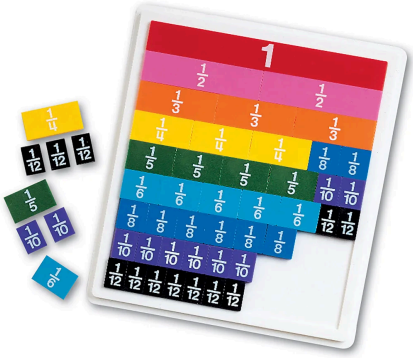
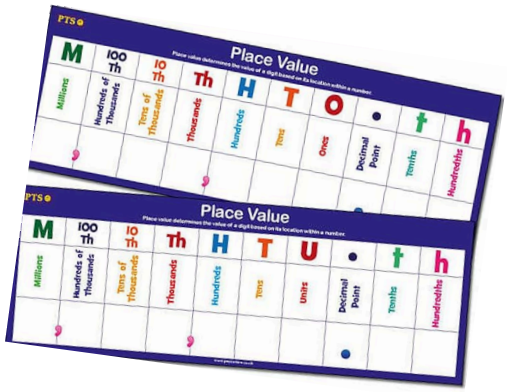
Lawrence House School





Calculation Policy - Functional Skills (Entry 1 to Level 2)

Purpose

This document outlines a clear, consistent calculation policy and step-by-step guides for delivering, teaching and assessing calculation skills across Functional Skills Mathematics from Entry Level 1 through Level 2.

Contents:

1. Principles and aims

- Clarity and consistency: All staff use common terminology and steps so students internalise reliable methods.
- Progressive independence: Move students from concrete manipulatives (Objects such as counters) - pictorial strategies - abstract written methods and mental methods.
- Functional relevance: Prioritise methods and contexts students will meet outside the classroom (money, measures, time, simple ratios).

2. Progression overview (what students should be able to do)

Entry 1

- Add and subtract small whole numbers using objects and marks (e.g. 2 + 3 = 5).
- Use counting on and counting back; recognise simple number words.

Entry 2

- Add/subtract numbers within practical contexts (e.g. totals to 20), use partitioning with tens and ones in simple examples.
- Begin to use multiplication as repeated addition (2 × 3 = 3 + 3) and simple division as sharing.

Entry 3

- Add/subtract confidently with whole numbers up to three digits in practical contexts.
- Multiply and divide within small number ranges, simple written methods introduced.

Level 1

- Use formal written methods for addition and subtraction of whole numbers and decimals (for money), multiplication using short multiplication for one/two-digit multipliers, and short division with remainders. Apply in real-life contexts.

Level 2

- Confident use of written methods for multi-digit addition/subtraction, standard short multiplication and short division (including where quotient has more than one digit), working with decimals, percentages and compound contexts.

3. Teaching & assessment approaches

- Use concrete - pictorial - abstract (CPA) progression.
- Teach vocabulary explicitly (sum, difference, product, quotient, remainder, exchange/borrow, carry/ regroup, divisor, factor).
- Regular low-stakes practice of core skill (daily quick checks: Flashback Five).
- Diagnose gaps (e.g. missing place-value understanding) and remediate before moving to formal written methods, via Pink Pen marking and feedback.

4. Step-by-step guides for operations

Each operation below shows:

- Core skill at each level
- Step-by-step method
- Worked example
- Common errors & checks
- Scaffolding & where to move next

A. Addition

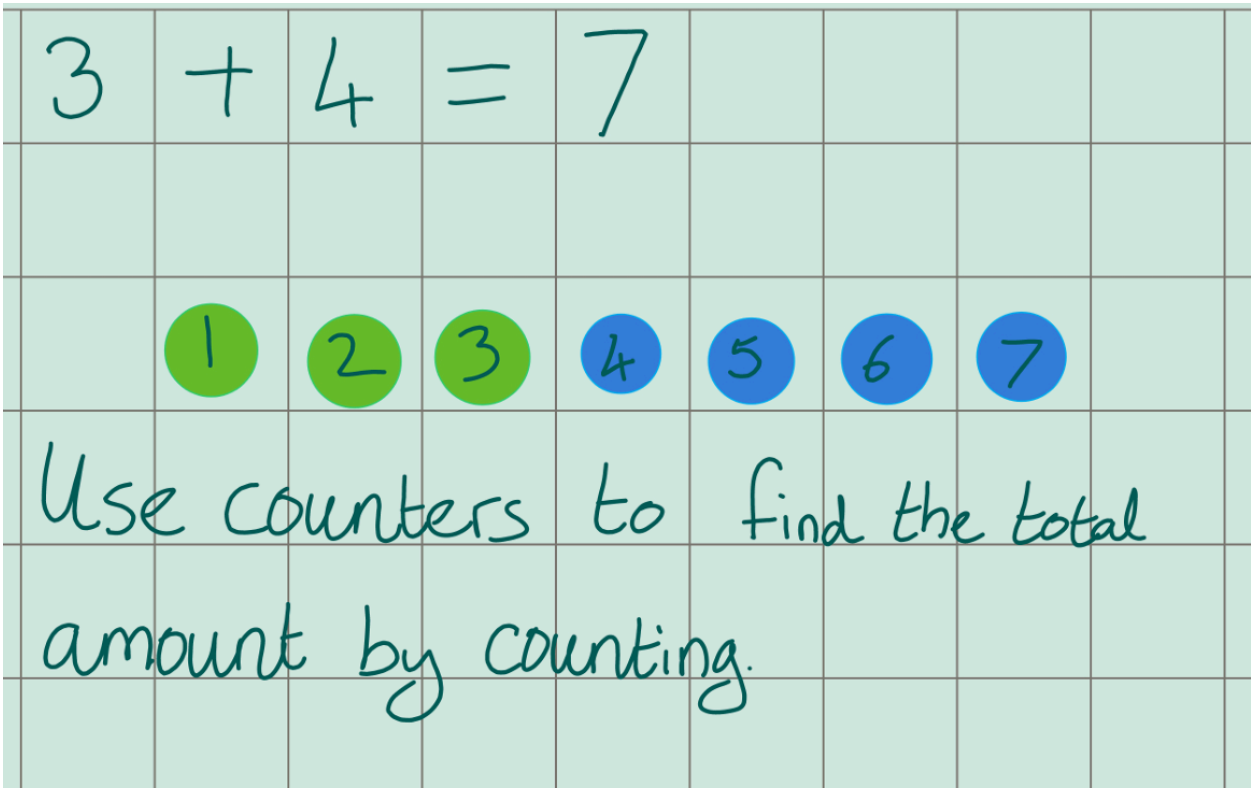
Entry 1 - Core skill

Add small counts (using objects); record answers with number or tally.
Method (step-by-step)

1. Use objects/counters. Put groups together. Count all.

2. Say the total.

Example: 3 counters + 2 counters, put the counters together, count: 1,2,3,4,5 the answer is 5.
Checks: Count again; use fingers.
Scaffolding: Use ten-frame; move to number line counting on.



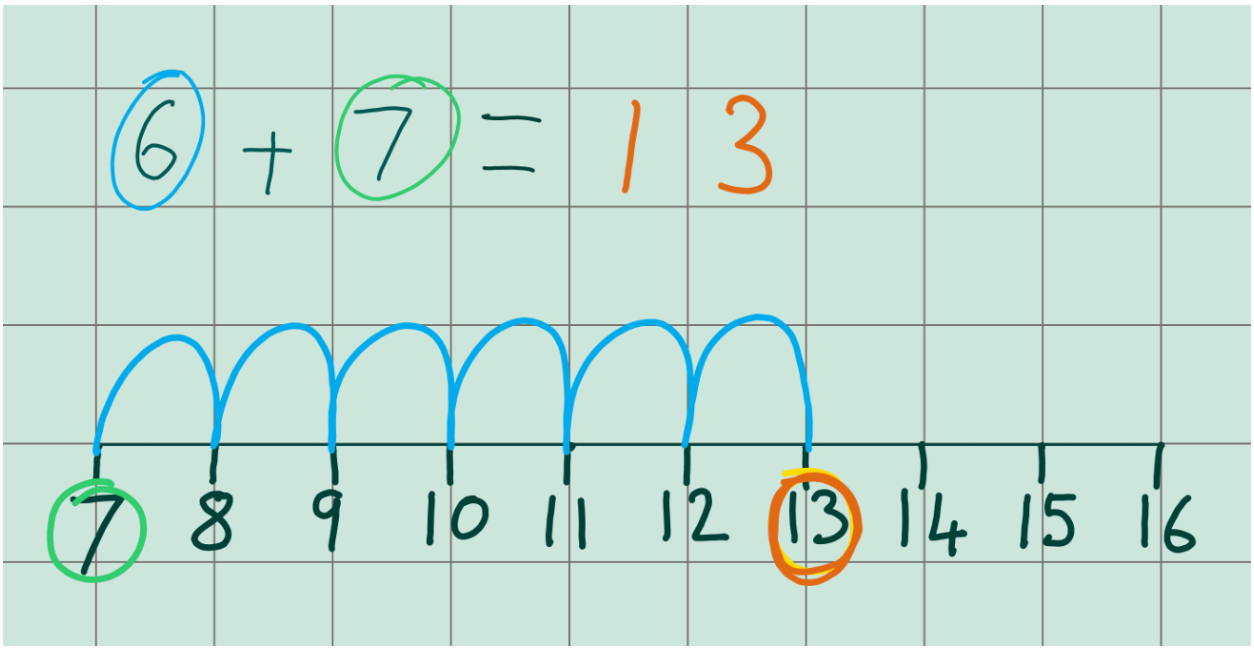
Entry 2 - Core skill

Add numbers within 20 using counting on and simple partitioning.
Method (counting on)

1. Start with the larger number on a number line or in head.

2. Count on the smaller number in ones.

Example: 8 + 5, start at 8, count +5, 9,10,11,12,13 result 13.
Checks: Reverse operation (13 − 5 = 8).
Scaffolding: Use partitioning (8 + 5 = 8 + 2 + 3).

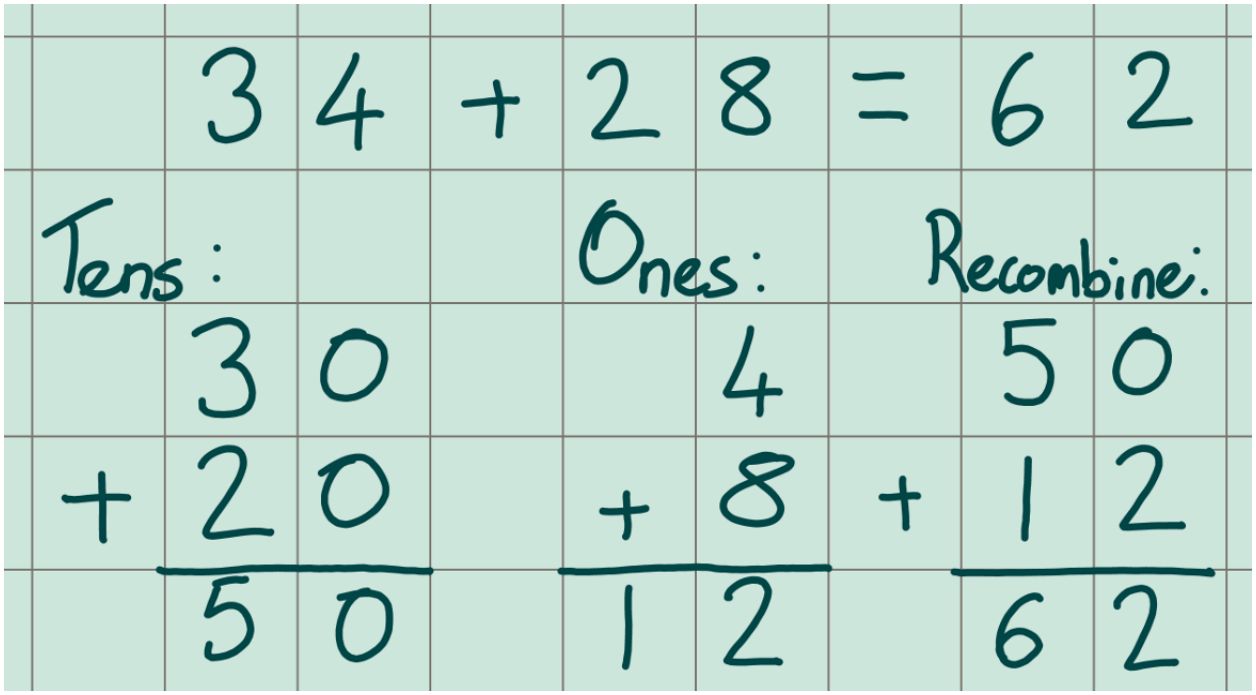


Entry 3 - Core skill

Add 2-digit numbers using partitioning (tens and ones) and informal column method.
Method (partitioning)

1. Split numbers into tens and ones (e.g. 34 = 30 + 4).
2. Add tens together, add ones together.
3. Recombine.

Example: 34 + 28 = (30 + 4) + (20 + 8), tens: 30 + 20 = 50, ones: 4 + 8 = 12 so; 50 + 12 = 62.
Checks: Estimate: 30 + 30 = 60; so 62 is reasonable.
Scaffolding: Introduce column addition with carrying.



Level 1 - Core skill

Column addition for larger whole numbers; add decimals (same number of decimal places) for money.

Method (column addition with carrying)

1. Write numbers stacked, aligning place value (ones under ones, tens under tens, decimal point aligned for decimals).

2. Add from the rightmost column (oness/least significant digit).

3. If the sum in a column is 10 or more, write down the ones digit and carry the tens to the next column on the left.

4. Continue left until complete.

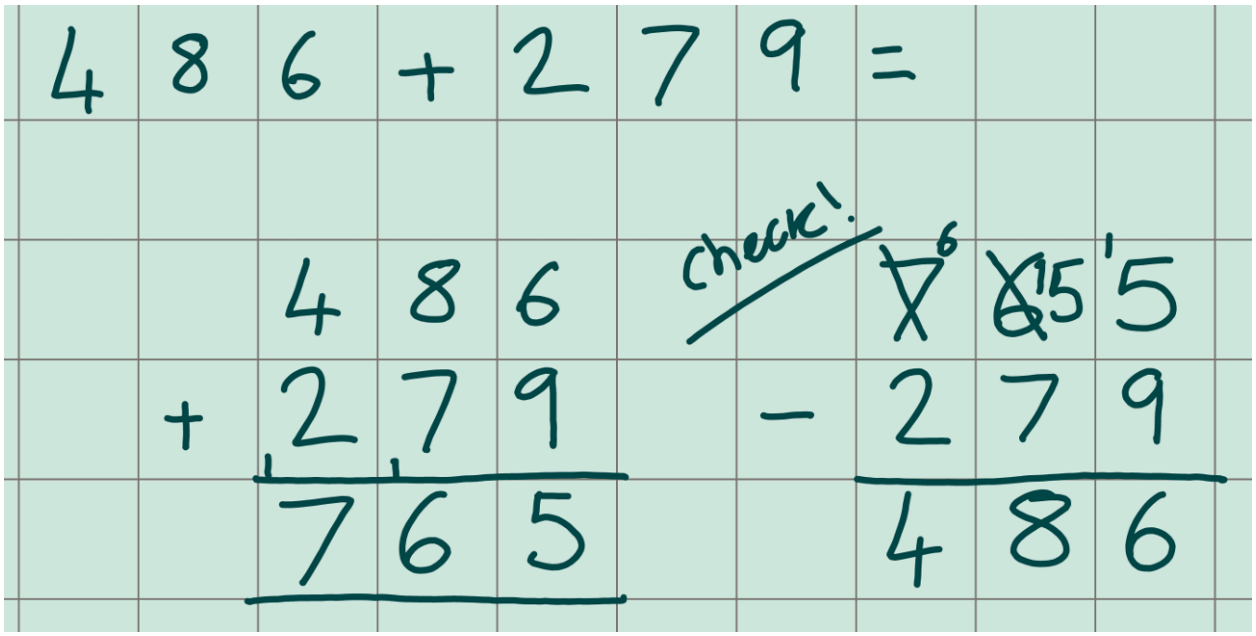
Example: 486 + 279

- ***Ones: 6 + 9 = 15, write 5, carry 1.***

- ***Tens: 8 + 7 + 1 (carry) = 16, write 6, carry 1.***

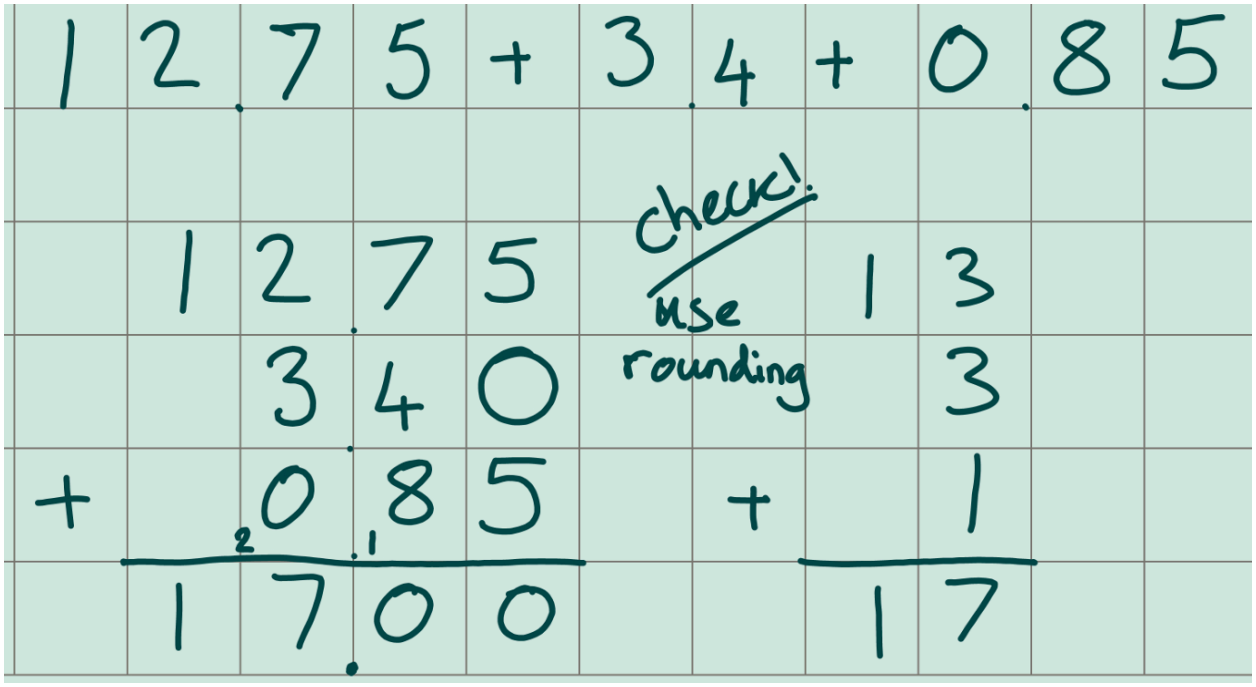
- ***Hundreds: 4 + 2 + 1 = 7, write 7, answer 765.***

Checks: Reverse subtraction 765 − 279 = 486; estimate rounding to nearest 100.
Scaffolding: Practice with decimals and aligned decimal points.



Level 2 - Core skill

Add multi-digit whole numbers and decimals; apply to problem solving with measures, money and percentages.
Method: As Level 1 but with multiple addends and mixed decimals; use a calculator when allowed for checking.
Example: 12.75 + 3.4 + 0.85, align decimals (12.75 + 3.40 + 0.85), add right to left: 5 + 0 + 5 = 10 write 0 carry 1; etc, result 17.00.
Checks: Estimate using rounding; check with calculator if permitted.



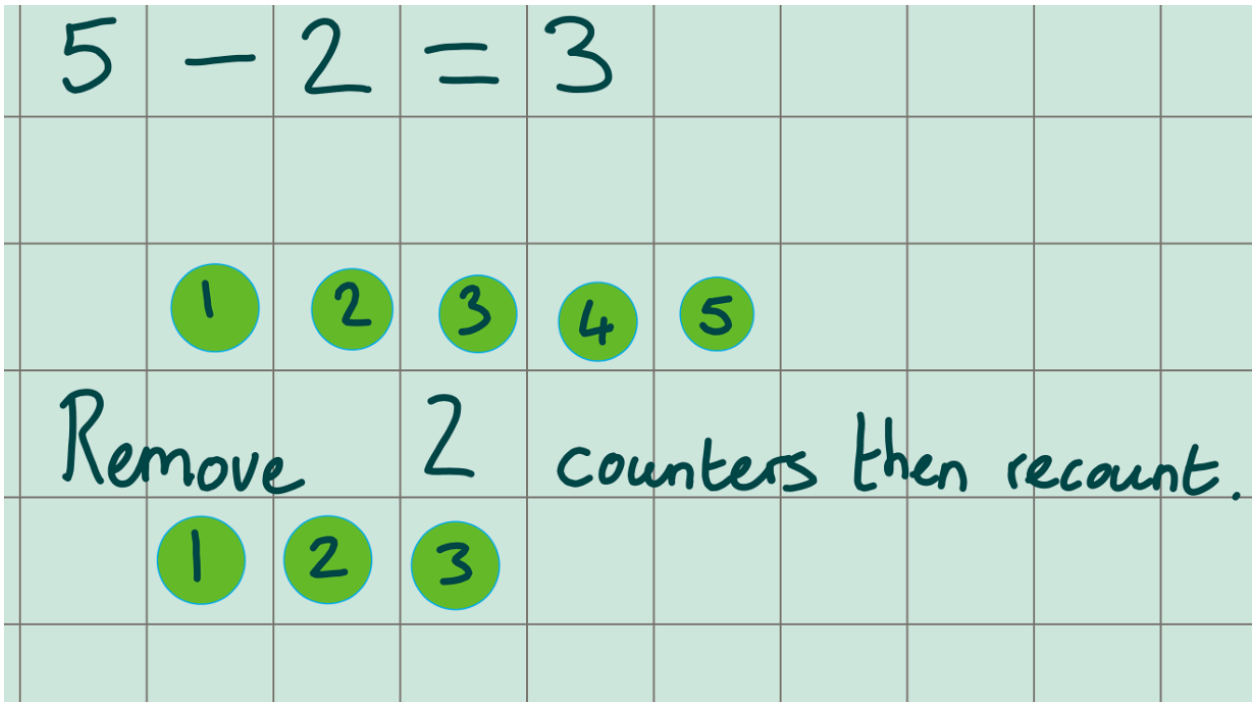
B. Subtraction

Entry 1 - Core skill

Take away small groups using objects; count what is left.
Method (concrete)

1. Start with a group.
2. Remove the amount to take away.
3. Count remaining.

Example: 5 counters − 2 counters, remove 2, remaining 3.
Checks: Use addition 3 + 2 = 5.



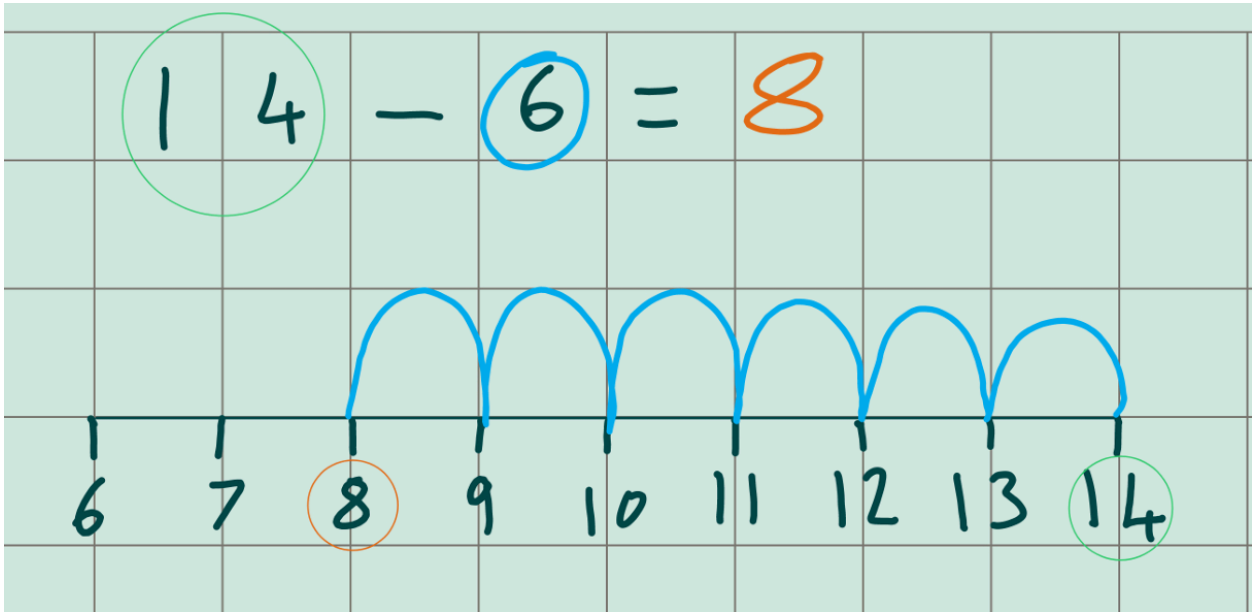
Entry 2 - Core skill

Counting back on a number line; simple subtraction within 20.
Method (counting back)

1. Start at the larger number.

2. Count back the smaller number in ones.

Example: 14 − 6, start at 14, count back 6, 13,12,11,10,9,8 the answer is 8.
Checks: Add back to check.



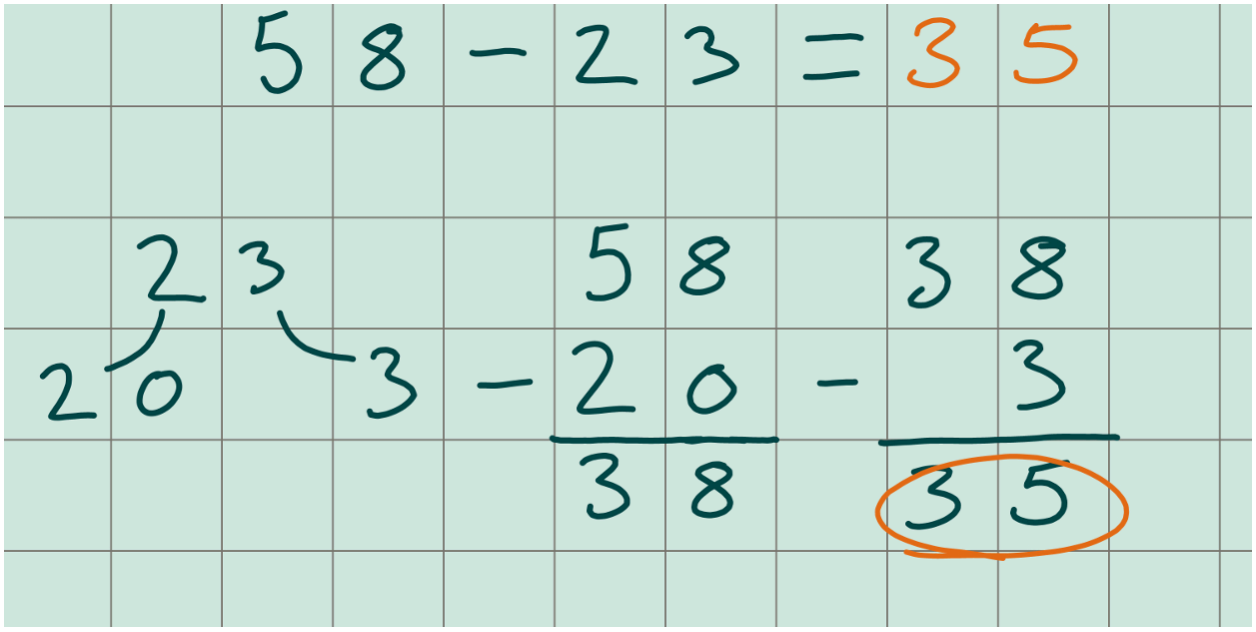
Entry 3 - Core skill

Subtraction using partitioning and informal column subtraction.
Method (partitioning)

1. Split the subtrahend into tens and ones.

2. Subtract tens then ones; if not enough ones, exchange from tens.

Example: 58 − 23, partition 28 as 20 + 3, 58 − 20 = 38, 38 − 3 = 35.
Checks: Addition 35 + 23 = 58.
Scaffolding: Model exchange (borrowing) with place-value counters.



Level 1 - Core skill

Column subtraction with borrowing (exchange) including decimals in context (money).
Method (column subtraction with exchange)

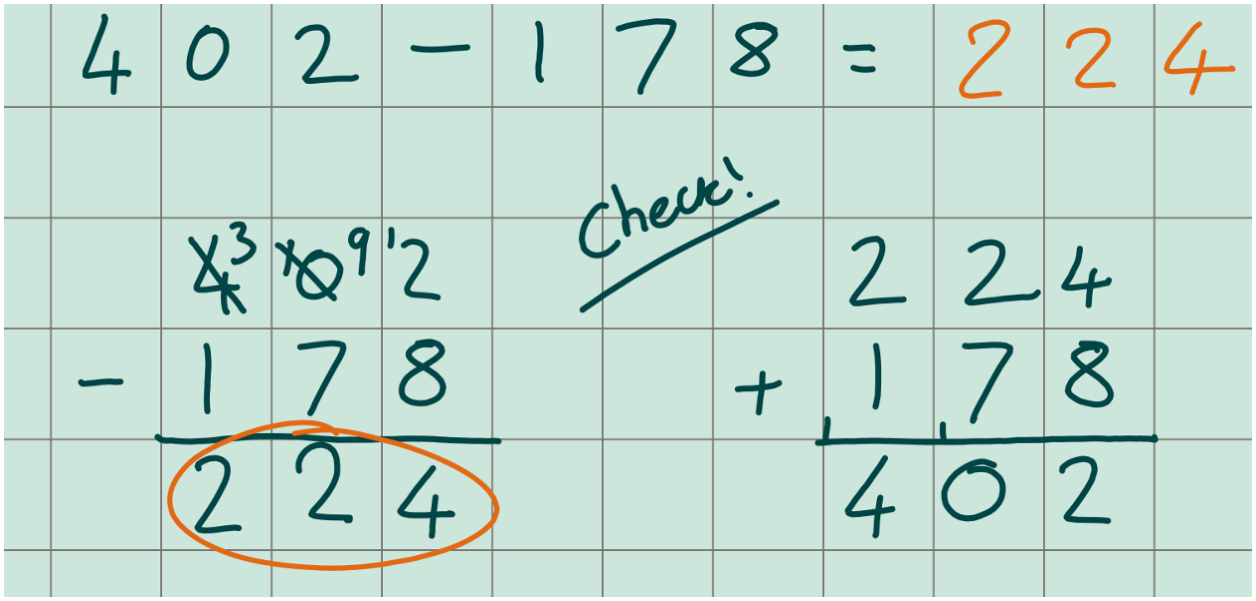
1. Stack numbers aligned by place value and decimals.

2. Start at the ones column: if top digit < bottom digit, exchange 1 ten from next column left (reduce that column by 1 and add 10 to the current column).

3. Subtract current column, proceed left.

Example: 402 − 178
ones: 2 − 8: can't, so borrow 1 ten from tens (0 tens) - need to borrow from hundreds: reduce 4 (hundreds) to 3, make tens 10; then borrow 1 ten → tens become 9 and ones become 12. ones: 12 − 8 = 4. Tens: 9 − 7 = 2. Hundreds: 3 − 1 = 2 → answer 224.

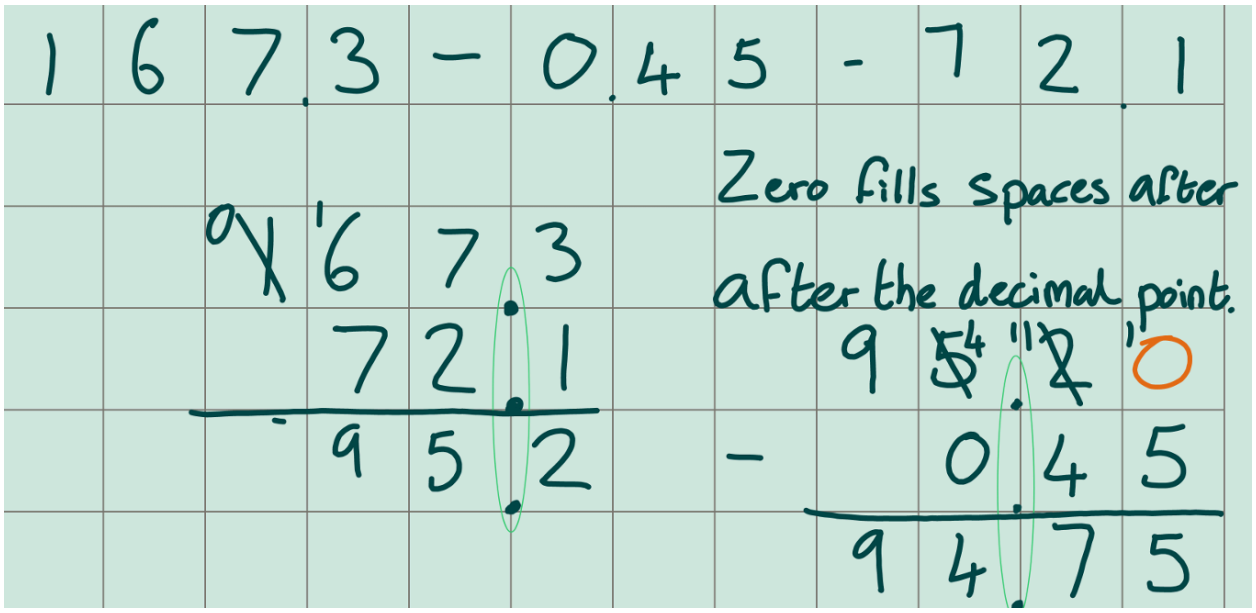
Checks: Add the answer and the original subtracted number matches the original number; estimate.



Level 2 - Core skill

Column subtraction with multiple-digit numbers and decimals; apply to real-life problems (change from money, time differences).

Method: As Level 1 - ensure decimal alignment; practice with mixed ones (£ and pence) by aligning decimals.
Checks: Use calculator if allowed; inverse addition.



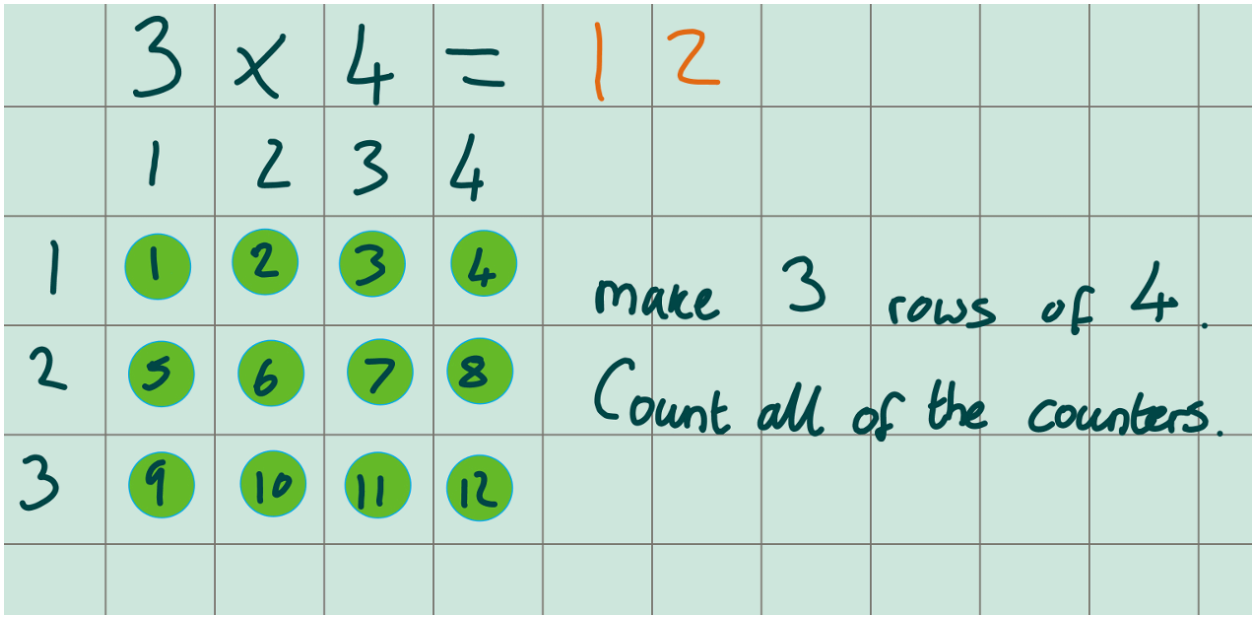
C. Multiplication

Entry 2 - Core skill

Understand multiplication as repeated addition and arrays (e.g. 3 × 2 = 2 + 2 + 2).
Method

1. Use practical arrays (rows and columns) or repeated addition.

Example: 3 × 4, 4 + 4 + 4 = 12.
Checks: Division as inverse.



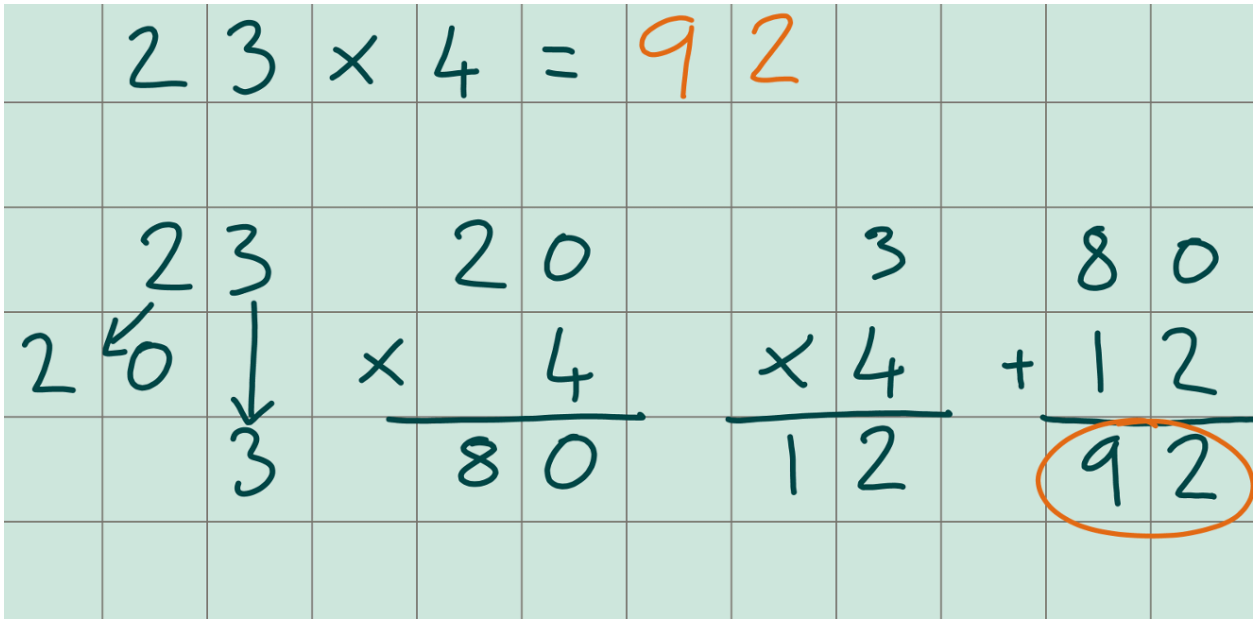
Entry 3 - Core skill

Use times tables (2, 5, 10) and use the grid method for small two-digit numbers.
Method (grid)

1. Partition numbers into tens and ones (e.g. 23 × 4 → (20 + 3) × 4).

2. Multiply each part, then add results.

Example: 23 × 4, 20×4 = 80; 3×4 = 12; total 92.
Checks: Divide result by multiplier to check.



Level 1 - Core skill

Short multiplication for one- or two-digit multipliers; multiply decimals (where appropriate) using place-value understanding.

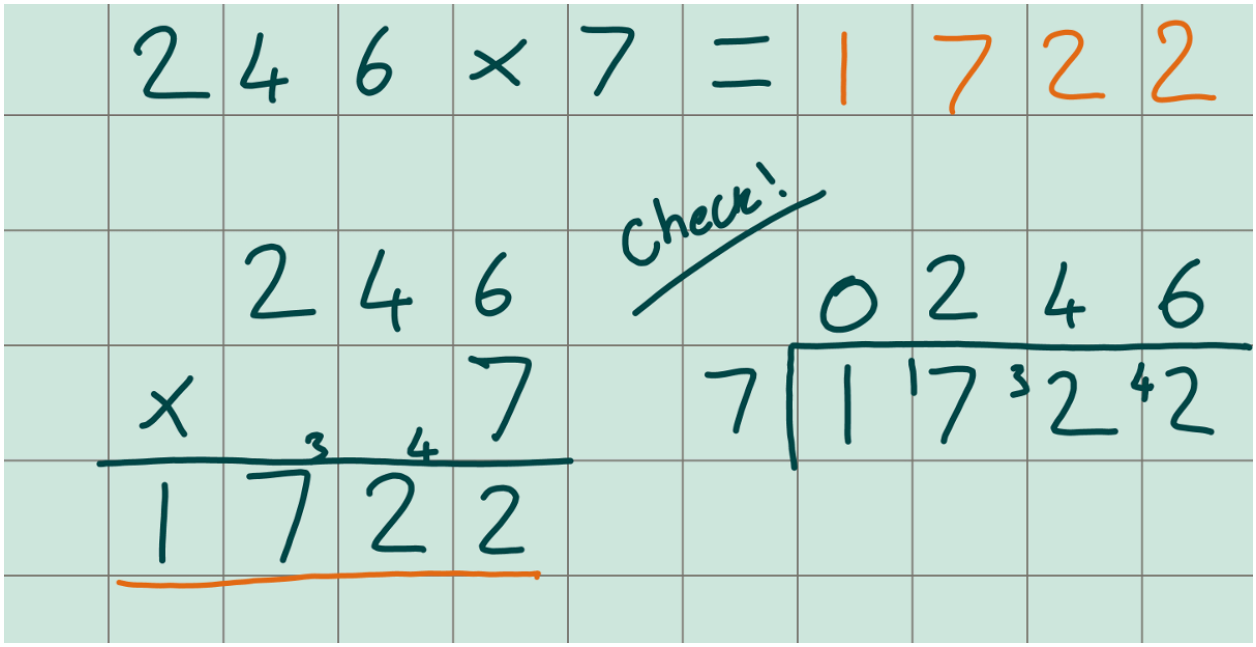
Method (short multiplication - single digit multiplier)

1. Write multiplicand (e.g. 246) and multiplier (e.g. ×7) beneath.
2. Multiply ones by 7, write ones digit and carry tens to next.
3. Continue left, adding carries.

Example: 246 × 7

- ***ones: 6×7 = 42, write 2 carry 4.***
- ***Tens: 4×7 = 28 + 4 = 32, write 2 carry 3.***
- ***Hundreds: 2×7 = 14 + 3 = 17, write 17, the answer is 1722.***

Checks: Estimate with rounding; divide to check.
Scaffolding: Use the grid method before the short method.

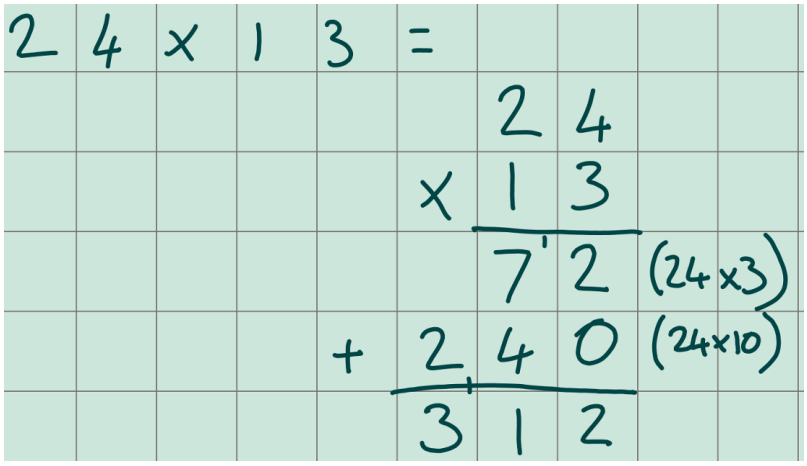


Level 2 - Core skill

Short multiplication with multi-digit multiplicands and multipliers (two-digit multipliers using long/grid) where appropriate; multiplication with decimals - understanding where to place the decimal point.

Method (short × two-digit or long/grid method)

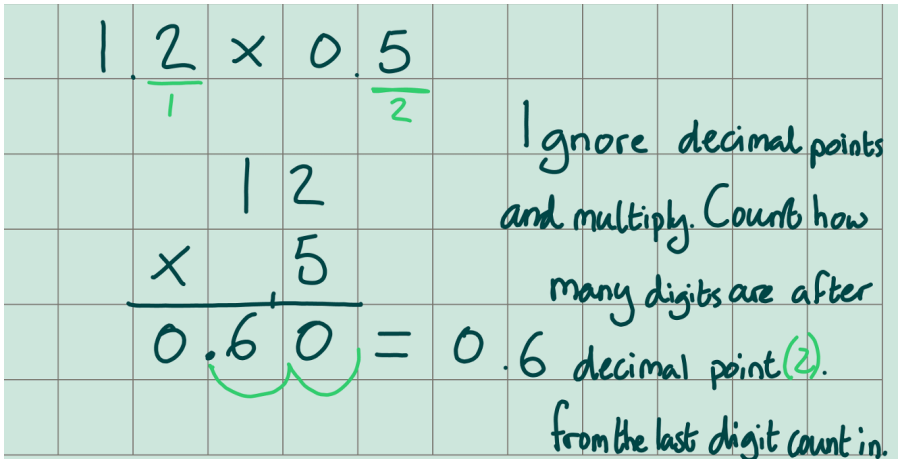
1. For two-digit multipliers, use long multiplication or grid: multiply by tens digit then by ones digit, shift and add.



2. For decimals, multiply ignoring decimal points then place decimal in product by counting total decimal places.

Example (1.2 × 0.5):

- ***Ignore decimals: 12 × 5 = 60. Total decimal places = 2, answer 0.60 = 0.6.***



D. Division

Entry 2 - Core skill

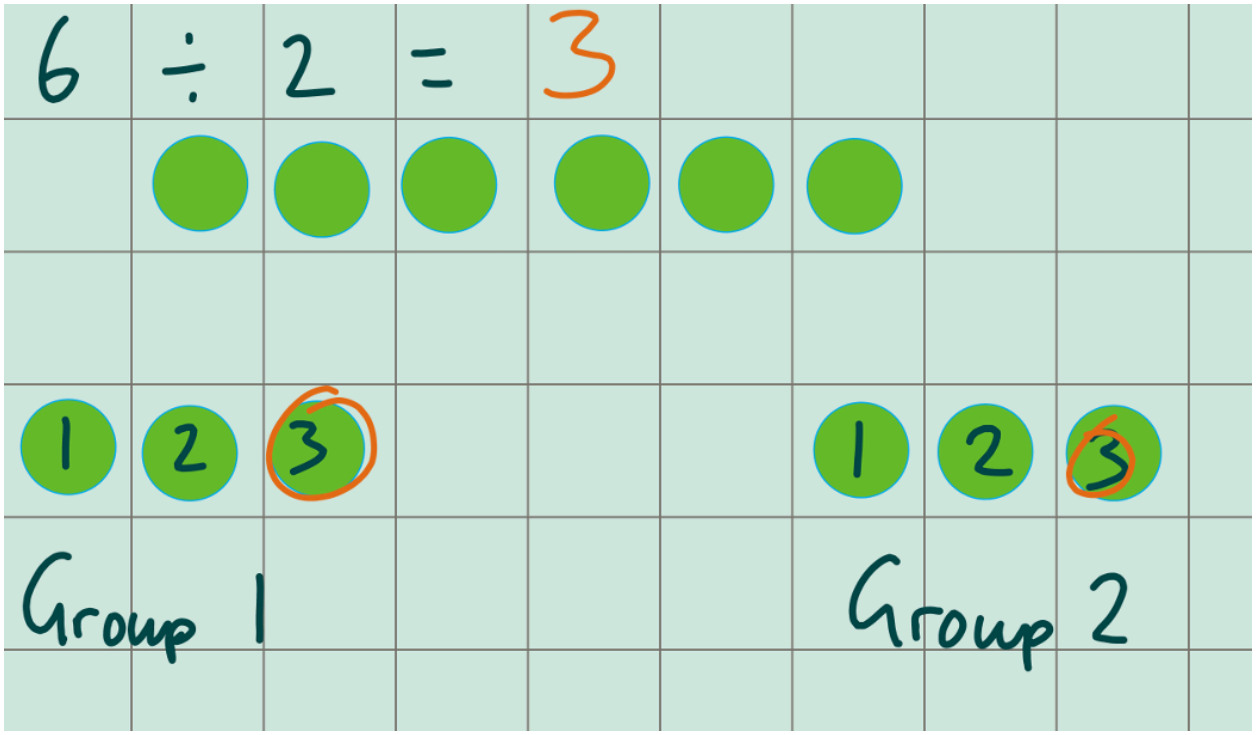
Sharing into equal groups and simple grouping; understand division as sharing or repeated subtraction.

Method (sharing)

1. Share concrete objects evenly into the required number of groups.

2. Count how many in each group.

Example: 6 shared between 3, 2 each.



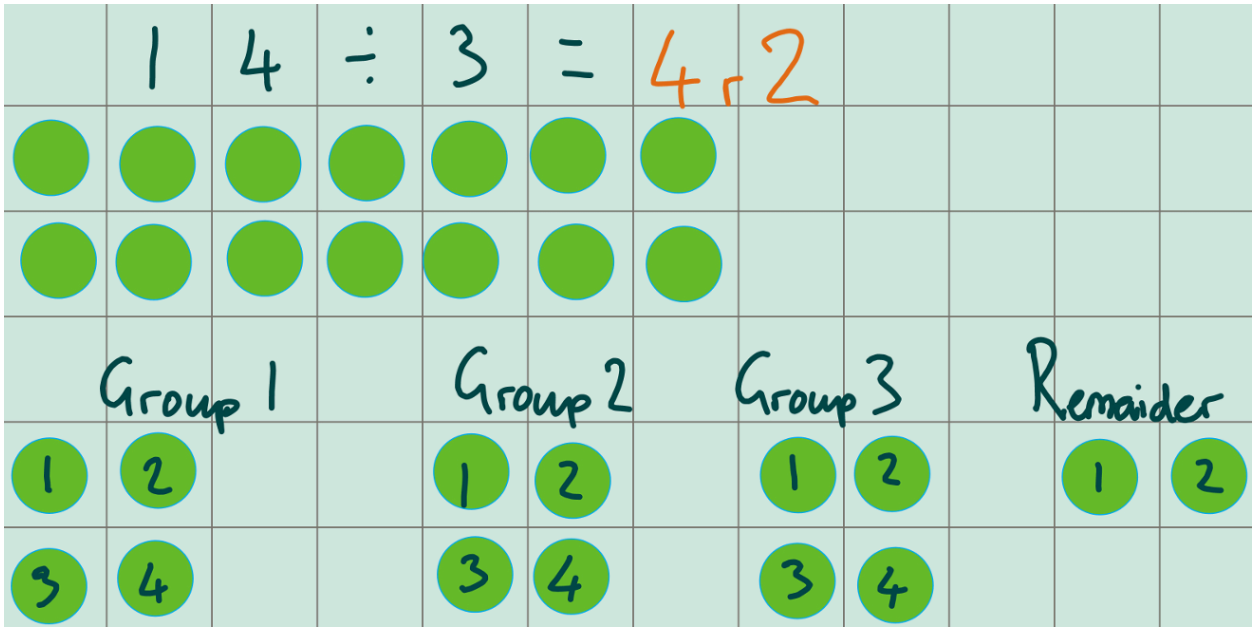
Entry 3 - Core skill

Use grouping (repeated subtraction) and understand remainder (leftover) in sharing contexts; relate to times tables.

Method (grouping)

1. Use repeated subtraction or group counters into groups matching the divisor until the remainder is less than the divisor.

Example: 14 ÷ 3, subtract 3 four times (14 −3−3−3−3 = 2), quotient 4 remainder 2.
Checks: 3 × 4 = 12 12 + 2 = 14.



Level 1 - Core skill

Short division (bus stop method) for one-digit divisors producing whole quotients and remainders; division in contexts (e.g. dividing money or measures).

Method (short division / bus stop)

1. Place the divisor outside, dividend under the bus stop.

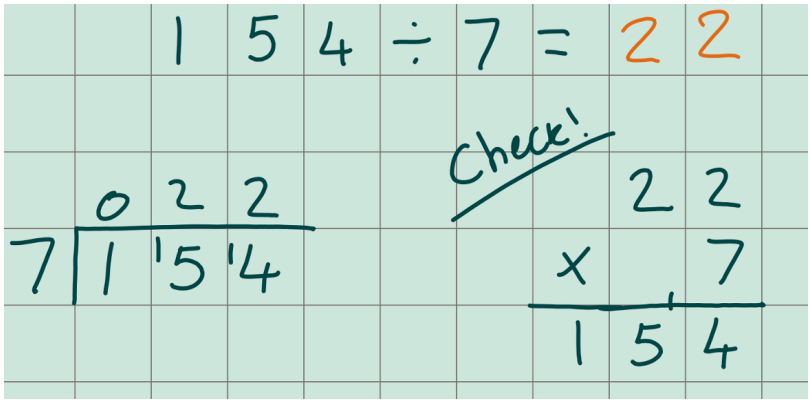
2. Divide the highest place value that fits; write the quotient digit above.

3. Multiply divisor × quotient digit, subtract, bring down next digit, repeat.

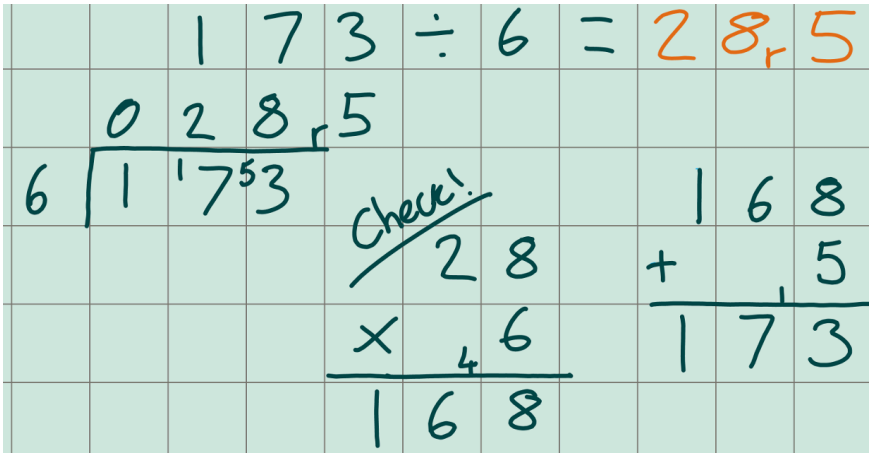
Example: 154 ÷ 7

- ***7 into 15 goes 2 times, 2 above tens place; 2×7=14; subtract 15−14=1; bring down the 1, 14; 7 into 14, 2 → quotient 22.***

Checks: Multiply quotient by divisor and add remainder.



Example including a remainder:



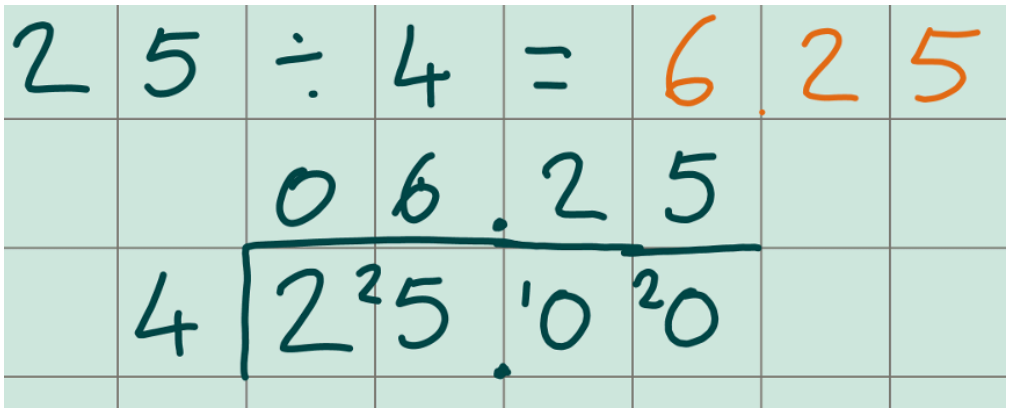
Level 2 - Core skill

Short division with larger dividends and application to decimals (e.g. dividing to produce decimal quotients), interpreting remainders (rounding up, giving remainder, converting to fraction/decimal) depending on context.

Method (division producing decimal)

1. Use standard short division; when remainder remains and decimal required, add a decimal point to quotient and append zeros to dividend and continue.

Example: 25 ÷ 4, 4 into 25 = 6 remainder 1, add decimal point and 0, carry the 1 remainder to make 10, 4 into 10 = 2 remainder 2, add another 0 and carry the remainder 2 to make 20, 4 into 20 = 5, the result is 6.25.
Checks: Multiply 4 × 6.25 = 25.



5. Quick reference

Symbols & vocabulary: + (add/sum/total), − (subtract/difference/take away), × (multiply/times), ÷ (divide/share/quotient), = (equals), r (remainder).
Cheat sheet:

- When stuck, estimate by rounding.
- Check answers with inverse operation.
- Align decimal points for decimals.
- Use place-value counters for borrowing/carrying.