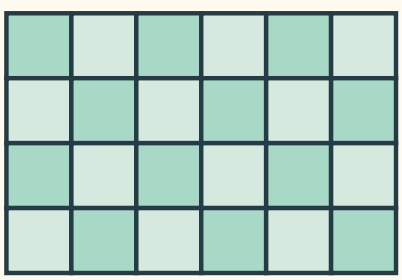
MATHS FIELD GUIDE · GRADE 4

Place value explains written methods

OPENING PROBLEM

If each of these squares represents ten pencils, how many pencils in all?



02 Choose a whole-number calculation
03 Rules and worked cases
04 Tickets for the school play
05 Run the operation backwards
06 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Choose a whole-number calculation

What the question asks you to count determines the operation.

1

398 + 247
↓
400 + 247 − 2
↓
645

Why subtract two at the end?

Rounding 398 up to 400 added two extra.

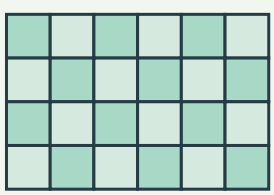
2

703 − 298
↓
703 − 300 + 2
↓
405

Why add back two?

Subtracting 300 removed two too many.

3



If each of these squares represents ten pencils, how many pencils in all?

There are 24 squares. Twenty-four tens make 240.

4

205 seats needed
↓
12 seats per row
↓
17 × 12 = 204

Are seventeen rows enough?

One seat is still missing. Eighteen full rows provide 216 places.

Rounding 49 up to 50 when adding remove the extra one.

Rounding 49 up to 50 when subtracting put one back.

CHAPTER PROBLEM

In 268 + 157, why does the 1 exchanged from the ones belong in the tens column?

It represents one ten made from ten of the fifteen ones.

MATHS REFERENCE · GRADE 4

Place value explains written methods

A written calculation is a way to organise operations on place-value units. Its digits represent amounts, not isolated marks.

A column collects units of the same size. Regrouping exchanges equivalent amounts between neighbouring places.

Four cases to recognise

Situation	What to do and why
8 × 49	Eight fifties minus eight ones gives 392.
612 ÷ 6	Split 612 into 600 and 12. The quotients 100 and 2 sum to 102.
5 boxes of 32, then sell 18	First find 160 items. Then subtract once to leave 142.
Check 617 − 289	Add 11 to both numbers: 628 − 300 = 328. The difference is unchanged.

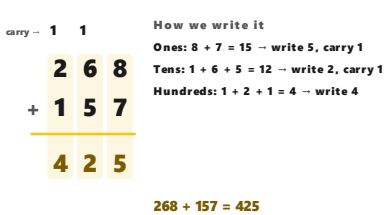
Read the model

Build the idea

For 268 + 157, combine ones first. Fifteen ones become one ten and five ones. Then combine tens, including the exchanged ten.

Twelve tens become one hundred and two tens. Finally combine the hundreds. The total is four hundreds, two tens and five ones.

268 + 157



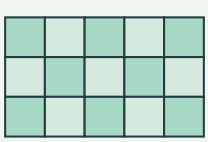
Column addition with carrying

Why it works

Every exchange preserves the total: ten ones equal one ten; ten tens equal one hundred. This is the reason carried digits have their particular values.

Starting with small units allows their new bundles to be included in the larger-unit calculation.

place-value unit Ones, tens, hundreds or another named unit.
partial result A result for one part of a calculation.
regroup Exchange equal-valued units.



Fifteen counters, five per box. How many full boxes?

Three, with zero spare.

WORKED INVESTIGATION

Tickets for the school play

Four classes book 24 seats each. Work out all four groups first, then account for the six empty seats.

Look at this part	What it tells you
Each class	24 seats
All bookings	96 seats
Six empty	90 occupied

Work it through

Split 24 into 20 and 4. Four twenties make 80 and four fours make 16. These partial products explain why 4 × 24 = 96.

Catch the mistake

Subtracting six from each class removes 24 seats. The six empty seats apply to the whole booking.

Compare the cases

Follow an example

268 + 157 = 425. Estimate first: about 270 + 160 gives about 430, so 425 is reasonable.

Check using subtraction: 425 − 157 should rebuild 268. The inverse gives a stronger check than merely repeating the same addition.

What changes? What stays true?

For multiplication, partial products also carry units. For example, 23 × 4 joins four groups of 20 and four groups of 3.

A method is useful when its steps preserve the meaning. Explain what a carried or exchanged digit represents before using it.

Change one condition

If six seats per class were empty, the correct model would be 4 × (24 − 6), giving 72 occupied seats.

17 = 3 × 5 + 2

Seventeen counters, five per bag. What does the two count?

Two loose counters after three full bags.

ILLUSTRATED PROBLEM SHEET

Run the operation backwards

Begin with the result and undo the last change first.

1

? + 18 = 43
↓
43 − 18 = 25

What number was hidden?

Twenty-five. Adding eighteen to it returns forty-three.

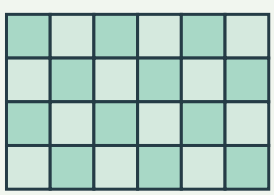
2

? − 16 = 27
↓
27 + 16 = 43

A box lost sixteen and now has twenty-seven. How many at first?

Forty-three. Undo a loss by putting it back.

3



Twenty-four counters fill four identical rows. How many per row?

Six. Four times six gives the original total.

4

? × 3 + 2 = 20
↓
20 − 2 = 18
↓
18 ÷ 3 = 6

Which change do you undo first?

Remove the final two, then divide by three. Check: three sixes and two make twenty.

□ + 9 = 32
subtract nine: 23.

□ − 9 = 32
add nine: 41.

CHAPTER PROBLEM

Calculate 206 − 89. How can you use addition to check it?

206 − 90 + 1 = 117. Check: 117 + 89 = 206.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 How could you check 36 × 15 using a split?	36 × 10 + 36 × 5 = 360 + 180 = 540.
02 Is 35 − 12 a check for 23 + 12 = 35?	Yes. Removing one part from the total recovers the other.
03 Five classes book 18 seats each and seven seats are empty altogether. How many are occupied?	Five groups of 18 make 90 seats. Subtract the seven empty seats once to get 83 occupied seats.
04 Three cartons each have 48 items. Nine items in all are broken. How many still work?	3 × 48 − 9 = 135.
05 A school wants 200 pencils in packs of twelve. How many packs must it buy?	Sixteen packs give 192. Seventeen give 204, enough.

29 = 4 × 5 + 9
↓
29 = 5 × 5 + 4

Why is the second division answer finished?

Nine spare can fill another group. Four spare cannot fill a group of five.

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