

## WHERE THIS FITS IN YOUR YEAR

### Subtract Two-Digit Numbers · Grade 2 · California

Natural unit: Addition and subtraction within 100 This pack fits most naturally in the Grade 2 part of the year devoted to place-value reasoning and addition and subtraction within 100. It is best used after students can build two-digit numbers with tens and ones, but while they are still connecting concrete trades to written subtraction. Lessons 1 and 2 provide the strongest core: students model  $75 - 61$ ,  $61 - 17$ , and  $44 - 19$ , explain when a ten must be traded, and maintain a four-day record from 75 to zero.

Lesson 3 slows the work down to representation. Students build and draw 75, 61, 44, and 25, then trade one ten for ten ones and verify that the value has not changed. Lesson 4 connects addition and subtraction through a constant whole of 75. Students find missing parts and write related addition and subtraction equations. Lesson 5 offers an early equal-groups experience with five groups of five; it is useful preparation for multiplication but is not a complete multiplication lesson.

The three math-through-reading lessons work well as application or consolidation. Students must use specific sentences to determine quantities, test a changed sentence, reconstruct the week's numerical order, and justify a hidden total. These lessons strengthen mathematical reading and explanation without turning incidental story vocabulary into a curriculum claim.

#### STRONGEST CURRICULUM CONNECTIONS - OUR SUMMARY

Teaches · Lessons 1, 2, 6, 7, 8 2.NBT.5 - Fluently add and subtract within 100 using strategies based on place value and the relationship between addition and subtraction.

Student evidence: Students use concrete base-ten models, written equations, and linked daily totals to subtract within 100.

#### Reinforces · Lessons 4

2.OA.1 - Use addition and subtraction within 100 to solve one- and two-step word problems.

Student evidence: Students use a bar representation and equations to find the missing part of a whole of 75.

Limitation: The pack does not require a symbol for the unknown across the full range of problem types.

#### Reinforces · Lessons 5

2.OA.4 - Use addition to find the total number of objects arranged in rectangular arrays with up to five rows and five columns.

Student evidence: Students build five rows of five and determine the total of 25.

Limitation: Students do not write the equation expressing the total as a sum of equal addends.

Official reference: California Common Core State Standards: Mathematics

## Subtract Two-Digit Numbers

Grade 2 5 skill lessons · 3 math-through-reading Skill lessons 5 lessons on the mathematics the book carries. Each lesson has printable workbook pages and a separate teacher key.

1. Take the Day's Laps Off the Sign Fluency · Subtracting a two-digit number from a two-digit number, trading a ten when the ones will not give The book puts one number on a sign and changes it four times: Coach Blue writes the goal, then takes each day's laps off it. Students work three of those subtractions, blocks first and writing second — 75 minus 61, 61 minus 17, 44 minus 19 — meeting one that needs no trade and two that do.

Full lesson — 20 minutes

1. Set the goal on the sign (3 min) Each pair builds 75 on the lap sign card with 7 ten-rods and 5 single cubes. Then say the number twice: seventy-five, seven tens and five ones. Slide rods into the left column and cubes into the right so tens and ones never mix. Leave the sign standing; every subtraction today starts from a sign.

Word preview: goal Then she subtracted the total from the 75-lap goal.

On Tuesday, while the team warmed up, Coach Blue wrote their goal on a big sign.

2. Find Tuesday's laps with no trade (5 min) The sign reads 75 before Tuesday and 61 after it. Take 61 off 75 with the blocks — one cube from five cubes, six rods from seven rods. Write  $75 - 61 = 14$  on the recording strip. Say out loud why nothing had to be broken open: there were enough ones to give.

Word preview: subtracted Now we have 61 laps to go

3. Trade a ten to take seventeen (6 min)

Build 61 again and take away the 17 laps the team swam on Wednesday. One cube cannot give up seven, so trade one rod for ten cubes and count eleven ones. Take 7 ones and 1 ten, write  $61 - 17 = 44$ , and check your sign against the number the book announces.

Word preview: total Tiny stopped after two laps, but all the others swam three.

We have 44 laps to go

4. Trade again to take nineteen (6 min) Build 44 and take away Thursday's 19 laps: trade a rod, count fourteen ones, take 9 ones and 1 ten.

Write  $44 - 19 = 25$  under the other two subtractions. Ring the two that needed a trade and be ready to say what the ring means.

This time, no one got out after two laps. Everyone swam 3 except Gil.

This time, he swam 4.

Short version — 9 minutes

1. Set the goal on the sign (3 min) Build 75 on the lap sign card with 7 ten-rods and 5 cubes, tens in one column and

ones in the other. Say it twice: seventy-five, seven tens and five ones.

Word preview: goal Then she subtracted the total from the 75-lap goal.

2. Trade a ten to take seventeen (6 min) Take Wednesday's 17 laps off the 61 on your sign. One cube cannot give up seven, so trade a rod for ten cubes and count eleven ones. Take 7 ones and 1 ten, write  $61 - 17 = 44$ , and check it against the book's number.

Word preview: total Tiny stopped after two laps, but all the others swam three.

We have 44 laps to go

### THREE LEVELS

Support Hand the pair 61 already built, five rods and one cube standing in the columns, and do only  $61 - 17$ . Trade the rod for ten cubes, count eleven ones aloud, then take 7 ones and 1 ten. The blocks stay on the mat while the subtraction is written, so the difference is read off rather than held in mind. The trade itself is not reduced.

At Grade Work all three subtractions, blocks first and writing second, and ring the two that needed a trade. Say for each one whether the ones column could give before you touch it.

Extension Work backwards from the sign alone. Given only 75, 61, 44 and 25, find how many laps the team swam on each of the three days. Then, for each day, decide from the ones digits alone — before subtracting anything — whether a trade will be needed, and prove one of your predictions with the blocks.

### ENGLISH LEARNERS

The blocks and the numerals carry across any first language: seven tens and five ones look the same in every classroom, and trading one ten for ten ones is a move a child can make before saying a word about it. What does not carry is the order inside take 17 off 61, since many languages name the smaller number first, and laps to go is an English idiom for what is left rather than for what is done.

Run one sentence all lesson: how many laps to go, how many were taken away, and how many to go now. Students are welcome to count the trade aloud in their family language and give the finished sentence in English.

## **MATERIALS**

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

## **WORKBOOK**

Lap Sign Card full page Shark Swimathon — Take the Day's Laps Off the Sign Lap Sign Card Put ten-rods in the left column and single cubes in the right column.

Leave the sign standing. Every subtraction today starts from it.

Tens Ones Recording Strip half page Shark Swimathon — Take the Day's Laps Off the Sign Recording Strip Build it with the blocks first. Then write the subtraction on its own line.

Ring the two that needed a trade.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Word Cards card set Shark Swimathon — Take the Day's Laps Off the Sign Word Cards Cut on every line.

**goal**

**subtracted**

**total**

2. Keep the Goal Board for Four Days Application · Running a four-stage subtraction to track how many are left toward a goal Coach Blue never announces a day's total; she announces what is left. The book runs that loop four times, from 75 down to nothing. Students keep the board themselves: total the day's laps from what the swimmers did, subtract that total from the number standing on the board, write the new number, and begin the next day from it. This is application because the subtraction is never handed over — the day supplies it.

Full lesson — 20 minutes

1. Post the goal and Tuesday's number (5 min) Rule your goal board into four day rows and write 75 at the top. The book gives Tuesday's finished number, so write 61 in the first row and find the laps that took:

$75 - 61 = 14$ . Say the row aloud, 75 to go, 14 swum, 61 to go, before you touch the next one.

Word preview: goal On Tuesday, while the team warmed up, Coach Blue wrote their goal on a big sign.

Now we have 61 laps to go

2. Total Wednesday's laps (4 min) Six sharks swim on Wednesday. Put out two counters for Tiny and three for each of the other five.

Then count the whole set: two, and three, and three, and three, and three, and three. Write the day's total in the second row. This number is nowhere in the book, so your counters are the proof of it.

Word preview: all All six sharks swam one lap, the length of the pool and back.

Tiny stopped after two laps, but all the others swam three.

3. Take each day off the board (6 min) Subtract Wednesday's 17 from the 61 standing above it, trading a ten with rods and cubes, and write

44. Then total Thursday the same way, five sharks at three laps and Gil at four, and take 19 off 44 to write 25. Every row must start from the number the row above finished with.

Word preview: subtracted

When she finished, she subtracted Wednesday's total from the number of laps they still needed to meet their goal.

We have 44 laps to go Everyone swam 3 except Gil. This time, he swam 4.

4. Finish the board at zero (5 min) Gill cannot race, so five sharks swim on Friday and each of them swims five laps.

Build the five fives, total them, and take that total off the 25 standing on the board.

Write the last number, then read the whole board top to bottom in four sentences.

Word preview: each The doctor said I can't race for a whole month.

We can make it if we each swim five laps.

There are zero ones and zero tens left.

Short version — 9 minutes

1. Total Wednesday's laps (4 min) Put out two counters for Tiny and three for each of the other five sharks. Count the whole set and write the day's total. The book never says this number, so the counters are your proof.

Word preview: all Tiny stopped after two laps, but all the others swam three.

2. Finish the board at zero (5 min) Five sharks swim on Friday because Gill cannot race, and each swims five laps.

Build the five fives, total them, take that total off the 25 on the board, and read the finished board aloud.

Word preview: each We can make it if we each swim five laps.

There are zero ones and zero tens left.

### THREE LEVELS

Support Hand the pair the two day totals already counted, 17 and 19, on cards. The board work is unchanged: take each total off the number standing above it and write what is left. What is lifted is the counting, not the running subtraction.

At Grade Total each day from the swimmers and run the board yourself from 75 down to nothing, writing the day total and the number left in every row.

Extension Cover the Wednesday row and hand the pair only 75, 61 and 44. Rebuild the hidden total, then decide which day's total was fixed by the day before it and which were not, and say what that means for the last number on the board.

### ENGLISH LEARNERS

The direction words are what need teaching. To go, left and still needed all name the same quantity in this book, and a child may hear three different numbers where there is one. Fix a single sentence and use it in every row: how many were swum, and how many laps to go. Students may total in their strongest language and read the row in English.

### MATERIALS

- Goal board, one per pair, ruled into four day rows
- Pencil, or dry-erase marker if the board is sleeved or laminated
- Counters, 25 per pair Base-ten rods and unit cubes, 9 rods and 20 cubes per pair Word cards: all, each, goal, subtracted

### WORKBOOK

Goal Board full page Shark Swimathon — Keep the Goal Board for Four Days Goal Board Write the goal at the top. Fill in one row for each day.

Every row starts from the number the row above finished with.

Goal Day Tuesday Laps swum Laps to go Wednesday Thursday Friday Word Cards card set Shark Swimathon — Keep the Goal Board for Four Days Word Cards Cut on every line.

**all**

**each**

**goal**

**subtracted**

Day Total Cards Support card set Shark Swimathon — Keep the Goal Board for Four Days Day Total Cards Cut on the line. Put one card beside the row it belongs to.

**17**

**19**

3. Show the Laps Left in Tens and Ones Representation · Representing two-digit numbers as tens and ones and trading one ten for ten ones Four numbers stand on Coach Blue's sign across the week — 75, 61, 44 and 25 — and the book ends by naming the last one in tens and ones.

Students build each sign number with rods and cubes, draw it as sticks and dots, then trade one ten for ten ones and show by counting back that the number did not change. The point is the representation itself: one quantity in three forms, and the trade as a move you can watch happen.

Full lesson — 20 minutes

1. Build the four sign numbers (6 min) Take the number cards 75, 61, 44 and 25 one at a time and build each on the trading mat with rods and cubes. Say every number twice, once as its name and once as its tens and ones. Line the four builds up left to right so the week's shrinking is in front of you.

Then she subtracted the total from the 75-lap goal.

Now we have 61 laps to go We have 44 laps to go

2. Draw what you built (4 min) Draw each of the four numbers with a stick for every ten and a dot for every one, keeping sticks and dots in separate columns. Write the two-digit numeral under each drawing. Count one drawing back to check that the sticks and dots match the numeral you wrote.

3. Trade one ten for ten ones (5 min) Go back to 61 and trade one rod for ten cubes. Count what is on the mat now, five tens and eleven ones, and say whether the number changed. Prove your answer by counting the whole mat back to sixty-one, then make the same trade on 44.

4. Clear the mat to zero (5 min) Build 25 and take it all away, one ten and then the rest, until the mat is empty. Say what is left in the book's own words and write the numeral 0 under your last drawing.

Word preview: left There are zero ones and zero tens left.

Short version — 9 minutes

1. Draw what you built (4 min) Draw 61 and 44 with a stick for every ten and a dot for every one, sticks and dots in their own columns, and write the numeral under each drawing.

Word preview: ones

2. Trade one ten for ten ones (5 min)

Build 61 and trade one rod for ten cubes. Count the mat, five tens and eleven ones, and prove the number did not change by counting the whole mat back to sixty-one.

### THREE LEVELS

Support Work only 61 and 44, and keep the number card face up beside the mat so the numeral never has to be held in mind while the blocks are moved. The trade is unchanged: one rod out, ten cubes in, count the whole mat back.

At Grade Build, draw and trade all four sign numbers, writing the tens-and-ones name under each drawing.

Extension Trade twice on 75 — one rod, then a second — and write all three names for the one number: seven tens five ones, six tens fifteen ones, five tens twenty-five ones. Then say which of the three names is the useful one if 28 laps have to come off, and show on the mat why the other two are not.

### ENGLISH LEARNERS

Ten-ness is the same everywhere and the blocks say it without English. The number words are not: many languages build teens and tens in a different order than English does, so fifteen and fifty collide for a child hearing them for the first time. Have students point at the mat while they say the number, and practise one sentence naming the tens, the ones, and the number they make. Counting the trade in a first language before naming it in English is welcome, and the drawing is a report a student can give with no words at all.

## **MATERIALS**

Base-ten rods and unit cubes, 9 rods and 20 cubes per pair Number card set: 75, 61, 44, 25, one set per pair Trading mat, one per pair, ruled tens and ones Blank paper Pencil Word cards: left

## **WORKBOOK**

Trading Mat full page Shark Swimathon — Show the Laps Left in Tens and Ones Trading Mat Build each number with rods in the left column and cubes in the right column.

When you trade, one rod leaves the left column and ten cubes come into the right.

Tens Ones Sign Number Cards and Word Card card set Shark Swimathon — Show the Laps Left in Tens and Ones Sign Number Cards and Word Card

Cut on every line. Take the number cards one at a time.

**75**

**61**

**44**

**25**

**left**

Sticks and Dots Sheet full page Shark Swimathon — Show the Laps Left in Tens and Ones Sticks and Dots Sheet Draw a stick for every ten and a dot for every one. Keep sticks and dots in their own columns.

Write the numeral on the first line and the tens-and-ones name on the second.

When the mat is empty, write the numeral here: \_\_\_\_\_

4. Laps Swum and Laps to Go Make Seventy-Five Concept · Finding a missing part when the whole and one part are known, within 100 The goal never moves: seventy-five laps. What changes is how it splits, laps already swum on one side and laps still to go on the other. The book states one side of that split on three different days and never the other. Students shade a seventy-five bar to show both parts, find the missing part each time, and write the pair of number sentences that says one split two ways.

Full lesson — 20 minutes

1. Split the bar into two parts (5 min) Take the seventy-five bar strip, marked in tens. Shade from the left end the laps the sharks have already swum by the end of Tuesday. That leaves 61 squares open.

Label the shaded part swum and the open part to go. Read the whole strip as one number, then read each part as its own.

Word preview: goal Then she subtracted the total from the 75-lap goal.

Now we have 61 laps to go

2. Find the missing part three times (6 min) The book gives the open part on three days, 61 and then 44 and then 25, and never gives the shaded part. Find each shaded part by taking the open part off 75 with counters or blocks, and write the three pairs on your recording strip. Keep the whole, 75, written at the top of every pair.

Word preview: needed We have 44 laps to go When she finished, she subtracted Wednesday's total from the number of laps they still needed to meet their goal.

3. Write the split two ways (4 min) Pick one day and write both sentences for it:  $75 - 61 = 14$  and  $14 + 61 = 75$ . Point at the strip while you read each sentence aloud, and show your partner that your finger covers the same two parts both times.

Word preview: total

4. Check the parts against the sign (5 min)

Line up your three shaded amounts. Check each one against the sign number for that day by adding.

The two parts have to make 75 every time. Fix any pair that does not, and say out loud which part you changed and why.

Coach Blue had already put up the team's numbers.

The sharks all rushed over to the sign.

Short version — 9 minutes

1. Write the split two ways (4 min) Write both sentences for one day:  $75 - 61 = 14$  and  $14 + 61 = 75$ . Read each aloud while your finger covers the same two parts of the strip.

Word preview: total

2. Check the parts against the sign (5 min) Add the two parts for each of the three days. Every pair has to make 75. Say which part you changed for any pair that did not.

Coach Blue had already put up the team's numbers.

### THREE LEVELS

Support Work one day only, the 61 day, and leave the counters sitting on the strip while both sentences are written so the two parts stay in sight. Both sentences are still required; the number of days is what is reduced.

At Grade Find all three missing parts and write both sentences for at least two of the days.

Extension Show on the strip why the shaded part can only grow across the week and the open part can only shrink. Then decide what would have to be true of one day's total for the open part to run past the end of the strip, and say whether the book's numbers ever came close.

### ENGLISH LEARNERS

The part-part-whole picture is language-free: two pieces of one strip say the relation before any sentence does. English hides that relation in small words — to go, still, already — and a child may read to go as laps completed. Anchor both sentences to the strip with a finger and rehearse the pair frame: \_\_\_\_ swum and \_\_\_\_ to go make 75, and 75 take away \_\_\_\_ leaves \_\_\_\_\_. Reasoning aloud in a first language and reporting the pair in English is welcome.

### MATERIALS

Seventy-five bar strip, one per pair, marked in tens Colored pencil Two-color counters, 75 per pair Recording strip, one per student Pencil Goal board, one per pair, ruled into four day rows Word cards: goal, needed, total

### WORKBOOK

Seventy-Five Bar Strip full page Shark Swimathon — Laps Swum and Laps to Go Make Seventy-Five Seventy-Five Bar Strip Shade from the left end the laps already swum. Leave the rest open.

Label the shaded part swum and the open part to go.

|    |                           |    |
|----|---------------------------|----|
| 10 | 20                        | 30 |
| 40 | 50                        | 60 |
| 70 | Recording Strip full page | 75 |

Shark Swimathon — Laps Swum and Laps to Go Make Seventy-Five Recording Strip Write the whole at the top of every pair, then the two parts.

Then write both sentences for two of the days.

Whole: \_\_\_\_\_ swum and \_\_\_\_\_ to go.

Whole: \_\_\_\_\_ swum and \_\_\_\_\_ to go.

Whole: \_\_\_\_\_ swum and \_\_\_\_\_ to go.

Both sentences \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_ =  
\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

Word Cards card set Shark Swimathon — Laps Swum and Laps to Go Make Seventy-Five Word Cards Cut on every line.

# goal needed total

## 5. Five Sharks, Five Laps: Does the Plan Reach Zero?

Reasoning · Totalling five equal groups within 25 and judging whether the total meets a goal On Friday the team is one shark short and 25 laps stand on the sign. Stripes proposes five laps each.

Students count who is left in the water, build five equal groups of five, total them, set that total against the 25 still to go, and decide whether the plan reaches zero — then say why in a sentence that carries both numbers. The reasoning is the work here; the computation is small and the argument is not.

Full lesson — 20 minutes

1. Count who is swimming (4 min) Set out one counter for each shark on the team, then take out the counter for Gill, who cannot race.

Say the count that is left. Then say which sentence in the book told you to take one out.

Word preview: all All six sharks swam one lap, the length of the pool and back.

The doctor said I can't race for a whole month.

2. Build five groups of five (6 min) On the five-row work mat, put five counters into each of five rows, one row for each swimmer. Count the rows by fives, touching a whole row for each number word you say: five, ten, fifteen, twenty, twenty-five. Write the total under the mat.

Word preview: each We can make it if we each swim five laps.

3. Set the plan against the sign (5 min) Write 25 for the laps still to go beside your total for the plan, and take one from the other. Decide out loud whether the plan reaches zero, falls short, or goes past, and mark your board with what you decided.

There are zero ones and zero tens left.

4. Say why, with the numbers in it (5 min) Tell your partner what you decided using the frame card, and your sentence has to contain both numbers. Then answer one question back: suppose only four sharks could swim — does your sentence still hold? Change it if the answer changes it.

Short version — 9 minutes

1. Count who is swimming (4 min) Put out one counter for each shark, then take out Gill's because he cannot race.

Say the count that is left and name the sentence that told you to take one out.

Word preview: all

The doctor said I can't race for a whole month.

2. Set the plan against the sign (5 min) Five swimmers at five laps each make 25. Write that beside the 25 still to go, take one from the other, and decide out loud whether the plan reaches zero.

Word preview: zero There are zero ones and zero tens left.

### THREE LEVELS

Support Leave the five rows of counters standing on the mat while the sentence is spoken, and give the frame card with both numbers already printed on it so the argument is built by filling two blanks rather than composed from nothing. The decision stays the student's own.

At Grade Build the five groups, compare the total with 25, decide, and give a partner a sentence that contains both numbers.

Extension Argue the other side first. Take Tiny's position, that the team cannot do it without Gill, and build the strongest case for it out of the week's numbers before answering it with your own. Both sides have to contain a number.

### ENGLISH LEARNERS

Equal groups are visible: five rows of five is an argument a child can point at before saying it. The English that carries the argument is not visible — each, enough, still to go, and the because-clause all have to be built. Give the frame on a card and practise it: Five sharks swim five laps each. That is \_\_\_\_ laps, and \_\_\_\_ laps are still to go, so the plan \_\_\_\_\_. Students may argue it with a partner in their first language first and give the framed sentence in English.

### MATERIALS

Counters, 25 per pair Five-row work mat, one per pair Goal board, one per pair, ruled into four day rows Sentence frame card, one per student Word cards: all, each

## WORKBOOK

Five-Row Work Mat full page Shark Swimathon — Five Sharks, Five Laps: Does the Plan Reach Zero?

Five-Row Work Mat Put five counters in each row, one row for each swimmer.

Count the rows by fives and write the total under the mat.

Total for the plan: \_\_\_\_\_ Laps still to go: \_\_\_\_\_ Take one from the other: \_\_\_\_\_

Our decision: \_\_\_\_\_

Sentence Frame Card and Word Cards card set Shark Swimathon — Five Sharks, Five Laps: Does the Plan Reach Zero?

Sentence Frame Card and Word Cards Cut on every line. Keep the frame card in front of you when you say your sentence.

Frame card Five sharks swim five laps each.

That is \_\_\_\_\_ laps, and \_\_\_\_\_ laps are still to go, so the plan  
\_\_\_\_\_ because \_\_\_\_\_ .

Word cards

**all**

**each**

Sentence Frame Card with the Numbers Printed Support half page Shark Swimathon — Five Sharks, Five Laps: Does the Plan Reach Zero?

Sentence Frame Card

Say your sentence from this card. Two blanks are yours to fill.

Five sharks swim five laps each.

That is 25 laps, and 25 laps are still to go, so the plan \_\_\_\_\_ because  
\_\_\_\_\_ .

Math through the reading The mathematics is reached through a sentence the book prints: change the wording the reading and the numbers change with it. These carry their own standards, matched against these lessons rather than inherited from the skill ones.

6. The Word That Moves the Number Integrated · Students total one day of the swimathon twice, once as the book's sentence says it and

|                  |                                                            |
|------------------|------------------------------------------------------------|
| once with the    | nd show that the two totals leave two different numbers on |
| sentence changed |                                                            |

Coach Blue's sign.

Students total one day of the swimathon twice, once as the book's sentence says it and once with the sentence changed nd show that the two totals leave two different numbers on Coach Blue's sign.

Full lesson — 20 minutes

1. Sort the swimmers the sentence tells you to (4 min) Students read Thursday's two sentences off the strip, then load six lanes to match: three counters into five lanes and four into the sixth. They underline the one word that told them to keep that sixth lane out of the group.
2. Total the day and take it off the sign (6 min)

Students add the lanes to get the day's total, then take it off the 44 standing on the sign, trading a ten with rods and cubes, and write the new sign number under their total.

3. Swap the word and run it again (5 min) Students take the second strip, reload the six lanes to match the swapped sentence, total the day again and subtract again from 44. Both results stay on the desk side by side.
4. Say which word moved the number (5 min) Each student writes one sentence about their own two results that uses the swapped word correctly, then reads it to a partner, who checks the sentence against the lanes rather than against the answer.

Short version — 9 minutes

1. Sort the swimmers the sentence tells you to (4 min) Load the book version: five lanes of 3 and Gil's lane of 4. Total 19; subtract 19 from 44 to leave
25. Underline except.
2. Swap the word and run it again (5 min) Load the changed version: all six lanes have 3. Total 18;

subtract 18 from 44 to leave 26. Compare 25 and 26 and name the changed phrase.

### THREE LEVELS

Support Give the pair the six lanes already loaded for the book's sentence and ask only for the swapped loading. Reading the second sentence and deciding where Gil's counters go is the whole task, and the first total is handed over so the comparison still has two sides. The subtraction from 44 is not reduced.

At grade Load, total and subtract both versions, then write the sentence that names what the word did to the number.

Extension Find a second word in the book whose swap would move a number, name the sentence it lives in, and produce both results. Then find a word in that same sentence whose swap changes nothing at all, and say what makes the difference between the two.

## ENGLISH LEARNERS

Quantity, counters and the subtraction itself transfer from any first language. What does not transfer is the exclusion word: languages mark except, apart from and other than in very different places in a sentence, sometimes before the group and sometimes after, and a child who is fluent in the arithmetic can still load the wrong lane. Put the two sentences side by side on the strip, have students point at the lane the word moves before they say anything, and rehearse one frame: All of them swam \_\_\_\_ .

Only \_\_\_\_ swam \_\_\_\_ . Students may talk the swap through in their strongest language and write the final sentence in English.

## MATERIALS

Six-lane counter mat, one per pair Counters, 25 per pair Two sentence strips per pair, one printed with Thursday's two sentences and one with the swapped sentence Base-ten rods and unit cubes Recording strips and pencils The 44 from Wednesday, written where the whole class can see it

7. Put the Sign Back in Order Integrated · Students receive the week's swims and sign numbers as cards with the day names stripped off, and restore the order by working out which swim turns which number into which.

Students receive the week's swims and sign numbers as cards with the day names stripped off, and restore the order by working out which swim turns which number into which.

Full lesson — 20 minutes

1. Match each swim to the number it leaves (6 min) Students total each swim card with counters, then hunt the number cards for the one it produces and write the subtraction on the strip between them.
2. Lay the cards in the only order that works (5 min) Students build the row from 75 down to nothing, each card's finishing number becoming the next card's starting number, and place the injury card where it changes what the last swim can be.
3. Argue one placement to a partner (5 min) Each student picks one card and says why it cannot sit anywhere else in the row.

The reason has to be a quantity; a day name is not an answer, because the cards do not carry any.

4. Retell the week with the number in every sentence (4 min) Pairs retell the four swims in order, every sentence naming the total swum and the number left, and finish on what the sign says at the end.

Short version — 9 minutes

1. Lay the cards in the only order that works (5 min) Total each swim card while placing it. Build the chain from 75 to 0 so each finish becomes the next start. Place the injury card where it changes the final swim.
2. Retell the week with the number in every sentence (4 min) Pairs retell the four swims in order, every sentence naming the total swum and the number left, and finish on what the sign says at the end.

### THREE LEVELS

Support Hand the pair the four number cards already in order, 75, 61, 44 and 25, and ask only that the swim cards be matched to them. The totalling and the reason are unchanged; what is lifted is holding four subtractions in mind at once while searching.

At grade Order swims and numbers together, write the subtraction between each pair, and place the injury card.

Extension Swap two swim cards on purpose and run the row again. Find every number that changes and the one number that does not, then explain why the last card's own quantity stops being right the moment it moves.

### ENGLISH LEARNERS

The card row is a picture of order that needs no English, and the subtraction under each pair is readable in any language. What needs building is the connective that carries an argument about order: before, after, because, that is why. Many students can point at the right card long before they can say why, so accept the pointing first and then supply the frame: This one comes before that one, because \_\_\_ laps to go turns into \_\_\_ laps to go. Students may work out the order in their strongest language with a partner and give the retelling in English; the retelling is the part worth rehearsing twice.

### MATERIALS

Event cards, four, each carrying one swim with no day name on it Number cards, five: 75, 61, 44, 25 and 0 One injury card carrying the sentence about the doctor Counters, 25 per pair Base-ten rods and unit cubes Recording strip and pencil A blank sign ruled tens and ones, for the class row

8. The Number Coach Blue Never Says Integrated · Students find the Wednesday total the book withholds, using the two sentences that fix it, and must hand in the number and the line that funds it together.

Students find the Wednesday total the book withholds, using the two sentences that fix it, and must hand in the number and the line that funds it together.

## Full lesson — 20 minutes

1. Hunt for the sentences that fix the swim (4 min) Students read the two printed sentences, the one that counts the whole team into the pool and the one that says who swam what on Wednesday, and mark the words that say how many sharks and how many laps each. All the others gets underlined.
2. Build the day and count it (6 min) Students load six lanes to match what they marked, count the whole set, and write the total they get on the evidence card. Nobody writes a number they have not built.
3. Pair the number with its line (5 min) Students copy the sentence they used underneath their number and read it aloud to another pair, who check the lanes against the words rather than against the answer.
4. Check the sign (5 min)

Students take their total off 61 with rods and cubes and compare it with the number Coach Blue announces. A pair whose sign does not land on 44 goes back to the sentence, not to the counting.

## Short version — 9 minutes

1. Hunt for the sentences that fix the swim (4 min) Mark six sharks, Tiny's 2 laps, and 3 laps for each of the other five. Load the lanes, count 17, and write 17 on the evidence card.
2. Pair the number with its line (5 min) Copy the evidence sentence beneath 17 and read both to another pair. Partners check the lanes against the words, then confirm  $61 - 17 = 44$ .

## THREE LEVELS

Support Reread the two sentences aloud twice while the pair loads the lanes, and give them a mat with one lane already marked Tiny so that all the others can be pointed at rather than held in mind.

They still find the number themselves and still copy the line.

At grade Find the sentences, build the day, produce the number and the line together, and check the result against 44.

Extension Find a second total the book withholds, the one for the day after, and show which two sentences pin it down to a single number. Then say what would have to be missing from the page for a total to become impossible rather than merely hidden.

## ENGLISH LEARNERS

The lanes and the counters carry the quantity without English, and a student who cannot yet read the sentence can still build the day once it is read to them, which is why the rereading is built into the Support tier rather than offered as a favour. What has to be taught is the quantifier phrase: all the others names a group by subtraction, and languages mark that in very different ways. Rehearse the frame while pointing at the mat: One shark swam \_\_\_\_ . All the others swam \_\_\_\_ . Students may state the total in their strongest language and then read the English sentence aloud from the card.

## MATERIALS

A printed strip carrying the sentence that counts the team into the pool and the Wednesday sentence  
Six-lane counter mat with one lane marked Tiny Counters, 20 per pair Evidence cards, one per pair  
Base-ten rods and unit cubes Pencil The 61 from the day before, shown from the start; the 44 shown only after the evidence cards are handed in

Shark Swimathon · Grade 2 showcase pack

## Teacher Keys

### Lesson 1 · Take the Day's Laps Off the Sign

$75 - 61 = 14$  (no trade);  $61 - 17 = 44$  (trade);  $44 - 19 = 25$  (trade).

### Lesson 2 · Keep the Goal Board for Four Days

Daily totals: 14, 17, 19, 25. Board:  $75 \rightarrow 61 \rightarrow 44 \rightarrow 25 \rightarrow 0$ .

### Lesson 3 · Show the Laps Left in Tens and Ones

$75 = 7$  tens 5 ones;  $61 = 6$  tens 1 one;  $44 = 4$  tens 4 ones;  $25 = 2$  tens 5 ones. Trading 61 gives 5 tens 11 ones; the value remains 61.

### Lesson 4 · Laps Swum and Laps to Go Make Seventy-Five

$14 + 61 = 75$  and  $75 - 61 = 14$ ;  $31 + 44 = 75$  and  $75 - 44 = 31$ ;  $50 + 25 = 75$  and  $75 - 25 = 50$ .

### Lesson 5 · Five Sharks, Five Laps

5 groups of 5 = 25. Since 25 laps are needed,  $25 - 25 = 0$ . The plan reaches the goal exactly.

### Lesson 6 · The Word That Moves the Number

Book version:  $5 \times 3 + 4 = 19$ ;  $44 - 19 = 25$ . Changed version:  $6 \times 3 = 18$ ;  $44 - 18 = 26$ .

## Lesson 7 · Put the Sign Back in Order

$75 - 14 = 61$ ;  $61 - 17 = 44$ ;  $44 - 19 = 25$ ;  $25 - 25 = 0$ . Injury card belongs before the final swim.

## Lesson 8 · The Number Coach Blue Never Says

Tiny swims 2; five other sharks swim 3 each:  $2 + 15 = 17$ . Check:  $61 - 17 = 44$ .

## Lesson 6 Printables Cut apart the two sentence

strips.

BOOK VERSION Everyone swam 3 except Gil.

This time, he swam 4.

CHANGED VERSION Everyone swam 3, including Gil.

Six-Lane Counter Mat

|                               |           |
|-------------------------------|-----------|
| Tiny Flip Flap Finn Stripes   | Gil       |
| Recording Strip               |           |
| 44 - total Version Total swum | Laps left |
| Book                          |           |
| Changed                       |           |

## Lesson 7 Printables

Cut apart the event, number and injury cards.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| <b>The sharks swim 14</b> | Tiny swims 2 laps. Each of the other five sharks swims 3. |
| <b>laps.</b>              |                                                           |

Five sharks swim 3 laps. Gil swims 4.

Gil cannot race. Each of the other five sharks swims 5.

|    |          |   |
|----|----------|---|
| 75 | 61 44 25 | 0 |
|----|----------|---|

|                 |                                                          |           |
|-----------------|----------------------------------------------------------|-----------|
|                 | INJURY CARD The doctor says Gil cannot race for a month. |           |
| Recording Strip |                                                          |           |
| Start           | Laps swum Subtraction                                    | Laps left |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Lesson 8 Printables Read both evidence strips before building the lanes. |       |
| All six sharks swam one lap, the length of the pool and back.            |       |
| Tiny stopped after two laps, but all the others swam three.              |       |
| Six-Lane Evidence Mat                                                    |       |
| Tiny Other Other Other Other                                             | Other |

Evidence Card

Number Coach Blue never says Evidence line