KEY LESSON	is a key lesson
COMBINED	can be combined with other lessons in the chapter
INTEGRATED	can be integrated with lessons from other year groups
INDEPENDENT	can be tackled independently
NON-STATUTORY	non statutory
IF TIME ALLOWS	if time allows

NB: Teachers are responsible for contacting maths leaders for advice before making changes to long term plan, eg: spending longer on a topic.

Ready to Progress?

Above each unit is a copy of the relevant DfE Ready to Progress Criteria and assessment questions as well as a link to the relevant NCETM Prioritisation Support. Please use these to assess whether the children are ready for the textbooks, to add lessons to address gaps in learning.

Hyperlink to teacher guidance: https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools

Hyperlink to supporting resources (for intervention/pre-teaching): https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/

Textbook 3A

Place Value

Ready-to-progress criteria

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications
Know that 10 ones are equivalent to 1 ten, and that 40 (for example) can be composed from 40 ones or 4 tens. Know how many tens there are in multiples of 10 up to 100.	3NPV–1 Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.	Solve multiplication problems that that involve a scaling structure, such as 'ten times as long'.
Recognise the place value of each digit in *two*-digit numbers, and compose and decompose *two*-digit numbers using standard and non-standard partitioning.	3NPV–2 Recognise the place value of each digit in *three*-digit numbers, and compose and decompose *three*-digit numbers using standard and non-standard partitioning.	Compare and order numbers. Add and subtract using mental and formal written methods.
Reason about the location of any *two*-digit number in the linear number system, including identifying the previous and next multiple of 10.	3NPV–3 Reason about the location of any *three*-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.	Compare and order numbers. Estimate and approximate to the nearest multiple of 1,000, 100 or 10.
Count in multiples of 2, 5 and 10.	3NPV–4 Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	Read scales on graphs and measuring instruments.

Check they've got this, if not do this before moving on.

Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding. Maths No Problem Chapter Consolidation can also be used as assessment tasks.

3NPV–1 Example assessment questions

1. How many 10cm lengths can a 310cm length of ribbon be cut into?
2. The school office sells 52 poppies for 10p each. How much money have they collected altogether?
3. I take 10ml of medicine every day. How many days will a 250ml bottle last?
4. Marek is 2 years old, and has a mass of 10kg. His father's mass is 10 times as much. What is the mass of Marek's father?
5. Janey saves up £100. This is 10 times as much money as her brother has. How much money does her brother have?
6. Circle the numbers that are multiples of 10. Explain your answer.

640 300 105 510 330 409 100 864

4. Fill in the missing numbers.

$600 + 70 + 1 = \square$ $3 + 500 + 40 = \square$

$461 = \square + 60 + 1$ $20 + \square + 3 = 823$

$953 - 50 - 3 = \square$ $846 - \square - 40 = 800$

$\square = 203 + 90$ $\square = 290 + 3$

4. Fill in the missing numbers.

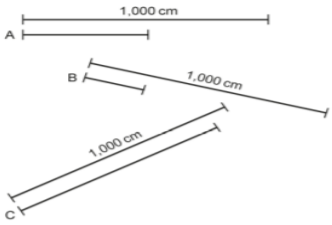
100 less		100 more
☐	← 800 →	☐
☐	← 100 →	☐

10 less		10 more
☐	← 390 →	☐
☐	← 800 →	☐

previous multiple of 100		next multiple of 100
☐	← 630 →	☐
☐	← 347 →	☐

previous multiple of 10		next multiple of 10
☐	← 492 →	☐
☐	← 347 →	☐

5. Look at lines A, B and C. Can you estimate how long they are by comparing them to the 1,000cm lines?



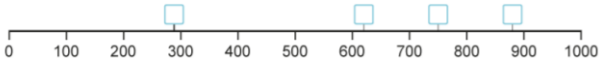
6. Estimate the mass, in grams, shown on this weighing scale.

3NPV–3 Example assessment questions

1. Fill in the missing numbers.

900	☐	700	600	☐	400	☐	200
370	☐	390	☐	☐	420	☐	440

2. Estimate to fill in the missing numbers.

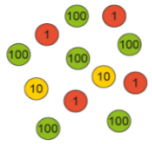


3. Estimate and mark the position of these numbers on the number line.

600 200 480 840 762 195

3NPV–2 Example assessment questions

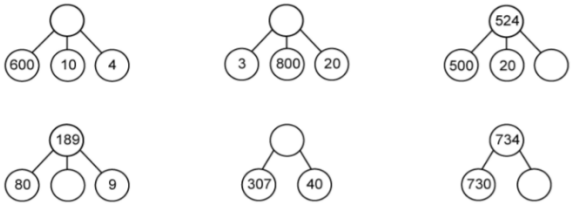
1. What number is represented by these counters?



2. What number is represented by this expression?

$1 + 10 + 10 + 100 + 100 + 10 + 10$

3. Fill in the missing numbers to complete these partitioning diagrams.



5. How many 25p cupcakes can I buy for £5?
6. How many 50cm lengths of wood can I cut from a 3m plank?
7. We raise £100 at the school fair and divide the money equally between 5 charities. How much does each charity get?
8. Fill in the missing numbers.

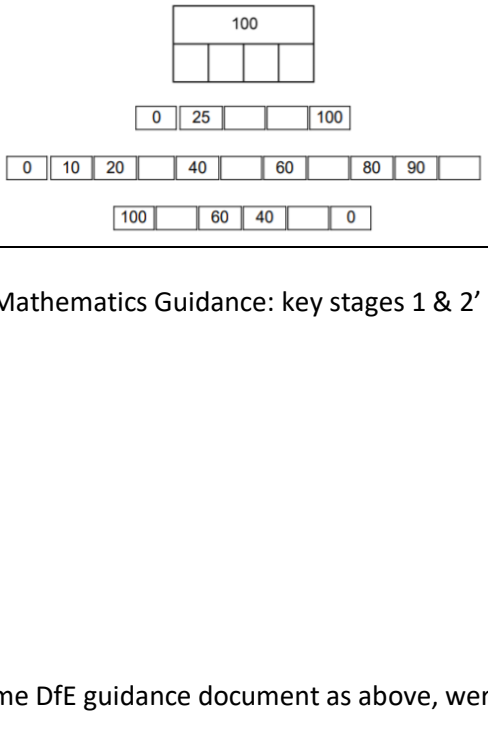
$100 \div 4 = \square$ $\square \times 20 = 100$ $100 \div 50 = \square$ $25 + \square = 100$

9. Stan counts from 0 in multiples of 25. Circle the numbers he will say.

100 25 240 155 400 275 505 350

3NPV–4 Example assessment questions

1. Fill in the missing numbers.



Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- 2AS-1 Page 57
- 3NF-1 Page 98
- 3NPV-1 Page 86
- 3NPV-2 Page 88
- 3NPV-3 Page 91
- 3NPV-4 Page 95
- 3NF-3 Page 103
- 3AS-1 Page 106

Prior learning

If the following ready-to-progress criteria, contained in the same DfE guidance document as above, were secured in Year 2, children will be ready to start on this unit.

- 2NPV-1 Page 51
- 2NPV-2 Page 53

NCETM Prioritisation:

- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-1-adding-and-subtracting-across-10/
- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-2-numbers-to-1-000/

MNP Chapter 1

Numbers to 1000 – Place Value - Counting

Use function machine, number lines, inc large number line around class to support counting, use counting stick, place value mats, part/whole diagram mats, introduce Gattegno grid & use in fact fluency sessions, other useful resources: arrow cards, digit cards, pv dice/spinners, tens frames, Unifix, Dienes, coloured counters.

- Recap Adding and subtracting across 10
- To learn to count in hundreds and understand the place value. Pupils will also understand how many hundreds are needed to make 1000.
- Counting in Hundreds, Tens and Ones To compose and decompose numbers consisting of hundreds, tens and ones.
- To understand the value of each digit in a 3-digit number.
- To be able to compare and order numbers.
- To be able to count in fifties.
- To recognise, describe and continue a number pattern.
- To be able to recognise, describe and complete more complicated number patterns.
- To be able to count in fours and eights.

NC objectives not explicitly mentioned as they are expected throughout all work

- *Identify and represent using different representations (include partitioning numbers in different ways)*
- *Estimate the answer to a calculation and use inverse to check*
- *Solve problems involving place value*

Suitable Nrich:

How Would We Count? https://nrich.maths.org/8123

Five Steps to 50 Game https://nrich.maths.org/10586

	Which Scripts? https://nrich.maths.org/774 Coded Hundred Square https://nrich.maths.org/6554 Magic Vs https://nrich.maths.org/6274 Number Differences https://nrich.maths.org/2790/note Number Match https://nrich.maths.org/6937 Sitting Round the Party Tables *https://nrich.maths.org/7228*

Fact fluency sessions

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications
Automatically recall number bonds to 9 and to 10. Know that 10 ones are equivalent to 1 ten, and 10 tens are equivalent to 1 hundred.	3AS–1 Calculate complements to 100, for example: 46 + ? = 100	Calculate complements to other numbers, particularly powers of 10. Calculate how much change is due when paying for an item.
Automatically recall addition and subtraction facts within 10 and across 10. Recognise the place value of each digit in two- and three-digit numbers. Know that 10 ones are equivalent to 1 ten, and 10 tens are equivalent to 1 hundred.	3AS–2 Add and subtract up to three-digit numbers using columnar methods.	Add and subtract other numbers, including four-digits and above, and decimals, using columnar methods.
Have experience with the commutative property of addition, for example, have recognised that 3 + 2 and 2 + 3 have the same sum. Be able to write an equation in different ways, for example, 2 + 3 = 5 and 5 = 2 + 3 Write equations to represent addition and subtraction contexts.	3AS–3 Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction.	All future additive reasoning.
Calculate products within the 2, 5 and 10 multiplication tables.	3NF–2 Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.	Use multiplication facts during application of formal written layout. Use division facts during short division and long division.
Automatically recall addition and subtraction facts within 10, and across 10. Unitise in tens: understand that 10 can be thought of as a single unit of 1 ten.	3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140 140 − 60 = 80 30 × 4 = 120 120 ÷ 4 = 30	Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example: 8 + 6 = 14 and 14 − 6 = 8 so 800 + 600 = 1,400 1,400 − 600 = 800 3 × 4 = 12 and 12 ÷ 4 = 3 so 300 × 4 = 1,200 1,200 ÷ 4 = 300

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications
Add and subtract across 10, for example: 8 + 5 = 13 13 − 5 = 8	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice.	Add and subtract mentally where digits sum to more than 10, for example: 26 + 37 = 63 Add and subtract across other powers of 10, without written methods, for example: 1.3 − 0.4 = 0.9 Add within a column during columnar addition when the column sums to more than 10 (regrouping), for example, for: 126 + 148 Subtract within a column during columnar subtraction when the minuend of the column is smaller than the subtrahend (exchanging), for example, for: 453 − 124

Addition and Subtraction

Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding. Maths No Problem Chapter Consolidation can also be used as assessment tasks.

3NF–1 Example assessment questions

1. Mr Kahn drove 8km to get to his friend's house, and then drove another 3km with his friend to get to the gym. How far did Mr Kahn drive?
2. There are 12 children. 5 of them can ride a bicycle and the rest cannot. How many of the children cannot ride a bicycle?
3. Maja had £17. Then she spent £9. How much money does she have left?

3AS–1 Example assessment questions

1. Which of these are correct complements to 100 and which have an extra 10? Tick the correct column. Explain your answers.

	Correct bond to 100	Incorrect bond to 100 (extra 10)	Explanation
28 + 72			
61 + 49			
55 + 45			
43 + 67			
84 + 16			
39 + 71			

2. Fill in the missing numbers.

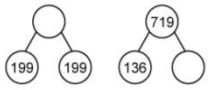
$65 + \square = 100$ $\quad 100 - 29 = \square$

$100 = 42 + \square$ $\quad \square = 100 - 83$

3. A dressmaker had 1m of ribbon. Then she used 22cm of it. How many centimetres of ribbon does she have left?
4. A toy shop sells ping-pong balls for 65p each. If I use a £1 coin to pay for a ping-pong ball, how much change will I get, in pence?
5. Mr Jones has 100 stickers. 47 of them are gold and the rest are silver. How many are silver?
4. I have 6 metres of red ribbon and 6 metres of blue ribbon. How many metres of ribbon do I have altogether?
5. Hazeem is growing a sunflower and a bean plant. So far, his sunflower plant is 14cm tall and his bean plant is 8cm tall. How much taller is the sunflower plant than the bean plant?

Assessment guidance: For pupils to have met criterion **3NF–1**, they need to be able to add and subtract within and across 10 without counting forwards or backwards in ones on their fingers, on a number line or in their heads. Pupils need to be able to automatically recall the facts within 10, and be able to mentally apply strategies for calculation across 10, with accuracy and speed. Teachers should assess pupils in small groups – simply providing the correct answers to the example questions above does not demonstrate that a pupil has met the criterion. The full set of addition and subtraction facts which children need to be fluent in is shown in the appendix.

7. Complete the following calculations. Choose carefully which method to use.



175 + 25	776 – 200
63 + 89 + 42	523 – 247
50 + 250 + 300	400 – 35

3AS–2 Example assessment questions

1. Solve these calculations using columnar addition or columnar subtraction.

a. 89 – 23 c. 402 + 130 + 78 e. 345 – 72

b. 127 + 43 + 49 d. 462 – 256 f. 407 – 129

2. Year 3 want to buy some sports equipment which costs £472. So far they have raised £158. How much more money do they need to raise?
3. Cheryl has £135. She spends £53 on some new trainers. How much money does she have left?
4. There are 172 non-fiction books in the school library and 356 fiction books. How many books are there in the library altogether?
5. Fill in the missing numbers.

$$\begin{array}{r} 2\,6\,2 \\ +\,3\,\square\,1 \\ \hline 5\,8\,3 \end{array} \qquad \begin{array}{r} 3\,2\,2 \\ +\,1\,6\,\square \\ \hline 4\,9\,1 \end{array} \qquad \begin{array}{r} 6\,2\,7 \\ -\,1\,1\,\square \\ \hline 5\,1\,4 \end{array} \qquad \begin{array}{r} 7\,\square\,4 \\ -\,\quad 6\,2 \\ \hline \square\,3\,2 \end{array}$$

6. Mahsa carries out the following columnar addition calculation.

$$\begin{array}{r} 6\,2\,8 \\ +\,1\,5\,9 \\ \hline 7\,8\,7 \\ {\scriptstyle 1\ \ \ } \end{array}$$

Write a columnar subtraction calculation that she could do to check that her calculation is correct.

Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- **3AS-3 Page 113**

NCETM Prioritisation:

- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-4-manipulating-the-additive-relationship-and-securing-mental-calculation/
- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-5-column-addition/
- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-7-column-subtraction/

MNP Chapter 2	**Addition and Subtraction** Use colour coded calculation mats & part/whole mats to make link explicit between. Use base ten (Dienes) & Unifix/ Double Sided Counters with tens frames. Use NCETM resources to help plan lessons on aggregation, augmentation, reduction, partitioning and difference.

Representing with bar models and part-whole diagrams is expected throughout. Where teaching written methods ensure that children understand when these are appropriate and when they are not.

NB: By end of Y3 children may be introduced to Place Value counters, initially alongside Dienes focussing on what's the same/what's different, but this will generally take place in Y4, when place value is more secure and they start working with larger numbers.

- To understand the commutative law of addition and the corresponding addition and subtraction facts.
- To add a 3-digit number to a 1-digit number with no regrouping or renaming.
- To add a 3-digit number to a multiple of 10 (2-digit number) without regrouping or renaming.
- To add multiples of 100 to a 3-digit number. without regrouping or renaming.
- To add two 3-digit numbers without regrouping or renaming; introduction of the column method of addition.
- To add a 3-digit number to a 1-digit number, with renaming.
- To add with renaming in tens.
- To add two 3-digit numbers with renaming the ones.
- To add two 3-digit numbers with renaming the tens.
- To add with renaming in ones and tens.
- To do simple subtraction by taking away a 1-digit number from a 2-digit number without renaming.
- To do simple subtraction by taking away a 1-digit number from a 3-digit number without renaming.
- To subtract multiples of 10, up to 90, from a 3-digit number.
- To subtract hundreds from a 3-digit number and to subtract multiples of 1 and 10 from a 3-digit number
- To understand simple subtraction of a 3-digit number by another 3-digit number using the column method.
- To subtract with renaming in tens and ones.
- To subtract with renaming hundreds.
- To subtract with regrouping tens and hundreds.
- To subtract a 3-digit number with zeros.
- To use the bar model to solve problems.
- To solve complicated problems involving addition and subtraction using a **comparative bar model**

Suitable Nrich:
Roll These Dice https://nrich.maths.org/53
Cuisenaire environment https://nrich.maths.org/12222
What was in the box? https://nrich.maths.org/7819
Number Lines Game (suitable for intervention) https://nrich.maths.org/5652
Pairs of Numbers https://nrich.maths.org/7233
What could it be? (easily adaptable) https://nrich.maths.org/10479
Strike it Out Game https://nrich.maths.org/6589
Noah https://nrich.maths.org/136
Dicey Addition Game https://nrich.maths.org/11863
Secret Number https://nrich.maths.org/5651
Find the Difference https://nrich.maths.org/6227
Ladybirds in the Garden https://nrich.maths.org/1816

Multiplication and Division

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications

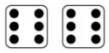
Recognise repeated addition contexts and represent them with multiplication equations. Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).	3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	

Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding. Maths No Problem Chapter Consolidation can also be used as assessment tasks.

3MD–1 Example assessment questions

1. Circle the expressions that match the picture.



2×6 6×6 6×2
2+6 6+2 6+6

2. If one sweet costs 3p, how much do 8 sweets cost?
3. I need to buy 32 metres of fencing to go around my garden. The fencing is sold in 8-metre lengths. How many 8-metre lengths do I need to buy?
4. There are 24 strawberries in a tub. I share them equally between the 4 people in my family. How many does each person get?
5. A gardener has 5 plant pots. She plants 6 seeds in each pot. How many seeds does she plant altogether?

3NF–3 Example assessment questions

1. A garden table costs £80 and 2 garden chairs each cost £60. How much do the 2 chairs and the table cost altogether?
2. 130 people are expected at a concert. So far 70 people have arrived. How many more people are due to arrive?
3. A family ticket for a safari park is £40. 3 families go together. How much do the 3 family tickets cost altogether?
4. Fill in the missing numbers.

$30 + \square = 110$ $7 \times 60 = \square$

3NF–2 Example assessment questions

1. A spider has 8 legs. If there are 5 spiders, how many legs are there altogether?
2. A book costs £5. How much do 6 books cost?
3. 18 socks are put into pairs. How many pairs are there?
4. Felicity wants to buy a scooter for £60. If she pays with £10 notes, how many notes does she need?
5. Circle the numbers that are multiples of 4.

14 24 40 34 16 32 25

Assessment guidance: The multiplication tables check in year 4 will assess pupils' fluency in all multiplication tables. At this stage, teachers should assess fluency in facts within the 10, 5, 2, 4 and 8 multiplication tables. Once pupils can automatically recall multiplication facts, and have covered criterion 3MD–1, they should be able to apply their knowledge to contextual questions like those shown here. Teachers should ensure that pupils answer these questions using automatic recall of the appropriate multiplication facts – for question 1, for example, if a pupil counts up in multiples of 8, or draws 5 spiders and counts the legs in ones, the pupil has not met this criterion.

Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- 3NF-2 Page 100
- 3MD-1 Page 117
- 3NF-3 Page 103

Prior learning

If the following ready-to-progress criteria, contained in the same DfE guidance document as above, were secured in Year 1, children will be ready to start on this unit.

- **1NF-2 Page 26**

MNP Chapter 3	**Multiplication and Division**
	Do not assume that the children understand the concepts of the 2, 5, and 10 times tables. Check for conceptual understanding as well as fact fluency and revisit if needed. Make explicit links to repeated addition and understanding the multiplier and multiplicand. **Grouping and sharing is really important – children will need several lessons consolidating the difference between grouping and sharing. Please see the maths leader if you are unsure.**

	Scaling is also really important - Lesson 14 is the first-time scaling is introduced but MNP does not mention the term explicitly. We do. Take time to ensure the children understand this, start with a one to one correspondence and move to unitising. Children need to develop multiple ways to access and apply tables facts **through understanding relationships**. Use practical apparatus and visual images to help reveal connections and build visual representations. Key skills required in order to build fluency with multiplication: Addition & subtraction, partitioning, doubling/halving, using known facts (using known addition facts and applying to multiples of ten and 100), bridging (using known facts to ten). • To multiply by 3. • To multiply by 3 using relational properties. • To multiply by 2 (this should be consolidation from KS1 but use RtP / Priorisation Docs) • To multiply by 4. • To multiply by 4 and 8. • To multiply by 8; to use commutative law to multiply. • To multiply by 8. • To divide by 3. • To divide by 4. • To find relationships between multiplication and division. • To divide by 4 and 8. • To solve problems with multiplication (including scaling) • To solve problems that involve division. • To solve more word problems involving multiplication and division When introducing a new table: i) check understanding of the concept of multiplication, ii) start from a known table and make links, eg: teaching the 4 x by reviewing 2 x and doubling … looking at both tables side by side & making links throughout, iii) ensure children use their knowledge of commutivity and the distributive & associative properties to support recall. Use table practice sheets, inc for homework and during any 5 minutes during the day. Assess using TTRS, use Mathletics to further practice. NCETM Mastery Professional Development Materials to support teaching of multiplication/division: https://www.ncetm.org.uk/resources/52830 Suitable Nrich: Times Tables Shifts https://nrich.maths.org/6863 Tables without tens https://nrich.maths.org/4905 Multiplication Tables – Matching Cards Game https://nrich.maths.org/1252 Sitting Round the Party Table https://nrich.maths.org/7228 Chairs and Tables https://nrich.maths.org/2908 Clapping Times https://nrich.maths.org/5482 Use Unifix, Cuisenaire, Number tracks, Number lines, bead strings, dice, Dominoes, counting stick, multiplication grids, part/whole diagrams, bar models)
MNP Chapter 4	**Further Multiplication and Division** See maths lead for guidance before planning division lessons – in Y3 the focus is on mental strategies for multiplication & division - using multiplication facts.

(Teach in Spring one – put length in first)	For written multiplication use multiplication calculation mat, with scaffold versions available (no calculation mat for division). • To multiply multiples of 10 by a 1-digit number. • To multiply any 2-digit number by a 1-digit number. • To multiply with regrouping. • To understand simple division of a 2-digit number by a 1-digit number. • **To divide where there is a need to regroup (Separate into two key points: finding multiples of the divisor that fit into the dividend; dividing partitioned dividend)** * NC states in y3 'progressing **toward** formal short division' **MNP objective to use long division in lesson 8 DO NOT TEACH – the children will not be ready for it, instead introduce the notation of short division (for sharing first, then grouping)*** • To solve problems that involve multiplication. • To solve problems involving division. • To solve more challenging word problems. **Guidance:** Teaching division – focus in Y3 is on: • **securing range of mental methods & concept of division**, inc grouping & sharing, along with relationship to multiplication & array rep. • Big focus on partitioning & using known facts. Partial tables should be introduced & frequently used in fact fluency sessions, ensuring children see link with division. • Remember written division begins with most significant digit, which children find tricky at first. No calculation mat for division, use A3 plain laminated paper to set out Dienes and record alongside.
Measures	
Assessment Questions Maths No Problem Chapter Consolidation as assessment tasks.	
MNP Chapter 5	**Length (& Height)** (continue to convert during recall sessions in Maths Workout, ideal opportunity to review place value. Set tasks on Mathletics) • To use metres and centimetres to measure objects. • To write length in centimetres only by converting metres to centimetres. Y4 NC – introduced here to support PV) • To use mm to measure objects(not covered in MNP but should be addressed here also) • To write length in mm only by converting cm to mm (not covered in MNP but should be addressed here also) **Kilometres is beyond year 3 so not essential** • To convert kilometres to metres. • To convert length from metres to kilometres and metres. • To compare two lengths. • To solve measurement-related problems. • To solve word problems further, involving multiplication. ***Include Scaling Problems to consolidate*** • To solve word problems associated with length using division. • To solve more challenging word problems. Wide range of resources available for this unit in Maths Room: Flexible plastic metre sticks, tape measures, foot and height measurers,

	(Some of these MNP are pitching toward Y4 content, so don't devote extra lessons beyond those allocated.) Suitable Nrich: Snake Coils https://nrich.maths.org/8811 Making Pathways https://nrich.maths.org/13003 Rabbit Run https://nrich.maths.org/2793 Little Man https://nrich.maths.org/4789 Measure our Heights https://nrich.maths.org/10620 Olympic Starters https://nrich.maths.org/8170
MNP Chapter 6	**Mass** **Practical Work is essential!** To measure mass using weighing scales and compare the mass of objects using grams and kilograms. • To use weighing scales to measure mass when the mass is between multiples of 100 g. • To read values on a scale which are 1 kg or more. • To weigh heavier items where the markers in the scales represent 200 g each. • To solve problems relating to mass with addition and subtraction. • To solve problems relating to mass using multiplication. ***Include Scaling Problems*** • To solve word problems relating to mass using division. NB: Although there are a large number of weighing scales, check well in advance there are enough for your needs and that they all work. Be prepared to bring in objects to weigh (eg: fruit, vegetables).
MNP Chapter 7	**Volume** **Practical Work is essential!** • To measure volume in millilitres. • To measure capacity in millilitres. • To measure volume using millilitres and litres. • To measure volume in millilitres and litres from a 'homemade' bottle with markings. • To measure volume using millilitres and litres in comparison to 1 l. • To measure larger capacity in litres and millilitres. • To solve problems related to volume. Resources (ensure these are ready before the day of the lesson as demand may be high): • Objects with different capacities/shapes • Measuring jugs/cylinders (between three) • Measuring beakers (ml) • Different small containers (between three) • 1 l measuring jug • Containers with 1 l capacity • Measuring beakers up to 1 l (between three) • Empty plastic bottles (set between three) • 100 ml measuring beakers (10) • Different everyday containers (set between groups of four or five) • Measuring beakers (large and small) (set between groups of four or five) • Jugs for pouring (between groups of four or five)

	NB: MNP has a great many lessons on measure – speak to maths lead if you are not progressing as per this overview.
Textbook 3B (by February - speak to maths lead if behind)	
MNP Chapter 8	**Money** Note: decimals are not taught until Year 4 so represent as pounds and pence using the word 'and'. If children are already familiar with this decimal notation, help them make the connection in context. Look out for children recording as £3.56p and address swiftly. • To consolidate previous learning about denominations of both notes and coins; to use simple addition to count amounts of money • To name amounts of money including coins above 100p; to regroup and rename 100p as £1 as a key strategy. • To find multiple ways of showing an amount of money. • To add money by adding together the pounds and pence separately. • To add amounts of money together using different methods; to consolidate the addition of pounds and pence separately. • To consolidate 'making a pound' as a strategy for adding amounts of money where the coins equal more than 99p. • To learn the 'make a pound' strategy with number bond diagrams; to consolidate the strategies associated with the addition of money. • To use multiple methods for subtracting amounts of money, including concrete materials and the column method. • To use visual comparison to subtract amounts of money; to consolidate column subtraction where there is no regrouping of pence required. • To use number bonds to subtract amounts of money; to develop number sense through decision making. • To use number bonds as the primary strategy for subtracting amounts of money; to split pounds and pence simultaneously when subtracting amounts of money. • To learn the 'counting on' strategy for calculating change; to consolidate the number bonds strategy for calculating change. • To use **comparative bar models** ***(Do pre-unit assessment on time)***
MNP Chapter 9	**Time** Telling the time should be discussed frequently with children during day to day routines, making reference to both digital and analogue clock and facts about dates (e.g. days, weeks in the month, months in the year, hours in the day etc). • To use the terms 'a.m.' and 'p.m.' correctly to identify morning or afternoon/evening. • To learn to tell time to the minute; to understand the relationship between the minute hand and hour hand. • To consolidate and apply a variety of vocabulary used to express the time. • To compare analogue and digital time; to represent time using both analogue and digital methods. • To tell time before the hour using the hour and minute hands. • To learn to tell time using 24-hour notation; to use analogue time and 24-hour notation interchangeably. • **To tell the time on an analogue clock using Roman numerals. This is the only time MNP covers MNP this year, also cover in History** • To measure time in seconds and milliseconds. • To measure time in seconds using a stopwatch; to consolidate previous learning about seconds. • To consolidate measuring time in seconds; to conduct a time experiment using seconds. • To measure time in hours using an analogue clock. • To consolidate the measurement of time in hours. • To measure time in hours using analogue clocks and timelines; to count backwards in time by the hour. • To measure the passage of time in minutes using an analogue clock and a timeline. • To measure time to the minute when it crosses into the next hour; to use number bonds to calculate the passage of time. • To measure time in minutes, counting backwards to determine the starting point; to use number bonds and timelines to calculate the passage of time.

	• To determine how many seconds are in a minute; to use multiplication to calculate the number of seconds in a number of minutes. • To convert seconds into minutes using number bonds. • To calculate the number of days in a month; to learn which months have 31, 30 and 28/29 days. • To find the duration of days for different activities. **Suitable Nrich:** Two Clocks https://nrich.maths.org/4806 Half Time https://nrich.maths.org/7408 Wonky Watches https://nrich.maths.org/1002 Flashing Lights https://nrich.maths.org/1014 Matching Time Cards https://nrich.maths.org/10332 **Resources available:** white boards with digital and analogue clocks printed on them, PE plastic hoops for counting around in 5s, analogue and digital clock can be displayed on whiteboard, all classrooms should have a teaching clock displayed
MNP Chapter 10	**Picture Graphs and Bar Graphs (inc science/topic)** Apply these skills across the curriculum – in particular in Science. • To construct picture graphs from a set of data; to present data with pictures that represent more than one item. • To construct bar graphs from a set of data; to use proportion to reflect precise difference in quantity. • To read and interpret information from a bar graph; to use and understand vocabulary related to bar graphs. • To read bar graphs where the scale is not a multiple of all quantities measured. • To read bar graphs where the scale is made up of larger increments. .

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications
	3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.	Use unit fractions as the basis to understand non-unit fractions, improper fractions and mixed numbers, for example: $\frac{2}{5}$ is 2 one-fifths $\frac{6}{5}$ is 6 one-fifths, so $\frac{6}{5} = 1\frac{1}{5}$
	3F–2 Find unit fractions of quantities using known division facts (multiplication tables fluency).	Apply knowledge of unit fractions to non-unit fractions.
Reason about the location of whole numbers in the linear number system.	3F–3 Reason about the location of any fraction within 1 in the linear number system.	Compare and order fractions.
Automatically recall addition and subtraction facts within 10. Unitise in tens: understand that 10 can be thought of as a single unit of 1 ten, and that these units can be added and subtracted.	3F–4 Add and subtract fractions with the same denominator, within 1.	Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.

Fractions

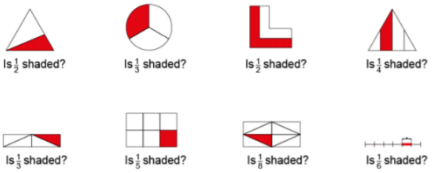
Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding.
Maths No Problem Chapter Consolidation can also be used as assessment tasks.

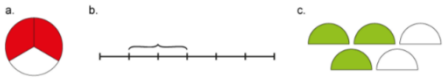
3F–1 Example assessment questions

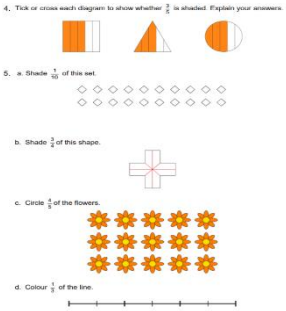
1. What fraction of each diagram is shaded?

2. Does each diagram show the given fraction? Explain your answers.



3. What fraction of each diagram is shaded/highlighted?

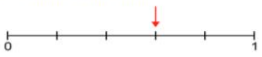




3F–2 Example assessment questions

1. Rohan saved £32. He spends $\frac{1}{4}$ of his money on a toy. How much does he spend?
2. Find:
   a. $\frac{1}{5}$ of 35
   b. $\frac{1}{10}$ of 40
   c. $\frac{1}{8}$ of 24
3. The school caretaker buys 50 litres of paint. She uses $\frac{1}{5}$ of it to paint the year 3 classroom. How many litres of paint is this?
4. There are 16 apples in a fruit bowl. Some children eat $\frac{1}{4}$ of the apples. How many are left?

4. Gemma and Kasper look at this number line.

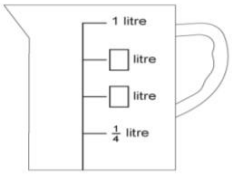


Gemma says the arrow is pointing to the number $\frac{3}{4}$.

Kasper says the arrow is pointing to the number $\frac{3}{5}$.

Who is correct? Explain your answer.

5. Add the missing labels to the measuring jug.



3F–4 Example assessment questions

1. Complete the calculations.

$\frac{5}{9}+\frac{1}{9}=\frac{\square}{\square}$ $\quad$ $\frac{6}{8}-\frac{2}{8}=\frac{\square}{\square}$

$\frac{5}{12}+\frac{3}{12}=\frac{\square}{\square}$ $\quad$ $\frac{9}{11}-\frac{6}{11}=\frac{\square}{\square}$

$\frac{5}{14}+\frac{7}{14}=\frac{\square}{\square}$ $\quad$ $\frac{9}{10}-0=\frac{\square}{\square}$

2. Diego writes:

$\frac{3}{12}+\frac{5}{12}=\frac{8}{12}$

Mark writes:

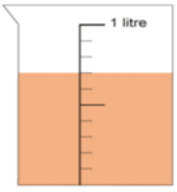
$\frac{3}{12}+\frac{5}{12}=\frac{8}{24}$

Who is correct? Explain the mistake that has been made.

3. Decide whether each calculation is correct or not. Explain your answers.

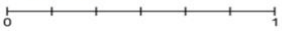
	Correct (✓) or incorrect (✗)?	Explanation
$\frac{7}{12}-\frac{2}{12}=\frac{5}{12}$		
$\frac{4}{7}-\frac{2}{7}=\frac{2}{0}$		
$\frac{8}{10}-\frac{2}{10}-\frac{1}{10}=\frac{3}{10}$		
$\frac{7}{9}-\frac{7}{9}=0$		
$\frac{5}{8}-\frac{2}{8}-\frac{2}{8}=\frac{1}{8}$		

4. Sofia had a jug containing $\frac{7}{10}$ of a litre of juice. She drank $\frac{4}{10}$ of a litre. How much does she have left?

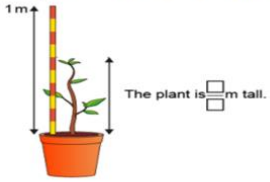


3F–3 Example assessment questions

1. Label the points on this number line.



2. How tall is this plant? Give your answer as a fraction of a metre.



3. a. Which is larger, $\frac{6}{8}$ or $\frac{3}{8}$? Explain your answer.
   b. Which is larger, $\frac{1}{4}$ or $\frac{1}{3}$? Explain your answer.

Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- 3F-1 Page 120
- 3F-2 Page 124
- 3F-3 Page 127
- 3F-4 Page 131

NCETM Prioritisation:

- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-8-unit-fractions/
- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-9-non-unit-fractions/

MNP Chapter 11

Fractions

When writing fractions take care with the language you use. Make the links with fraction as a division:

Say	Write
'Each whole orange is divided…'	Draw the fraction bar.
'…into four equal parts'	Write the denominator: 4
'And we have three of those parts'	Write the numerator: 3

- To count in tenths; to recognise tenths and be able to determine how many tenths are shaded.
- To make number pairs to create 1; to combine fractions to make 1.
- To add fractions with the same denominator.
- To consolidate adding fractions with the same name; to learn how fractions can add to 1.
- To subtract fractions with the same name.
- To find fractions equivalent to $\frac{1}{2}$; to use pictorial representations and multiplication to show equivalence.
- To find equivalent fractions
- *To find the simplest fraction. MNP goes beyond Y3 only teach if time and children are secure*
- To compare the fractions $\frac{1}{2}$ and $\frac{1}{4}$ using pictorial representations and concrete materials.

Nrich:

Fraction Match https://nrich.maths.org/6938

Matching fractions https://nrich.maths.org/8283

Assess these at start of Sept term.

Recognise standard and non-standard examples of 2D shapes presented in different orientations. Identify similar shapes.	3G–1 Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.	Compare angles. Estimate and measure angles in degrees.
Compose 2D shapes from smaller shapes to match an exemplar, rotating and turning over shapes to place them in specific orientations.	3G–2 Draw polygons by joining marked points, and identify parallel and perpendicular sides.	Find the area or volume of a compound shape by decomposing into constituent shapes. Find the perimeter of regular and irregular polygons.

Geometry - angles

Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding. Maths No Problem Chapter Consolidation can also be used as assessment tasks.

3G–1 Example assessment questions

1. Here is a map of a treasure island.

a. Follow the instructions and say where you end up. Each time, start at the camp, facing north.

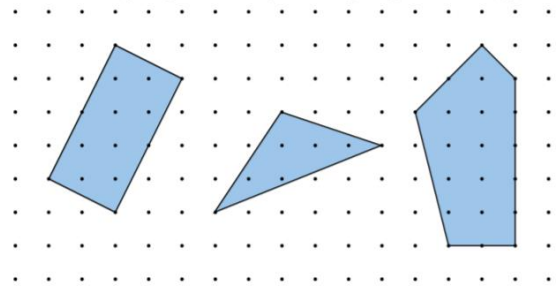
i. Go forwards 3 squares.
Make a quarter turn clockwise.
Go forwards 2 squares.
Make a quarter turn anticlockwise.
Go forwards 2 squares.
Where are you?

ii. Make a three-quarter turn clockwise.
Go forward 3 squares.
Make a quarter turn anticlockwise.
Go forward 1 square.
Where are you?

b. Start at the camp, facing North. Write some instructions, like the ones above, to get to the treasure.

2. Draw an irregular hexagon with one right angle on this grid.

3. Mark all of the right angles in these shapes. Use a right-angle checker to help you.



Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- 3G-1 Page 134

NCETM Prioritisation:

- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-3-right-angles/

MNP Chapter 12

Angles

- To learn what makes an angle and identify angles in objects.
- To see angles on the inside and outside of objects; to find angles in letters.
- To find angles in shapes; to determine the relationship between the number of angles in a shape and the number of sides.
- To find right angles in everyday objects; to understand what makes a right angle.
- To compare angles using the terms 'right' angle and 'acute' angle; to identify acute angles as smaller angles than right angles.
- To identify right angles and acute angles; to recognise and define an obtuse angle.
- To make turns using angles vocabulary; to align the language of angles and fractions to describe turns.

Nrich:

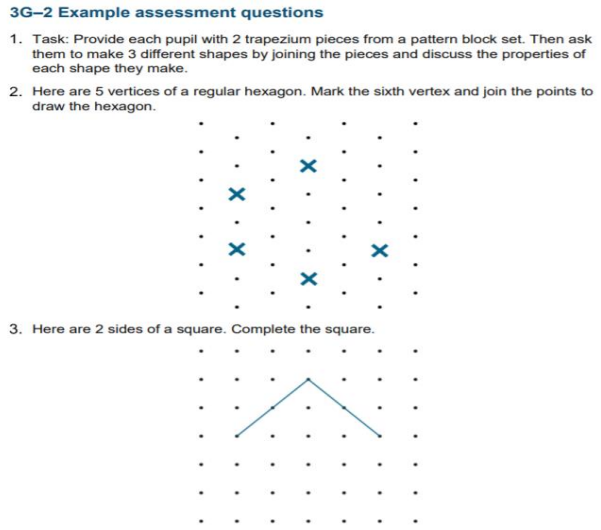
Estimating Angles https://nrich.maths.org/1235

Geometry – properties of shapes

Assessment Questions

These questions could be incorporated into Maths Workout or lessons at any point to assess understanding.

Maths No Problem Chapter Consolidation can also be used as assessment tasks.



3G–2 Example assessment questions

1. Task: Provide each pupil with 2 trapezium pieces from a pattern block set. Then ask them to make 3 different shapes by joining the pieces and discuss the properties of each shape they make.
2. Here are 5 vertices of a regular hexagon. Mark the sixth vertex and join the points to draw the hexagon.
3. Here are 2 sides of a square. Complete the square.
4. Look at these 5 quadrilaterals. Mark all the pairs of parallel sides. Hint: you can extend sides to help you.
5. Mark the missing vertex of this quadrilateral so that 2 of the sides are perpendicular.

Ready-to-progress criteria addressed by this unit

Teaching of this unit supports the following criteria from the 'DfE Mathematics Guidance: key stages 1 & 2' (the 335-page document available as a download)

- 3G-2 Page 137

NCETM Prioritisation

- https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-10-parallel-and-perpendicular-sides-in-polygons/

MNP Chapter 13	**Lines and Shapes** • To identify, define and create perpendicular lines; to find perpendicular lines in everyday objects. • To identify, define and create parallel lines; to find parallel lines in everyday objects. • To define and identify vertical and horizontal lines; to find vertical and horizontal lines in everyday life. • To describe 2D shapes using familiar vocabulary about lines and angles. • To draw 2D shapes in proportion to their size; to identify how big a shape is. • To create 3D shapes out of nets; to use vocabulary related to 3D shapes and their properties. • To construct 3D shapes out of clay and discuss their properties. • To describe 3D shapes using familiar terms; to identify properties of 3D shapes. **Nrich:** Shaping it https://nrich.maths.org/7301 Tangram Tangle https://nrich.maths.org/2398 Paper Patchwork https://nrich.maths.org/12203
MNP Chapter 14	**Perimeter of figures** • To determine the perimeter of basic shapes; to use grid paper to measure the perimeter of a shape. • To measure the perimeter of a shape using 1 cm grid paper. • To determine the perimeter of different shapes; to create shapes with a specific perimeter. • To find the perimeter of shapes using 2 cm grids; to identify mistakes in others' work. • To calculate the perimeter of a shape using a ruler to measure the side lengths. • To calculate the perimeter of a rectangle using multiplication and addition. • To calculate the perimeter of a square using addition and multiplication; to calculate the perimeter of rectangles and irregular shapes by adding up the length of each side.

	• To consolidate learning about perimeter using practical word problems; to calculate the perimeter of a rectangle using properties of shapes. • To calculate the perimeter of a square and a rectangle using information previously learned about the properties of shapes. • To calculate the perimeter of a rectangle when a square piece has been removed; to determine the lengths of sides that are not marked based on information about the piece removed. **Nrich:** Area and Perimeter https://nrich.maths.org/7280 Numerically Equal https://nrich.maths.org/1045 Dicey Perimeter Game https://nrich.maths.org/11895