Hampshire County Council
Improvement and Advisory Service

HIAS MOODLE+ RESOURCE

Year 6 Unit Plan 6.2
Multiplication and Division

Autumn term

HIAS Maths Team
September 2026
Final version

Overview

This document contains…

Year 6 Unit Plans linked to the Hampshire Medium Term Overview

Points to consider when using this resource:

These unit plans provide an example of how medium-term planning could be developed into units of work. These unit plans will need to be adapted to meet the needs of pupils. The unit plan provides an outline of a possible learning journey with suggestions of types of tasks that could be used. They also identify required prior learning, some common misconceptions and an indication of key skills pupils need to secure competency. It is assumed that teachers will make use of appropriate mathematical representations (manipulatives, visuals and symbolic) to support conceptual understanding for pupils alongside procedural fluency.

National Curriculum Links:

Multiplication and Division

Pupils should be taught to:

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- Perform mental calculations, including with mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve problems involving addition, subtraction, multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

<table>
<tr><td colspan="2">This unit builds pupils' fluency and confidence with multiplication and division, progressing from efficient mental strategies to formal written methods. Pupils consolidate place value understanding to multiply and divide by powers of 10, apply the distributive law and order of operations, and use scaling to solve problems in context. They develop accuracy and independence through estimation and appropriate rounding, while securing short and long multiplication and short division with larger numbers, ensuring they can calculate efficiently, reason about their answers, and check they make sense.</td><td>Notional Time:

15 sessions</td></tr>
<tr><td>Check and Refresh - skills and knowledge that pupils need to know</td><td>Verbal coding- precise mathematical language to model during worked examples</td><td>Mastering Key Facts in Key Stage 2 – developing fluency and automaticity</td></tr>
<tr><td>Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.

Manipulate multiplication and division equations.

Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example: 74 ÷ 9 = 8 r 2 and interpret remainders appropriately according to the context.</td><td>If I know…then I also know…
(e.g. if I know that 6 x 11 = 66, then I also know 66 ÷ 11 = 6, I can use this to solve 6600 ÷ 11 = ?)

To multiply by 10/100/1000, move each digit ___ place(s) to the left.

To divide by 10/100/1000, move each digit ___ place(s) to the right.</td><td>• Recap of Year 5: Multiply and divide numbers mentally drawing upon known facts.

• Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</td></tr>
<tr><td>Mathematical Concepts- important pieces of information learners should take away from the unit</td><td>Watch out for</td><td>DfE Ready -to- progress criteria</td></tr>
<tr><td rowspan="2">Understanding place value underpins all multiplication and division
Including using known and derived facts, understanding the effect of multiplying and dividing by powers of 10, and maintaining place value accuracy in mental strategies / formal methods.

Efficient strategies and formal methods must both be secure and connected
Pupils move flexibly between mental strategies and formal written methods. They choose the most appropriate and efficient strategy.

Reasoning, checking and sense-making are essential parts of calculation
Pupils develop the habit of thinking about calculations, not just completing them.</td><td rowspan="2">Pupils with insecure place value knowledge who treat multiplication and division by powers of 10 as "moving the decimal point".

Pupils not recognising proportional relationships within scaling problems.

Pupils who misapply the order of operations (BIDMAS).

Pupils who lose place value in formal written methods of multiplication and division.

Pupils who use estimation and rounding incorrectly—or not at all to check the reasonableness of their answers.</td><td>5MD-1

5MD-4

6MD-1</td></tr>
<tr><td>Formative assessment questions - key questions to support pupil reasoning and teacher assessment

• What is the same and what is different?
• What if I change…?
• Can you give me an example of… and another…and another?
• Which is harder and which is easier…?
• If I know this, then what else do I know?</td></tr>
</table>

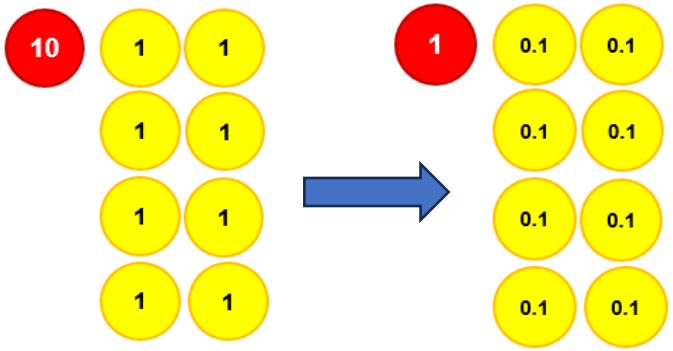
Visual coding: key representations

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

÷ 10
one-tenth of the size

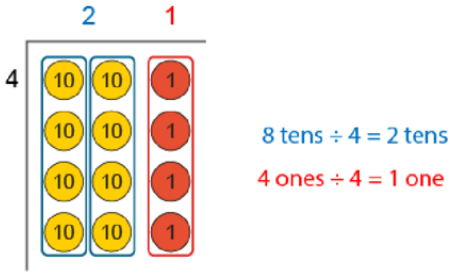
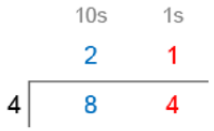
3.6 × 10 = 36

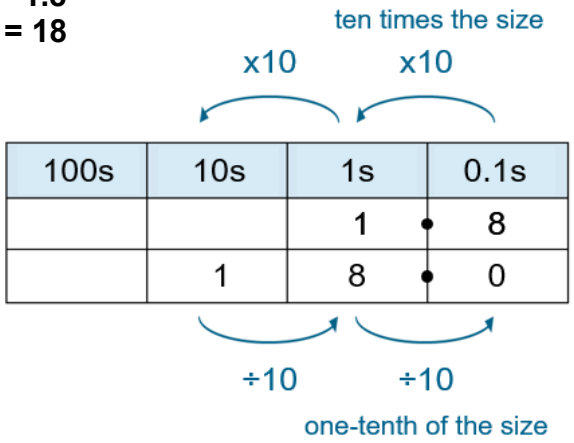
36 ÷ 10 = 3.6



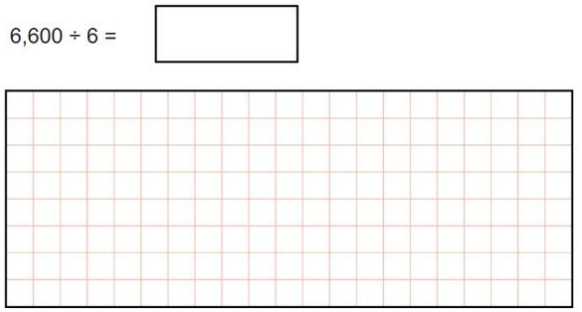
18 ÷ 10 = 1.8

1.8 x 10 = 18

Short division with place-value counters	Short division
	



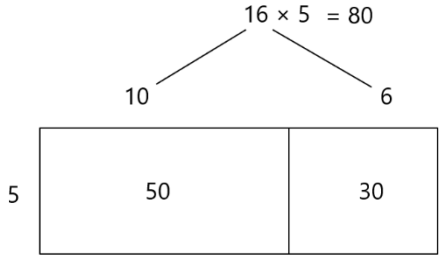
Autumn unit 6.2 (3 weeks)	Autumn unit 6.4 (1 week)	Spring unit 6.8 (2 weeks)	Spring unit 6.10	Summer unit 6.12
I can use place value, known and derived facts to multiply and divide mentally. I can solve problems using the distributive law to multiply two-digit numbers by one-digit. I can solve scaling problems involving multiplication and division. I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. I can use knowledge of the order of operations to carry out calculations involving the four operations. I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. I can multiply a four-digit number by a one-digit number using short multiplication. I can multiply a four-digit number by a two-digit number using long multiplication. I can divide four-digit numbers by one-digit numbers using short division.	I can perform mental calculations, including with mixed operations and large numbers. I can multiply up to a four-digit number by a two-digit whole number using the formal written method of long multiplication. I can divide numbers up to 4 digits by a 2-digit whole number using the formal written method of long division. I can divide numbers up to 4 digits by a 2-digit number using the formal written method of short division. I can interpret remainders as whole number remainders. I can interpret remainders as fractions. I can interpret remainders by rounding, as appropriate for the context.	I can identify common factors, common multiples and prime numbers. I can recognise and use square numbers and cube numbers, and the notation for squared and cubed. I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. I can perform mental calculations, including with mixed operations and large numbers. I can multiply multi-digit numbers up to 4 digits by a 2-digit whole number using the formal written method of long multiplication. I can divide numbers up to 4 digits by a 2-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. I can divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, where appropriate, interpreting remainders according to the context.	*Repeated in addition and subtraction* I can perform mental calculations, including with mixed operations and large numbers. I can use knowledge of the order of operations to carry out calculations involving the four operations. I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. I can solve problems involving addition, subtraction, multiplication and division.	

<table>
<tr><th colspan="2">Proposed lesson sequence to support development of mathematical concepts</th></tr>
<tr><th colspan="2">Developing fluency and automaticity – ongoing daily practice</th></tr>
<tr><td>Mastering Key Facts in Key Stage 2</td><td>Autumn Term Ongoing Mental Fluency Practice
Recap of Year 4: Recall and use multiplication and division facts for multiplication tables up to 12 x 12.
Recap of Year 5: Multiply and divide numbers mentally drawing upon known facts.</td></tr>
<tr><td>Counting Fluency</td><td>Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Course: Primary Counting Progression | Maths Moodle</td></tr>
<tr><td>I can…</td><td>Mathematical Concepts, Key Skills and Suggested Tasks</td></tr>
<tr><th colspan="2">15 sessions – Multiplication and Division</th></tr>
<tr><td>I can use place value, known and derived facts to multiply and divide mentally.</td><td>In this step, pupils build up their Year 5 knowledge and secure efficient strategies for mental multiplication and division using knowledge of place value and known facts to derive new facts. Many calculations are quicker and more appropriate to solve mentally. A key focus should be placed on:
choosing efficient strategies,
explaining how they adapted what they already know,
checking that answers are reasonable
Checking for understanding questions:
Encourage pupils to spot patterns rather than recalculating every time and consider what known fact they should use to help them calculate 6600 ÷ 6 = ?
‘Same-structure, different numbers’
Example sequence:
If I know 6 x 11 = 66, I also know 66 ÷ 6 = 11
Therefore 660 ÷ 6 = 110
6600 ÷ 6 = 1100.
What stays the same? What changes? Why? 

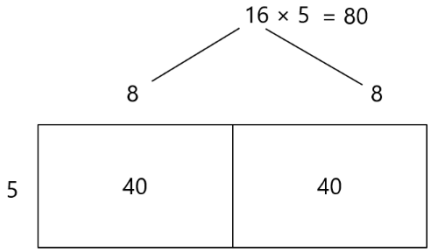
Design tasks that encourage pupils to reason mathematically, using precise language to justify their thinking. Where appropriate, encourage pupils to explain, prove, or represent their thinking, identifying the known fact that they used to help them.

</td></tr>
</table>

I can solve problems using the distributive law to multiply two-digit numbers by one-digit.	This step builds on prior Year 5 learning, detailed in Unit 5.2 where pupils use the distributive law (partitioning method) to multiply two-digit numbers by one-digit. Pupils will: • partition a number into manageable parts • use facts they already know • avoid counting or inefficient methods and apply their knowledge and understanding within the context of problem-solving. **Checking for understanding questions:** • 16 x 5 = ? Which factor will you partition? Could you represent this using rectangles? • Can you write the equation? • How else could you partition 16 without thinking of 10 and a bit? • Could we use doubles? • What would this look like as a representation using rectangles. Repeat using other calculations, multiplying two-digit numbers by one-digit numbers, varying the order of factors each time. Encourage pupils to move away from representations using rectangles and solve calculations using the same method. Design tasks that encourage pupils to reason mathematically, using precise language to justify their thinking. Where appropriate, encourage pupils to explain, prove, or represent their thinking, checking their answer for reasonability. Provide a range of both routine and non-routine problems for pupils to solve. Lauren buys 4 ice creams. Each ice cream costs 85p.  How much do they cost altogether? £



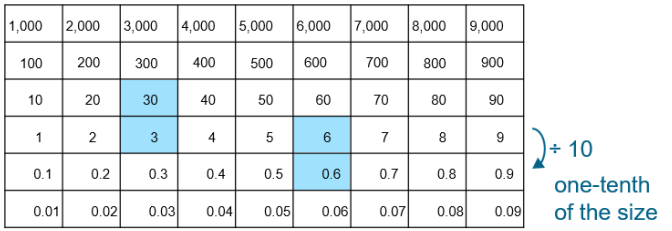
16 × 5 = 10 × 5 + 6 × 5
= 50 + 30
= 80



16 × 5 = 8 × 5 + 8 × 5
= 40 + 40
= 80

I can solve scaling problems involving multiplication and division.	This step builds on previous Year 5 learning, detailed in Unit 5.2, where pupils solve a range of scaling problems involving multiplication and division. This means pupils can: • recognise when a quantity is being made larger or smaller by a factor • decide whether to use multiplication or division • apply this understanding to real-life and mathematical contexts Scaling is about how values change in proportion, not just about finding an answer. **Simple scaling up (multiplication) example:** • A recipe for 4 people uses 250 g of flour. • How much flour is needed for 8 people? Pupils should recognise that: • 8 is twice 4 • so, the amount must be multiplied by 2 • 250 × 2 = 500 g **Scaling down example (division):** • A model car is made at a scale of 1:10. • The real car is 4 m long. • How long is the model? Pupils need to: • understand the scale relationship • divide by 10 • 4 ÷ 10 = 0.4 m Design tasks that encourage pupils to reason mathematically, using precise language to justify their thinking. Where appropriate, encourage pupils to explain, prove, or represent their thinking, checking their answer for reasonability. Provide a range of both routine and non-routine problems for pupils to solve and apply their knowledge and understanding.

I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	This step revisits pupils' Year 5 knowledge and deepens understanding. Multiplying and dividing by 10, 100 and 1000 reinforces how the value of a digit changes depending on its position. In Year 6, pupils must understand why digits shift. This conceptual security supports reasoning and reduces misconceptions later. These skills can be taught and embedded within this learning journey or delivered through explicit arithmetic practice. **Checking for understanding questions:** • What 2-digit number can you see on the chart? • If we multiply by ten and make the number tens times the size, what happens? • If we start with 36 and move each part down a row, what have we done? • When we multiply a decimal number by 10, do we still add a zero? • Can we try some other numbers? **Using place value counters:** • If each part is one-tenth the value, show me the counters you will now have. Write a calculation and explain what you have done. • If I then make each counter ten times the value, describe what happens. • Provide pupils with 2-digit numbers to divide by ten and numbers with ones and tenths to multiply by ten, using counters to show their understanding. Ask them to explain their reasoning. • *To multiply by 10, move each digit one place to the left.* • *To divide by 10, move each digit one place to the right.* Repeat with other calculations for multiplying and dividing whole numbers and decimals by 10, 100 and 1000. Encourage pupils to show their understanding using place value counters and on a place value chart.



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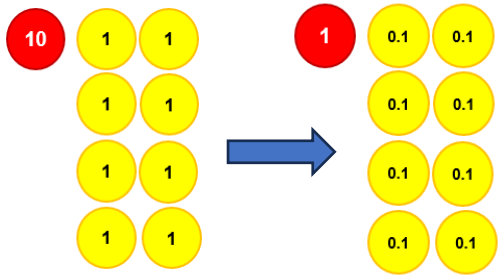

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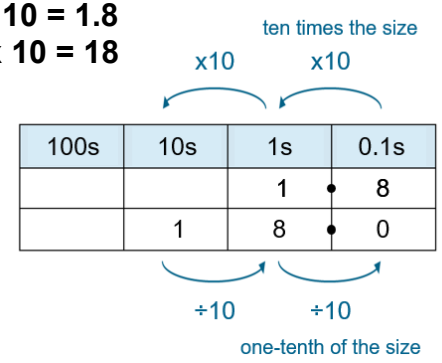
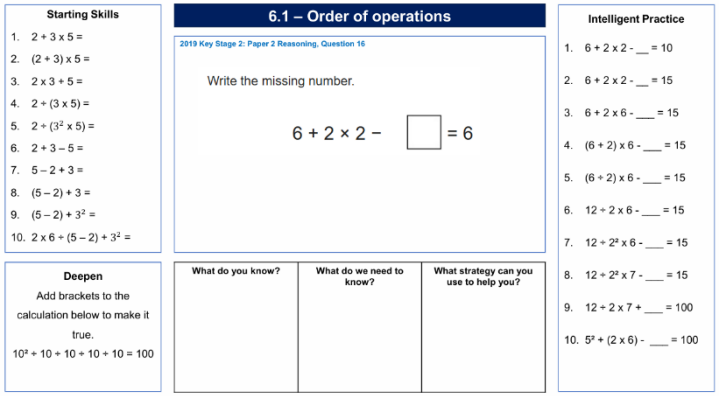
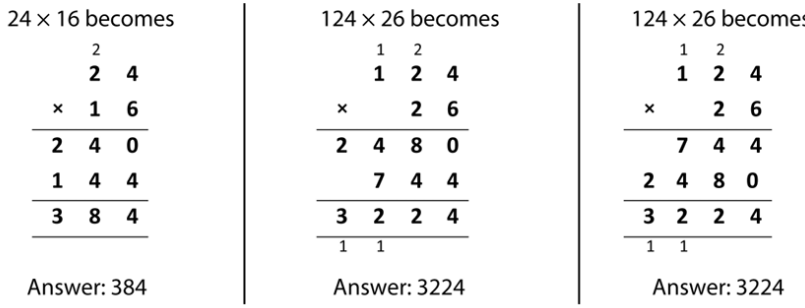
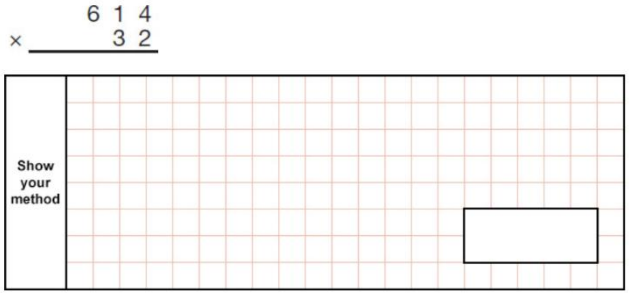
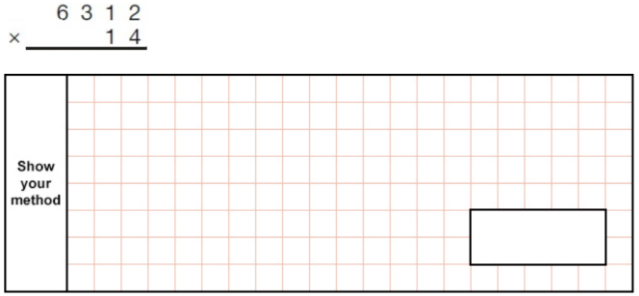
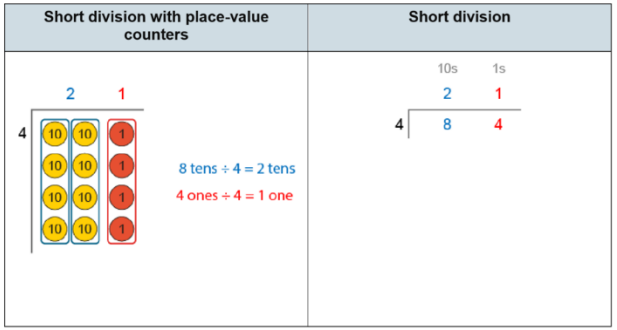


I can use knowledge of the order of operations to carry out calculations involving the four operations.	This step refers to pupils understanding and applying the agreed convention for calculations: Brackets, Indices, Division and Multiplication, Addition and Subtraction (often remembered as BIDMAS / BODMAS). This means pupils know which parts of a calculation to do first so that everyone arrives at the same correct answer. This step also encourages pupils to: • explain why an answer is correct • justify the order they worked in • spot errors in worked examples. $(5^2 + 3) - 12 \div 4 =$ ☐ **Key questions:** • Which part of the calculation will you solve first? • Remember the order of operations to help you (BIDMAS / BODMAS) • Brackets and Indices: 5 x 5 = 25, 25 + 3 = 28 • Division: 12 ÷ 4 = 3 • Subtraction 28 – 3 = **25** • How could you check your answer? Design tasks that encourage pupils to reason mathematically, using precise language to justify their thinking. Where appropriate, encourage pupils to explain, prove, or represent their thinking, checking their answer using the inverse where possible. Also provide deliberate mistakes for pupils to correct and 'spot the mistake' in the order of operations to deepen their understanding.  **Starting Skills** 1. 2 + 3 x 5 = 2. (2 + 3) x 5 = 3. 2 x 3 + 5 = 4. 2 + (3 x 5) = 5. 2 + (3^2 x 5) = 6. 2 + 3 – 5 = 7. 5 – 2 + 3 = 8. (5 – 2) + 3 = 9. (5 – 2) + 3^2 = 10. 2 x 6 ÷ (5 – 2) + 3^2 = **6.1 – Order of operations** 2019 Key Stage 2: Paper 2 Reasoning, Question 16 Write the missing number. 6 + 2 × 2 − ☐ = 6 **Intelligent Practice** 1. 6 + 2 x 2 - __ = 10 2. 6 + 2 x 2 - __ = 15 3. 6 + 2 x 6 - ___ = 15 4. (6 + 2) x 6 - ___ = 15 5. (6 ÷ 2) x 6 - ___ = 15 6. 12 ÷ 2 x 6 - ___ = 15 7. 12 ÷ 2^2 x 6 - ___ = 15 8. 12 ÷ 2^2 x 7 - ___ = 15 9. 12 ÷ 2 x 7 + ___ = 100 10. 5^2 + (2 x 6) - ___ = 100 **Deepen** Add brackets to the calculation below to make it true. $10^2 \div 10 \div 10 \div 10 \div 10 = 100$ What do you know? | What do we need to know? | What strategy can you use to help you? *Reasoning and Intelligent Practice Task 6.1*

I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	In this step pupils can: • make a sensible rough estimate before or after calculating • use that estimate to judge whether their answer is reasonable • decide how precise an answer needs to be, depending on the situation It is about mathematical judgement, not just arithmetic skill. **This step should be taught as an on-going skill to support problem-solving and checking the reasonableness of answers throughout all domains within the Year 6 curriculum.** Why does this matter at the start of Y6? **It helps pupils spot errors independently** Many pupils can carry out formal methods but: • make simple calculation errors • misplace digits or forget regrouping • trust any answer they get Estimation gives pupils a way to ask: “Does this answer make sense?” For example: • If 398 × 6 gives an answer of 1,238, estimation (≈ 400 × 6 = 2,400) shows something has gone wrong. This skill promotes **self-checking**, which is essential in Year 6. **It reduces reliance on teachers for validation** At the start of Y6, pupils need to become more **independent learners**. Estimation allows them to: • check work without immediate adult input • develop confidence in their thinking • take responsibility for accuracy This is particularly important as pace and expectations increase throughout the year. **Estimation helps pupils**: • recognise when an answer is clearly wrong • avoid losing marks through unreasonable results • check answers quickly under time pressure **It develops reasoning and mathematical maturity.** This step moves pupils beyond “finding the answer” to: • explaining *why* an answer is reasonable • comparing answers using approximate values • justifying choices about rounding.

I can multiply a four-digit number by a one-digit number using short multiplication.	This step is not just about performing a method correctly. It shows whether pupils can: • apply place value knowledge across thousands • manage regrouping (carrying) accurately • follow a formal written algorithm independently • work efficiently and reliably with larger numbers The Mathematics Programmes of Study, within the Primary National Curriculum contains an appendix which sets out some examples of formal written methods for all four operations to illustrate the range of methods that could be taught. It is not intended to be an exhaustive list, nor is it intended to show progression in formal written methods. For example, the exact position of intermediate calculations (superscript and subscript digits) will vary depending on the method and format used. The Progression in Calculation methods taught and used by pupils should align to your school's policy and agreed progression. **Short multiplication** 24 × 6 becomes 2 4 × 6 1 4 4 2 Answer: 144 342 × 7 becomes 3 4 2 × 7 2 3 9 4 2 1 Answer: 2394 2741 × 6 becomes 2 7 4 1 × 6 1 6 4 4 6 4 2 Answer: 16 446 Mathematics programmes of study: key stages 1 and 2 When pupils are working through a range of questions to practice the skill of using short multiplication to multiply a four-digit number by a one-digit number, provide varied practice to secure understanding of multiplying a three-digit number by a one-digit number initially before moving on. It is also important to provide pupils with opportunities to solve missing digit problems or part completed examples to secure their understanding and develop their reasoning. For example: Write in the missing digits to make this correct. □ 4 □ × 6 2 0 5 2 Contains material developed by the Standards and Testing Agency for 2018 national curriculum assessments and licensed under Open Government Licence v3.0' http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

I can multiply a four-digit number by a two-digit number using long multiplication.	This step brings together: • secure place value understanding up to thousands • short multiplication skills • correct alignment of multiple partial products • accurate addition of those partial products If pupils are not secure here, it indicates gaps not just in multiplication, but in place value, regrouping and written calculation discipline. The Mathematics Programmes of Study, within the Primary National Curriculum contains an appendix which sets out some examples of formal written methods for all four operations to illustrate the range of methods that could be taught. It is not intended to be an exhaustive list, nor is it intended to show progression in formal written methods. For example, the exact position of intermediate calculations (superscript and subscript digits) will vary depending on the method and format used. The Progression in Calculation methods taught and used by pupils should align to your school's policy and agreed progression. **Long multiplication**   [Mathematics programmes of study: key stages 1 and 2] When pupils are working through a range of questions to practice the skill of using long multiplication to multiply a four-digit number by a two-digit number, provide varied practice to secure understanding of multiplying a two-digit number by a two-digit number initially before moving on to multiplying a three-digit number by a two-digit number. 

I can divide four-digit numbers by one-digit numbers using short division.	In this step pupils must apply: • secure place value knowledge up to thousands • understanding of partitioning • accurate regrouping (exchanging) • a formal written method independently If pupils are not secure here, they will struggle with all further division work in Year 6. The Progression in Calculation methods taught and used by pupils should align to your school's policy and agreed progression. **Checking for understanding questions:** Encourage pupils to use place value counters alongside formal short division method. Recap on using short division for two-digit numbers divided by a one-digit number, without remainders initially and then with remainders, before moving onto three-digit numbers divided by a one-digit number and then progressing onto four-digit numbers divided by a one-digit number to secure understanding. • Encourage pupils to 'find groups of' using their place value counters alongside the formal short division method • E.g. 84 ÷ 4, use place value counters as shown • How many groups of 4 can be made from the 8 tens? • *2 groups of 4 tens can be made (80)* • How many groups of 4 can be made from the 4 ones? • *1 group of 4 ones can be made (4)* • 84 ÷ 4 = 21  Design tasks that encourage pupils to use the short division formal method, alongside place value counters to secure their understanding within a problem-solving context. Include examples of varied practice that have remainders that need to be interpreted within the context of the problem (e.g. if there are 85 pupils on a camping trip, and each tent can hold 4 pupils, how many tents are needed for all pupils? 85 ÷ 4 = 21 r 1, however the answer will need to be 'rounded up' to include the remaining pupil that will need a tent to sleep in.) Also provide tasks that encourage pupils to reason mathematically, using precise language to justify their thinking. Where appropriate, encourage pupils to explain, prove, or represent their thinking, checking their answer using the inverse where possible. Also provide deliberate mistakes for pupils to correct and 'spot the mistake' to deepen their understanding. **5MD-4**

HIAS Resources to support:

- Reasoning and Intelligent Practice Tasks: Reasoning and Intelligent Practice Tasks
- Faded Scaffolds and Intelligent Practice: Faded Scaffolds and Intelligent Practice
- Paired Examples: Paired Examples
- Entry and Exit tickets: Entry and Exit Tickets
- Interleaving, Recall and Retrieval: Interleaving, Recall and Retrieval (hants.gov.uk)
- Connect4Maths: Connect4Maths - Primary
- Moderation Documents: Moderation Documents
- KS1 Key Facts: Key Stage 1 Key Facts Document
- Mastering Times Tables: Mastering Times Tables

NCETM Resources to support:

- Exemplification of ready -to -progress criteria (RTPS): Exemplification of ready-to-progress criteria | NCETM
- NCETM Professional Development materials spine 1: Number, Addition and Subtraction | NCETM ;
- The NCETM Mastery Task booklets can be used as a source of tasks to support end of year teacher assessment for both EXS and GDS Teaching for Mastery Booklets Yr1-6

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- Science
- Geography
- RE
- History
- Leadership
- Computing
- Art
- D&T
- Assessment
- Support Staff
- SEN
- TED
- MFL

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