with two labelled jumps beside the built blocks, with the matching parts pointed at.

CLOSE | 5 MIN

Pairs do fifty-nine plus thirteen both ways and watch for where the ten has to be built out of loose cubes, and say where that happens on the line.

From the source lesson: Base ten rods and ones cubes, twenty rods and twenty cubes per pair; Open number line strip marked 0 to 110 by tens, one per pair; Pencil; Word cards: jump, match, number line, same

Watch for: A line drawn with many small hops. Two jumps only; the whole point is that the second number came apart into two pieces.

Lesson 5 Taking away, and trading one ten for ten ones when the ones will not give

SKILL LESSON **Shark Swimathon** (/math-library/579.html) · lesson 1, Take the Day's Laps Off the Sign · Grade 2 · 20 minutes

Subtracting a two-digit number from a two-digit number, trading a ten when the ones will not give

I CAN	I can trade a ten to take the ones away.
BIG IDEA	Subtraction trades in the other direction: one ten becomes ten ones so the ones can give.
SUCCESS	The child rings the subtractions that needed a trade and can say what the ring means.
CONNECT 5 MIN	Adding traded ten ones up into a ten. Today one ten has to come back down, and you will meet one subtraction that needs no trade at all.
TAUGHT ON ITS OWN	Coach Blue writes the goal on a sign and then takes each day's laps off it, and the sign changes four times across the week.
SOURCE CORE 20 MIN	Pairs build seventy-five, take sixty-one off with no trade and write the line, then build sixty-one and trade one rod for ten cubes to take seventeen, then build forty-four and trade again to take nineteen.
COLLECT	Three written subtractions with the two that needed a trade ringed.
CLOSE 5 MIN	Pairs check each of their three answers against the number the book announces, and say aloud what the ring on two of them means.

From the source lesson: Base-ten rods and unit cubes, 9 rods and 20 cubes per pair; Lap sign card, one per pair, ruled tens and ones; Recording strip, one per student; Pencil; Word cards: goal, subtracted, total

Watch for: A child takes the smaller digit from the larger in the ones column and avoids the trade. Ask them to show it with the cubes.

Lesson 6**The whole and its two parts, written once as a subtraction and once as an addition****SKILL LESSON****Shark Swimathon** (/math-library/579.html) · lesson 4, Laps Swum and Laps to Go

Make Seventy-Five · Grade 2 · 20 minutes

Finding a missing part when the whole and one part are known, within 100

I CAN

I can find the part I am not given.

BIG IDEA

The goal never moves; what changes is how it splits, and one split makes two true sentences.

SUCCESS

The child writes both sentences for one day and shows a finger covering the same two parts each time.

CONNECT | 5 MIN

Yesterday you took each day's laps off the sign. Today the sign and the laps swum are the two parts of one whole that never changes.

TAUGHT ON ITS OWN

The book gives the open part on three different days and never gives the shaded part.

SOURCE CORE | 20 MIN

Pairs shade a seventy-five bar to show the laps already swum by the end of Tuesday, label both parts, then find each of the three shaded parts by taking the open part off seventy-five and write all three pairs with the whole at the top.

COLLECT

The shaded bar strip and three recorded pairs, each headed by the whole.

CLOSE | 5 MIN

Pairs pick one day and write both sentences for it, reading each aloud while pointing at the strip and showing their finger covers the same two parts.

From the source lesson: Seventy-five bar strip, one per pair, marked in tens; Colored pencil; Two-color counters, 25 per pair; Recording strip, one per student; Pencil; Goal board, one per pair, ruled into four day rows; Word cards: goal, needed, total

Watch for: A child treats the two sentences as two facts. Keep the finger on the strip while both are said.

Checkpoint after this lesson: The whole and the parts. The page is at the end of this guide.

Lesson 7**One word, two totals: the sentence, not the numeral, chooses the operation****MATH THROUGH THE READING****Mac & Cheese, Pleeeeze!** ([/math-library/393.html](http://math-library/393.html)) · lesson 6, One

Word, Two Totals · Grade 2 · 20 minutes

Students build the total a book sentence names, swap one word in that sentence, build the new total beside it, and say which word made the piles different.

I CAN

I can hear which operation the sentence wants.

BIG IDEA

The numeral is the same in every version; the word is what says whether to join it on, take it away, or report it as the total.

SUCCESS

Two piles stand on the split mat holding different totals from the same numeral.

CONNECT | 5 MIN

You have added and subtracted all week. Today the numbers stay put and only the word changes, and the total moves anyway.

TAUGHT ON ITS OWN

Within four sentences the book uses more as an addend, up to as a total reached, another as a further addend, and less as a subtraction, all about one growing count.

SOURCE CORE | 20 MIN

Pairs read the sentence strip, build seventy-two in rods and cubes and add the thirty-one, then take the strip with the word crossed out and replaced, read it aloud and build what the new sentence says on the other half of the mat.

COLLECT

A split mat holding two totals built from the same numeral, with both said aloud.

CLOSE | 5 MIN

Pairs place four sentence strips from the story under join it on, that is the total, or take it away, saying the word that decided each.

From the source lesson: Base ten rods and ones cubes, twenty rods and twenty cubes per pair; Split desk mat with two labelled halves, one per pair; Sentence strips, one book sentence per strip, five per pair; Sentence strip with another crossed out and in all written above it; Three sorting labels: join it on, that is the total, take it away; The five book sentences displayed one at a time

Watch for: A child builds from the numbers and ignores the word. Read the two strips one after the other before either build begins.

CULMINATING PERFORMANCE TASK

Keep the board for four days

Each pair posts a goal of seventy-five on a board ruled into four day rows. For each of four days they total the day's amounts from the card, subtract that total from the number standing on the board, and write the new number, starting every row from the number the row above finished with. Before each subtraction they say a floor for the answer. At the end they read the whole board top to bottom in four sentences and write the addition that shows the four days' totals rebuild the seventy-five.

Collect. The completed goal board, the four spoken floors, and the closing addition.

What it assesses. Adding, trading both ways, estimating a bound, and part-part-whole across four steps — everything the unit built, with nothing above one hundred.

TEACHER KEY AND RUBRIC

Key

- Checkpoint 1: floor of sixty; sum seventy-three; it beat the floor by thirteen.
- Checkpoint 2: twenty-seven.
- Task: choose four day totals that sum to exactly seventy-five, so the board ends at zero and the closing addition checks. Work the four rows yourself before the lesson.

Rubric

STRAND	SECURE LOOKS LIKE	DEVELOPING	NOT YET
Representation	Tens and ones are kept in their columns, and a trade is shown rather than asserted.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Calculation	Every row starts from the number above it, and the four totals add back to the goal.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Meaning	Each number on the board is named: swum, or still to go.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.
Explanation	The child says a floor before computing and says whether the answer beat it.	Does it with the arrangement in front of them.	Produces an answer without the arrangement or the reason.

PRINT-READY STUDENT PAGES

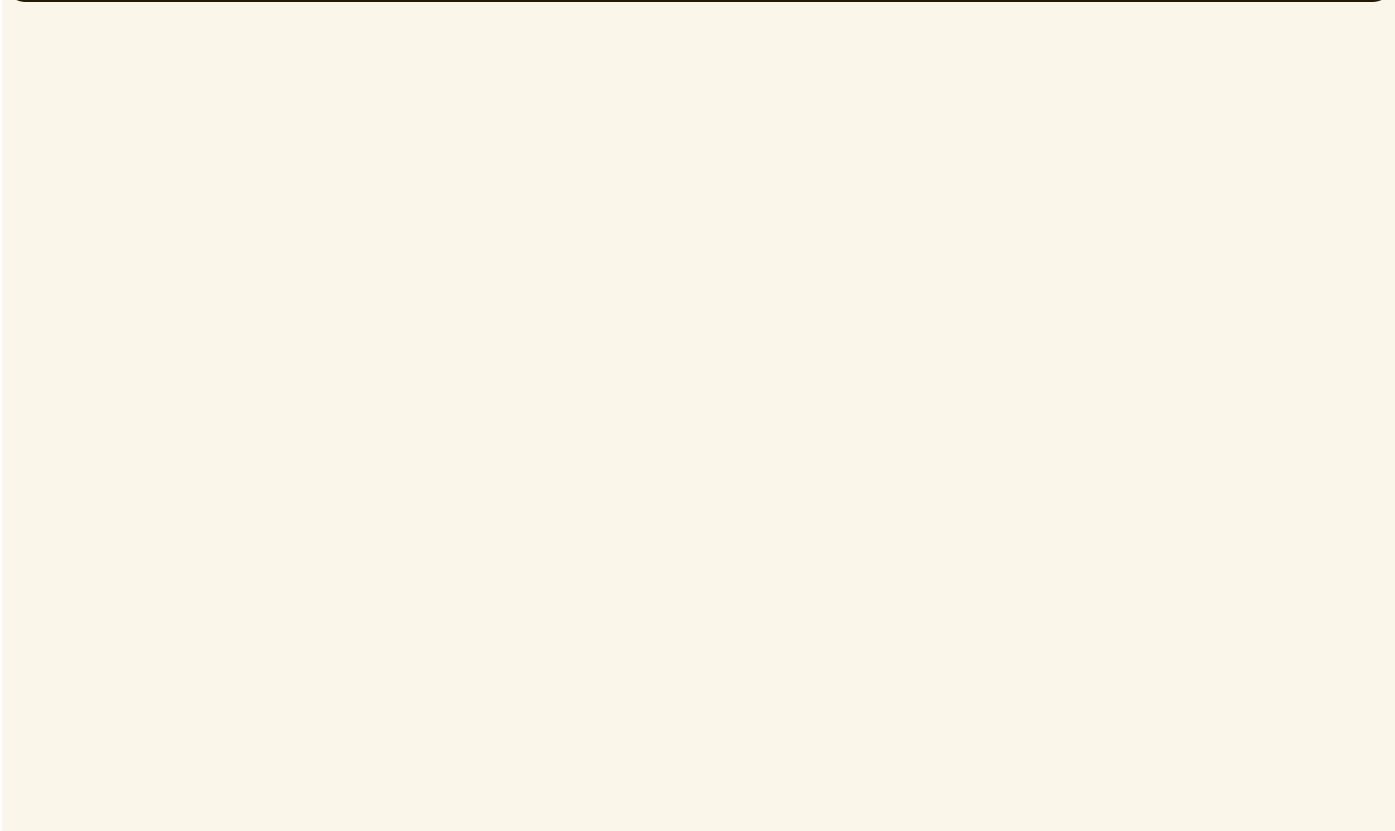
CHECKPOINT 1 · GRADE 2

Predict, then add

Name

Date

Look at 24, 18 and 31. Before you add anything, write a number the answer has to beat, and say why. Now add them. Did the total beat your number, and by how much?



CHECKPOINT 2 • GRADE 2

The whole and the parts

Name

Date

The whole is eighty. One part is fifty-three. What is the other part? Write both sentences about this split.

CULMINATING TASK • GRADE 2**Keep the board for four days**

Name _____

Date _____

Write seventy-five at the top of your board. For each day: total the day's amounts from the card, say roughly where the answer will land, then take the day's total off the number standing above it and write the new number. Every row starts from the number the row above finished with. When the board reaches the last day, read the whole board back in four sentences, then write the addition that shows the four days add back to seventy-five.

TEACHER PLANNING AND HANDOFF

- Children who could not produce a floor in checkpoint 1 need lesson 3 again; it is the habit that catches the biggest errors.
- Lesson 7 is the reading lesson, and it is the one that carries furthest — the Grade 4 money unit opens on the same problem.
- A Collection for Kate's running-total lesson is not used here; it is a good extra session if your class needs more practice on multi-addend sums.

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