Maths Recovery Curriculum

Autumn Term 2020

Medium Term Plan

Year 4/5

This learning schedule is based on the Hampshire Mathematics Scheme of Learning and is designed to take account of the national school closures between March 2020 and July 2020. Learners will begin a new academic year in need of catch-up and consolidation, together with some new learning from the previous academic year that has been missed. This document focusses on the core skills , knowledge and understanding that an 'on-track' learner would be expected to bring to the next stage of their learning and acknowledges that, for many, the habits of learning and the facility to recall previously embedded knowledge will need attention. For this reason, the first elements of this Autumn Term plan address the end of year objectives from the previous year. As the term progresses, the plan seeks to integrate expected prior learning, previously assumed and now no longer can be, into the standard units from the original scheme. In this way, the aim is to build on what is known and recalled in a moderately accelerated way to help learners get back on track for the end of the 20/21 academic year.

Teachers will need to adapt this schedule to meet the needs of their learners
National curriculum statements are in bold type and Hampshire Maths team guidance is in standard type.

The links to the Hampshire Assessment Model have been retained so that teacher assessment in each domain can be made at Milestone 1.

The Hampshire Mathematics team full scheme of learning for KS2 (Year 3- Year 6) offers long and medium-term maps with more detail, with end of year expectations broken down into smaller steps, plus linked units of work with key tasks and teaching points. This is available to schools subscribing to Moodle Plus https://maths.hias.hants.gov.uk/

These plans will need to be adapted to meet the needs of pupils. Number of lessons provides a suggested structure, based on hourly lessons. It is expected that domains within units will be connected and integrated. The structure enables pupils to make links and connections across domains. Pupils should develop reasoning through solving problems in each unit of work.

M1	M2	M3	ARE

Year 4	Year 5
Measurement: **Find everyday opportunities to tell the time from an analogue clock. Estimate and read time with increasing accuracy to the nearest minute. Use vocabulary of time (am/pm; morning / afternoon, noon / midnight). Know the number of days in each month, year and leap year.**	Measurement: **Find everyday opportunities to convert units using place value understanding and knowledge of tables facts.**

Subsequent units should continue to revisit material from previous units to deepen learning, encourage automaticity and allow rich connections to be made across the year.

Date	Unit Focus Lessons 15 Lessons	Year 4 Objectives Unit 4.1	Year 5 Objectives Unit 5.1	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 7th Sept Fri 25th Sept	• NPV • Add & Sub	**Solve number and practical problems involving:** • **Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens and ones)** Up to 10,000 • **Read and write numbers to at least 1000 in numerals and in words** • **Identify, represent and estimate numbers using different representations** including number-lines • **Find 10 ,100, 1000 more or less than** a given number • **Round any number to the nearest 10,100,1000** (represent on a number line)		**Types of task** **Provide practical experiences of using a range of concrete resources to model 3-digit numbers** Eg Dienes, arrow cards, place value counters. Combine this with recording the number using number sentences, missing box number sentences, part part part whole; Gattegno chart, place value grid alongside numbers **Revise composition of 1000**: Addition/ subtraction facts using multiples of 10 to 100 making links to 1000 eg 90+10; 900+100 **Addition/ subtraction families of facts** using multiples of 50 eg 1000-150= 850 **Partition numbers flexibly** eg 576= 400 +176; 500+76 using part part part whole diagrams **Use number lines** to position and compare numbers show where 3 - digit numbers lie compared to multiples of 100 **Key facts about 1000 and 10,000** using bar models identifying ½, 2/4 ;¼, ¾ and 1/10 of 1000 compared to 10,000 eg ¾ of 1000 = 750; ¾ of 10,000 =7500. Make 3 digit numbers using Dienes and physically add/take 10s and 100 from a number, record the PV equations eg 356 +10=366 find 10, 100 and 1000 more or less. Relate to making numbers with Dienes. Record comparisons of pairs of numbers using < , > **Key teaching points and prior learning – Year 4** • Y3**: Compare and order numbers from zero up to 1000; using < , > and = signs** • Y3: **Add and subtract numbers mentally including a 3-digit number and ones and a 3-digit number and hundreds.** • Revise representations for NPV • Revise representations for NPV -two and three part 'cherry' models, bar models and number lines **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-1-17-composition-and-calculation-100-and-bridging-100/	• https://www.ncetm.org.uk/classroom-resources/primm-1-18-composition-and-calculation-three-digit-numbers/ • https://www.ncetm.org.uk/classroom-resources/primm-1-22-composition-and-calculation-1-000-and-four-digit-numbers/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897801/Maths_guidance_year_3.pdf • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf **EOY3 Mastery questions NPV:** ■ 8 hundreds, 3 tens and 6 ones together make ☐. ■ 457 is made of ☐ hundreds, ☐ tens and ☐ ones. ■ 250 is made of ☐ hundreds and ☐ tens. Megan has made a 3-digit number with these cards. 6 7 5 What other 3-digit numbers can she make with these cards? **EOY3 Mastery with GD questions NPV:** What is the value of the number represented by the counters in the place value grid? 100s 10s 1s Using all of the counters, how many different numbers can you make? Have you made all the possible numbers? Explain how you know. Find different ways of expressing: ■ 630 ■ 704 ■ 867
	• NPV • Add & Sub: measurement (length inc perimeter) • Statistics	**Solve number and practical problems involving:** • **Read, write, order and compare numbers to at least 100,000 and determine the value of each digit.** • **Identify, represent and estimate numbers using different representations including number-lines** • **Round any number to the nearest 10,100,1000, 10,000 and 100,000** (represent on a number line)		**Types of task** **Possible contexts:** Comparing and finding the difference between the numbers of people attending say a large sports event or a music festival provides a good context to think about larger numbers. **Pictorial representations:** When extending children's knowledge of the number system number lines provide a key image to help children to develop understanding of the magnitude of the numbers and their relative position in the number system. Starting with a 0 to 10,000 and revising the position of the numbers might be a good starting point. Ask questions like "If I started here on 9000 and counted back 5 what number would I now be on? Where should I record it on the number line?" "If I counted back in 3 jumps of 250 from 3500 where should I start and which number would I be on now? Can you mark that position on the number line?" The use of Gattegno charts, place value grids, base 10 apparatus, place value counters is also important for all learners. **Key facts focus:** Using the Hampshire Mathematics Team number facts progression documents check back to children's number facts knowledge from the year 4 expectations. Address as necessary and get started on learning the year 5 facts as soon as appropriate. **Solving problems**: What is the difference between the number of people attending the match between Southampton and Leicester (29,489) and those attending the Wexham and Dover (5,378) match? The number line is also crucial to support learners when developing their understanding of how rounding numbers works. The use of Gattegno charts, place value grids, base 10 apparatus, place value counters is also important for all learners The number of people attending a popular music festival last year was 72,497. What was this rounded to the nearest 1000? **Key teaching points and prior learning – Year 5** • **Y4: Round decimals** in the context of length **to the nearest whole number** • **Y4: Compare** lengths **with the same number of decimal place (up to two decimal places)**	• Represent calculations and solutions to problems using a range of representations to help pupils to make links with prior learning and to notice structure and relationships within a domain and between domains • Model decimals PV using place value charts, two part 'cherry' models, arrow cards and on number lines. Support calculations involving decimals with place value charts, structured resources eg Dienes and number lines alongside formal methods where appropriate **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-1-26-composition-and-calculation-multiples-of-1-000-up-to-1-000-000/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf **EOY4 Mastery questions NPV:** Match 4600 to numbers with the same value. 4600 460 tens 460 hundreds 46 hundreds 4600 ones 46 tens Using these 4 digits: 1 7 3 0 What is the smallest number you can make? What is the largest number you can make? **EOY4 Mastery with GD questions NPV:** How many different ways can you write 5510? *Pupils should suggest answers such as:* *551 tens* *55 hundreds and 1 ten* *5 thousands and 510 ones* 5000 years ago Egyptians carved number symbols on their tombs: | =1 ∩ =10 𓍢 =100 What is the value of these Egyptian numbers? 𓍢∩∩|||

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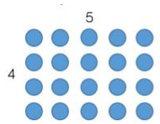
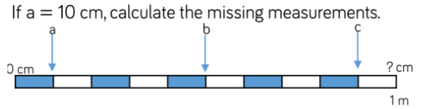
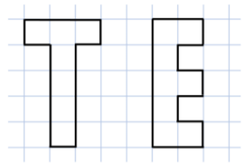
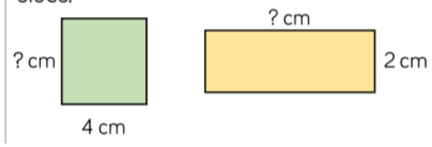
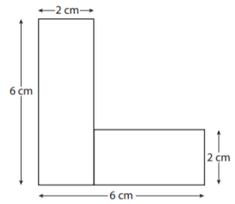
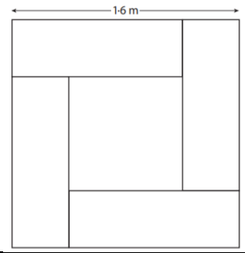
Mon 7th Sept Fri 25th Sept	• NPV • Add & Sub	• **Estimate the answer to a calculation and use inverse operations to check answers** • **Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.**		**Types of task** **Problem solving** Identify a few key tasks involving addition and subtraction in two-step problems in contexts, deciding which operations and methods to use and why- adapt numbers to reinforce the key concepts and facts from place value work. When solving problems encourage pupils to estimate answers, show solutions using a range of representations including: bar model, equation, number line, formal method where appropriate, checking for reasonableness of answers **Mental strategies** Use unstructured number lines too record mental calculations discussing appropriate strategies depending on the numbers involved **Key teaching points and prior learning – Year 4** • **Y2: Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100** • **Y3: Add and subtract numbers mentally including a 3-digit number and ones and a 3-digit number and hundreds.** • **Secure number bonds of 100 and related subtraction facts** Relate the use of formal methods to a range of representations modelling the structure of the calculations supporting estimating and checking reasonableness of answers including through the use of inverse • Revise representations for calculations and solutions to multi- step problems eg number sentence (expressions and equations), bar models and number lines Relate the use of formal methods to a range of representations modelling the structure of the calculations supporting estimating and checking reasonableness of answers including through the use of inverse **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-1-19-securing-mental-strategies-calculation-up-to-999/ • https://www.ncetm.org.uk/classroom-resources/primm-1-22-composition-and-calculation-1-000-and-four-digit-numbers/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897801/Maths_guidance_year_3.pdf • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf **EOY3 Mastery questions Add and sub** Write the four number facts that this bar model shows. 540 300 240 ☐ + ☐ = ☐ ☐ + ☐ = ☐ ☐ − ☐ = ☐ ☐ − ☐ = ☐ Complete these calculations. What do you notice? 3 + 7 = 8 + 2 = 6 + 4 = 30 + 70 = 80 + 20 = 60 + 40 = 33 + 7 = 88 + 2 = 66 + 4 = 333 + 7 = 888 + 2 = 666 + 4 = 300 + 700 = 800 + 200 = 600 + 400 = Sam has completed these calculations, but he is incorrect. Explain the errors he has made. 325 + 247 = 581 355 − 247 = 112 **EOY3 Mastery with GD questions Add and Sub** For positive integers are the following statements always, sometimes or never true? ■ The sum of 2 odd numbers is even. ■ The sum of 3 odd numbers is even. ■ Adding 5 to a number ending in 6 will sum to a number ending in 1. ■ Adding 8 to a number ending in 2 will always sum to a multiple of 10. Explain why in each case. Sophie has five coins in her pocket. How much money might she have? What is the greatest amount she can have? What is the least amount she can have? If all the coins are different: What is the greatest amount she can have? What is the least amount she can have?
	• NPV • Add & Sub: measurement (length inc perimeter) • Statistics	• **Add and subtract whole numbers with more than 4 digits. Represent solutions appropriately using informal and formal written methods.** • **Add and subtract mentally with increasingly large numbers e.g. 12,462 – 2300 = 10,612** • **Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy** • **Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.** • **Measure and calculate the perimeter of composite rectilinear shapes in cm and m** • **Use all four operations to solve problems involving measure (length), using decimal notation.**		**Types of task** **Pictorial representations:** Children should further consolidate their understanding of the relationship between addition and subtraction using the bar model. For any addition and subtraction equation they should be able to draw proportionally a suitable bar model. They should also be able to state related equations using the inverse operation. **Key facts focus:** Use PV charts for conversion of units multiplying and dividing by 10 and 100 eg 240mm= 24cm, 150cm= 1.5m, 500cm= 5m, 2300m = 2km 300m **Developing flexible and reliable calculation methods:** While extending children's ability to perform formal written methods with understanding there should be frequent opportunities to discuss and make sensible choices about the selection of mental, mental with jottings or formal written methods. All children need to develop these and to value each one. **Measurement** provides a good context for rounding numbers. This can support estimating when calculating and rounding answers to the nearest cm/m etc. Possibly around 3 lessons on rounding might be appropriate. **Solving problems** Finding the perimeters of different shapes and problem contexts eg fences and gardens, regular shapes (use different units to use key facts and conversion of units). An equilateral triangle has a perimeter of 1.26m. What is the length of one side in cm? In mm? A regular pentagon has sides that are 54mm long. What is the perimeter of this regular pentagon in cm? Kate needs to buy fencing for her garden. She measures and finds she needs two lengths measuring 13m and one length measuring 11m. Fence panels measure 1.8m x 1.8m and the posts are 2.3m high and 75mm in width. Each panel is supported by a post at each end. How many posts and panels does Kate need? **Key teaching points and prior learning** Provide regular opportunities to discuss and justify whether a calculation could be solved mentally using facts and related/ derived facts • **Y3: Add and subtract numbers mentally including a 3-digit number and ones and a 3-digit number and hundreds.** • **Y4: Add and subtract with numbers up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate** • **Y4: Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs** • **Y4: Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs**	• **Y4: Convert between kilometres, metres, centimetres and millimetres** • **Y4: Estimate, compare and calculate with measures of length** • **Y4: Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres** • **Y4: Solve length problems involving fractions and decimals to two decimal places** **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-1-26-composition-and-calculation-multiples-of-1-000-up-to-1-000-000/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf **EOY4 Mastery questions Add and Sub** Write down the four relationships you can see in the bar model. 2300 1240 3540 ☐ + ☐ = ☐ ☐ + ☐ = ☐ ☐ − ☐ = ☐ ☐ − ☐ = ☐ Ali and Sarah calculate 420 + 221 + 280 using different strategies. This is Sarah's strategy: 420 + 221 + 280 420 + 221 = 641 641 + 280 = 921 Answer = 921 This is Ali's strategy: 420 + 221 + 280 420 + 280 = 700 700+ 221 = 921 Answer = 921 Which do you prefer? **EOY4 Mastery with GD questions Add and Sub** Select your own numbers to make this bar model correct. 5000 Find the missing numbers. What do you notice? Make 9999 5000 + ☐ = 9999 4000 + ☐ = 9999 3000 + ☐ = 9999 2000 + ☐ = 9999 1000 + ☐ = 9999 Make 9998 5230 + ☐ = 9998 4230 + ☐ = 9998 3230 + ☐ = 9998 2230 + ☐ = 9998 1230 + ☐ = 9998 Make 9990 5023 + ☐ = 9990 4023 + ☐ = 9990 3023 + ☐ = 9990 2023 + ☐ = 9990 1023 + ☐ = 9990

Date	Unit Focus Lessons	Year 4 Objectives Unit 4.2 10 Lessons	Year 5 Objectives Unit 5.2 15Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 28th Sept - Fri 9th Oct	Addition and Subtraction/ measurement (money)	• Record addition and subtraction money calculations using pictorial representations such as a number-line and bar-models. • **Estimate, compare and calculate money in £ and p** • **Convert between units (£ and p)**		**Types of task** **Finding totals using different coins,** comparing and finding the difference between the two totals. Record using addition and subtraction number sentences and bar models Eg Tim has 94p, which coins could he have in his purse? He finds 78p more. How much has he got altogether? Which totals can you make using only 2ps (5ps, 50ps etc) ?: 76p, 38p, 41p Sally has £3.75 and Bill has £4.05. They only have silver coins- which coins could they each have? Who has the most? How much more? **Shopping**: Add three amounts (noticing any number bonds to 100/1000) eg A meal choice: drink + main +dessert Drinks: £1.50, £1.25; main: £7.50; £6.25; dessert: £5; £4.75 **Finding change** as how much is left /'taking away' in a problem context eg pocket money From a £1 (mental strategies) From £5 eg 75p; £3.75; £4.76 From £10 eg 95p; £2.95; £5.95; £6.05 **Key teaching points and prior learning – Year 4** • Build on and make links with NPV and calculation in Unit 4.1 • **Y3: Add and subtract amounts of money to give change using both £ and p to solve problems** • Use known and derived facts to work out change from £1 (100p), £10, £100 • Know 100p = £1; 2 x 50p = £1; 10 x 10p = £1; 5 x 20p = £1; 20 x 5p = £1; 50 x 2p = £1; relate to multiplication facts/ repeated addition in the context of money.	**Reference documents to support subject knowledge and CPA approach** https://www.ncetm.org.uk/classroom-resources/primm-1-25-addition-and-subtraction-money/ **EOY3 Mastery questions:** Using coins, find three ways to make £1. £2·60 + ☐ = £5·00 If I buy a sandwich for £2·20 and a drink for 90p, how much change do I get from £5? Ellie buys 2 pencils. She pays with a £2 coin and gets 70p change. How much did each pencil cost? **EOY3 Mastery with GD questions** Sophie has five coins in her pocket. How much money might she have? What is the greatest amount she can have? What is the least amount she can have? If all the coins are different: What is the greatest amount she can have? What is the least amount she can have? Sophie and Ravi have saved some money. Altogether they have saved £35. Sophie has saved £4 more than Ravi. How much have they each saved? Sam and Tom share this money equally. Divide the coins into two equal groups. Could three friends share the money equally? Explain your reasoning.
Mon 28th Sept - Fri 16th Oct	Multiplication and Division/ measurement (area and arrays)	• Represent multiplication and division facts as grid arrays, link to rectangular areas, identifying factors as whole number side lengths of rectangles. • **Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers. Know and use the vocabulary of prime numbers.** • Use knowledge of multiples to estimate **division calculations** e.g. 1075 ÷ 25 ≈ 40 (since 4 x 25 = 100).		**Key teaching points and prior learning – Year 5** • **Recall 2/3/4/5/6/8 multiplication and division facts for multiplication tables up to 12 x 12** • **Y4: multiplying three numbers together.** • **Y4: Recognise and use factor pairs and commutativity in mental calculations** **Types of task** **Pictorial representations:** Linking problem solving and reasoning to visualising multiplication and division with resources like number lines and arrays continues to be very important in upper key stage 2.  How many factors of twenty have you found by arranging your counters in different arrays? Tasks should help children to see the many links between multiplication and division and not separate them unhelpfully. **Key facts focus**: Ensure children knowledge of multiplication and division facts remains fresh and accurate. Factors, multiples and primes Ensure children become familiar with this vocabulary and can use it correctly to reason mathematically. Help children to investigate the patterns of different multiples on 100 squares.	**Reference documents to support subject knowledge and CPA approach** https://www.ncetm.org.uk/classroom-resources/primm-2-13-calculation-multiplying-and-dividing-by-10-or-100/ https://www.ncetm.org.uk/classroom-resources/primm-2-21-factors-multiples-prime-numbers-and-composite-numbers/ https://www.ncetm.org.uk/classroom-resources/primm-2-11-times-tables-11-and-12/ **EOY4 Mastery questions** What do you notice about the following calculations? Can you use one calculation to work out the answer to other calculations? 2 × 3 = 6 × 7 = 9 × 8 = 2 × 30 = 6 × 70 = 9 × 80 = 2 × 300 = 6 × 700 = 9 × 800 = 20 × 3 = 60 × 7 = 90 × 8 = 200 × 3 = 600 × 7 = 900 × 8 = **EOY4 Mastery with GD questions** Place one of these symbols in the circle to make the number sentence correct: >, < or =. Explain your reasoning. 8 × 50 ◯ 50 × 8 8 × 50 ◯ 80 × 5 300 × 3 ◯ 5 × 200

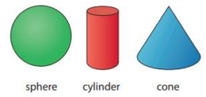
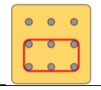
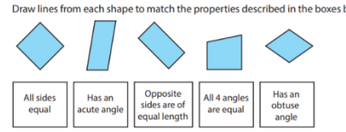
Date	Unit Focus Lessons	Year 4 Objectives Unit 4.2 10 Lessons	Year 5 Objectives Unit 5.2 15 Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5	
Mon 28th Sept - Fri 9th Oct	Addition and subtraction / measurement (length)	• **Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m** • **Convert between units (km to m, m to cm, cm to mm (x) and vice versa (÷)** • Know 1000m = 1km • Derive 500m = ½ km, 250 m = ¼ km, 750 km = ¾ km and 100m = 1/10 km • **Solve problems involving all of the above** • **Order and compare numbers beyond 1000** (represent on number lines, context of length)		**Key teaching points and prior learning – Year 4** **Y3: Measure, compare, add and subtract lengths (m/cm/mm)** **Y3: Measure and compare the perimeter of simple 2-D shapes in practical contexts** **Types of task** • **Key facts focus:** Use PV chart for conversion of units multiplying and dividing by 10 and 100 Eg 240mm= 24cm, 150cm= 1.5m, 500cm= 5m, 2300= 2km 3m • **Finding perimeter** of different shapes and problem contexts eg fences and fields (use different units to use key facts and conversion of units). • A farmer has a length of fencing to make a rectangular enclosure for his goats. Each side must be a multiple of 50. He uses 800 m of fencing altogether. What length could the sides be? • Farmer Tina needs to buy fencing to keep in a herd of cows in her field. The field has 5 equal sides all 375m long. How much fencing will she need? She has already got 2km length of fencing. Has she got enough? If a = 10 cm, calculate the missing measurements.  b = ___ cm c = ___ cm 1 metre = ___ cm Three children are partitioning 754 cm Teddy says, 75 m and 4 cm Whitney says, 7 m and 54 cm Jack says, 54 cm and 7 m Who is correct? Explain why.	Which of these shapes has the longest perimeter?  Explore other letters which could be drawn as rectilinear shapes. Put them in order of shortest to longest perimeter. Each of the shapes have a perimeter of 16 cm. Calculate the lengths of the missing sides. 
Mon 28th Sept - Fri 16th Oct	Multiplication and Division/ measurement (area and arrays)	• Understand division as grouping, moving on from sharing, to make efficient use of multiplication facts when dividing. • Represent division calculations (not the solution) as number-lines and bar-models to support conceptual understanding before solving. • Solve two step problems in context, choosing the appropriate operations		**Types of task** • **Developing flexible and reliable calculation methods:** • There should be frequent opportunities to discuss and make sensible choices about the selection of mental, mental with jottings or formal written methods. • Children should be encouraged to think flexibly to solve calculations • eg to solve 19 x 17 find 20 x 17 and subtract 17. • Solving problems A 6cm X 3cm rectangle has a perimeter of 18cm and an area of 18cm2 . • Although the units of measure are different numerically, they are the same. Is this true for all rectangles? Prove it! • A farmer has 24 lengths of fencing to make a rectangular enclosure on a field for her sheep. How can they be arranged to give the sheep the most grass to eat? • Elsie plants cauliflowers in rows of 14. She plants 17 rows. How many cauliflowers has she planted?	**Key teaching points and prior learning – Year 5** • Y4: **Find the effect of dividing a one-or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths** • **Y4: Multiply two-digit and three-digit numbers by a one-digit number using formal written layout** • **Y4: Solve problems involving multiplying and adding including using the distributive law to multiply two-digit numbers by one digit (37 x 8 = (30 x 8) + (7 x 8)),** the associative law (2 × 3) × 4 = 2 × (3 × 4)**). integer scaling problems** (six times taller) **and harder correspondence problems such as n objects are connected to m objects (**e.g. the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children. **Reference documents to support subject knowledge and CPA approach** https://www.ncetm.org.uk/classroom-resources/primm-2-10-connecting-multiplication-and-division-and-the-distributive-law/ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf

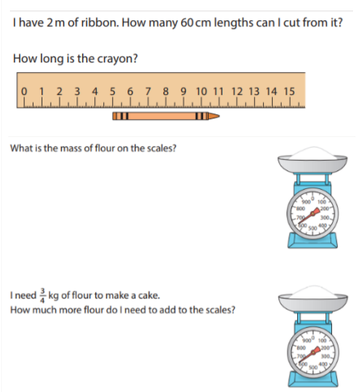
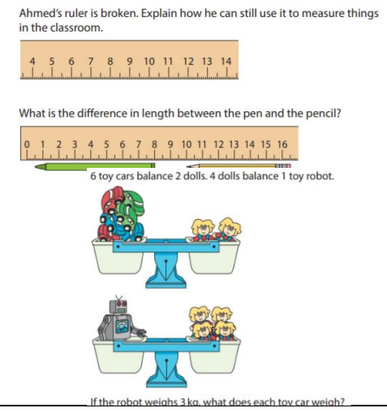
		• **Calculate and compare the area of rectangles, including squares, and including using standard units (cm^2 and m^2) and estimate the area of irregular shapes**	**Reference documents to support subject knowledge and CPA approach** https://www.ncetm.org.uk/classroom-resources/primm-2-16-multiplicative-contexts-area-and-perimeter-1/	**EOY4 Mastery questions** The shape below is made from two rectangles. Identify the perimeter of each of the two rectangles. How many 1 cm squares would fit into the smaller rectangle? How many more squares fit into the larger rectangle?  	**EOY4 Mastery with GD questions** The rectangular tiles here are three times as long as they are wide What is the perimeter of the centre square? 

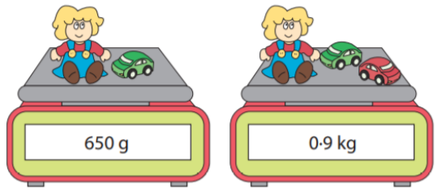
Date	Unit Focus Lessons	Year 4 Objectives Unit 4.3 10 Lessons	Year 5 Objectives Unit 5.3 5 Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 12th Oct Fri 23rd Oct	Multiplication and Division	• **Use place value, known and derived facts to multiply and divide mentally** • **Count in multiples of 3 and 4 from zero**. • Derive, **recall and use multiplication and division facts for 6x and 12x multiplication tables** • **Solve problems involving multiplying and adding (**partitioning and recombining). E.g. 37 x 8 = (30 x 8) + (7 x 8).		**Types of task** **Using counters to model multiplication on number lines and as arrays (grid) making links between the two representations.** Practising counting in 6s and 7s identifying specific places where pupils get stuck in the number sequence, looking at ways to work out those products using reasoning with known related facts eg recalling 6 x9 could be linked to knowing 6x10=60 or 6x3 is double 3x3 etc **Applying tables facts to solve problems:** multiplication Representing solutions to problems involving groups of 6 and 7 with arrays, number lines and bar models alongside the number sentence. Inc examples of needing to multiplying by 16 and 17 to consider partitioning and recombining eg 16x8 = 10x8 +6x8 Derive families of facts for particular tables linked to arrays eg 7x8, 8x7, 56÷7, 56÷8**.** **Using tables facts to solve division facts focused on groups of 6 and 7**. Use representations as above to show solutions Use word problems and missing box calculation examples **Division (groups of 6 and 7) involving remainders using non-multiples** Show how to use number lines and arrays to model remainders alongside number sentence. Solve problems involving remainders with non-multiples of 6 and 7 **Key teaching points and prior learning – Year 4** • Y2/3: **Recall and use multiplication and division facts for the 2,3,4,5,8,10 multiplication tables.** • **Y3: Write and calculate mathematical statements for multiplication and division using the tables they know, including for two-digit numbers times one-digit numbers, using mental strategies and** written strategies as appropriate (use arrays to underpin grid method) • Represent multiplication and division facts as arrays using a grid (rather than dots) and a number-line • Y3/ Y4: Solve problems including missing number problems involving multiplication and division, recording solutions with a range of representations to include number-lines, bar-models and arrays.	**Check and Refresh:** • Independent use of number lines, arrays and bar models using counters to model tables fact previously learnt • Using one fact to derive another through doubling/ halving adding/ subtracting a multiple • Able to record a multiplication fact using X and + eg 7+7+7= 7x3 • Use and understand division as repeated subtraction **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf • https://www.ncetm.org.uk/classroom-resources/primm-2-11-times-tables-11-and-12/ • https://www.ncetm.org.uk/classroom-resources/primm-2-08-times-tables-3-6-and-9-and-the-relationship-between-them/ **EOY3 Mastery questions:** What is the relationship between these calculations? 3 × 4 4 × 8 4 × 3 8 × 4 *Children should understand that multiplication is commutative.* What do you notice about the following calculations? 3 × 4 3 × 8 4 × 4 4 × 8 3 × 5 3 × 10 What is 3 × 4? What is 13 × 4? **EOY3 Mastery with GD questions** What is the relationship between these calculations? 2 × 3 4 × 3 2 × 30 4 × 30 20 × 3 40 × 3 20 × 3 × 10 40 × 3 × 10 Make up a problem for 13 × 4 and solve it. Write a story for 18 ÷ 3. Write these addition statements as multiplication statements: 2 + 2 + 2 + 2 + 4 3 + 3 + 3 + 2 + 4
Mon 19th Oct Fri 23rd Oct	Fractions	• **Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.** • **Compare and order fractions whose denominators are all multiples of the same number**		**Types of task** **Pictorial representations:** It is important that children develop further their understanding of fractions as positions on number lines and that they link these to equivalent fractions. A 0 to 2 number line helps children to see that fractions can be greater than 1 and to think about mixed numbers and improper fractions. Tenths and hundredths of a metre could be shown on a metre stick. **Key facts focus:** Beginning to learn the fraction equivalences eg 3 ÷ 10 = 3/10 = 0.3 (these facts could be displayed too on number lines) The work on adding and subtracting fractions whose denominators are all multiples of the same number provides an opportunity to link the work in the previous unit on multiples and factors. **Solving problems** Three friends share a bar of chocolate. The first eats 3/18, the second 1/3 and the third 2/9. How much chocolate is left? "Show how 7/8 - 3/8 can be solved using a number line, a bar model a drawing of a pizza …" **Key teaching points and prior learning – Year 5** • **Y4: Add and subtract fractions with the same denominator** • **Y4: Recognise and show using diagrams, families of common equivalent fractions.** • **Y4: Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number** • **Check and refresh:** Counting forwards and backwards using simple fractions and decimals noting equivalences.	• **Watch out for:** Children who have little idea of the correct relative position of fractions and decimals on the number line. Pupils who might still think that 1/8 is greater than ¼ because 8 is greater than 4. **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf • https://www.ncetm.org.uk/classroom-resources/primm-3-07-finding-equivalent-fractions-and-simplifying-fractions/ **EOY4 Mastery questions** Put these fractions on the number line: $\frac{2}{3}, \frac{1}{2}, \frac{3}{6}, \frac{4}{9}$ 0 — 1 Put these fractions on the number line: $\frac{4}{5}, \frac{7}{10}, \frac{5}{10}, \frac{2}{5}$ 0 — 1 Match each fraction to its decimal equivalent. $\frac{1}{2}$ $\frac{4}{10}$ $\frac{3}{4}$ $\frac{1}{4}$ 0·25 0·75 0·4 0·5 Circle the equivalent fraction to 0·25. $\frac{2}{5}$ $\frac{5}{2}$ $\frac{25}{100}$ $\frac{100}{25}$ Round to the nearest whole number. $8\frac{3}{8}$ 8·38 8·83 **EOY4 Mastery with GD questions** Insert the symbol >, < or = to make each statement correct. $\frac{2}{5}$ of 5 ◯ $\frac{1}{4}$ of 4 $\frac{1}{7}$ of 7 ◯ $\frac{2}{7}$ of 14 $\frac{2}{3}$ of 9 ◯ $\frac{1}{3}$ of 18 Make up three similar statements using >, < or =.

Half-term

Date	Unit Focus Lessons	Year 4 Objectives Unit 4.4 20 Lessons	Year 5 Objectives Unit 5.4 20 Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 2nd Nov - Fri 27th Nov	Fractions Geometry	• **Count up and down in tenths (proper and decimal fractions); recognise that tenths arise from dividing and object into ten equal parts.** Record using number lines (making explicit links with decimals) and bar models • **Round decimals with one decimal place to the nearest whole number** using different representations, including the number line • **Find the effect of dividing a one-or two-digit number by 10 and 100;** use place value understanding. • **Recognise and show, using diagrams, families of common equivalent fractions** • **Add and subtract fractions with the same denominator (**number-lines and bar-models)	**Types of task** • **Counting in fractional steps recording on a number line:** • revised ½, ¼ and 1/3 and then look at 1/5ths and1/10ths. • **Discuss the links between a number line showing 1/5th and 1/10ths**. • **Identify examples of equivalence** eg 2/5= 4/10 etc • **Model this using same length bars** eg Solve problems needing to count in fractional steps • **Show solutions using number lines, bar models and fraction notation**. eg I eat 1/5 (2/10) of a bar of chocolate on Monday, Tuesday and Wednesday. How much do I eat? after 1 week? Etc • 1/5 + 1/5+ 1/5 = 3/5; 2/10 +2/10 +2/10= 6/10 (2/10 x 3) • **Revise drawing bar models to show families of fractions** eg ½, ¼, 1/8 etc. • Record addition and subtraction facts; identify equivalent fractions • **Model tenths (hundredths) with place value chart and Dienes and number line** • Using dienes 10 stick to represent 1 whole and units to represent 1/10 of the whole tens stick. • **Record using bar model and with place value headings to make links**. • **Add and subtract within 1 whole** using fractions and decimal notation eg 1/10 +2/10s = 3/10. 0.1 + 0.2= 0.3 • Repeat with 100 square as the whole unit and dienes units as 1/100 of the whole 100 square. **Model counting in tenths as decimals on a number line starting from 0 and other numbers. Round to the nearest whole number** calculating how many more to make the next whole number- relate this to number bonds of 10. • **Comparing fractions and identifying equivalent fractions** • (developing pupil decision about the best representation to show solutions) • Use problems like: Would you rather have 3/5 or 4/10 of a bar of chocolate? • **Use jottings of bar models to show families of fraction** eg 1/5 and 1/10s • Put these fractions in order: ½; 2/4; 7/10; 1/5 • **Use jottings of bar models alongside to support reasoning**. • **Record solutions on number lines.** • Which is more 1/2 of £4 or ¼ of £12? (different 'wholes') • **Use bar models to record solutions**. • **Solve word problems involving adding and subtracting fractions with the same denominator** Record solutions using bar model diagrams and fractions notation in number sentences.	**Key teaching points and prior learning** • Y2: Revise counting in $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$s recording on number lines showing position using different representations eg $\frac{4}{2} = 2$ etc • Y3: Revise bar models showing fraction families eg $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$s etc • **Y3: Recognise, find and write fractions of a discrete set of objects (unit and non-unit fractions, small denominators)** • **Y3: Recognise and use fractions as numbers (unit and non-unit fractions, small denominators)** • **Y3: Recognise and show, using diagrams, equivalent fractions with small denominators** • **Y3: Add and subtract fractions with the same denominator within one whole (e.g. 5/7 + 1/7= 6/7)** • **Y3: Compare and order fractions with the same denominator within one whole** **Check and refresh:** • ½; ¼; 1/8; 1/3 and 1/6; (year 3 work) • Able to independently record families of fractions as bar models • Able to use a number line to record counting in fractional steps • Able to identify some equivalent fractions particularly = ½ **Watch out for:** • Accurate of vocabulary for fractions eg equal parts, numerator, denominator; whole; tens /tenths; hundreds/ hundredths etc • Pupils not checking what is the whole when comparing two fractions. **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-3-05-working-across-one-whole-improper-fractions-and-mixed-numbers/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf • NCETM – Year 3 fractions – all documents useful **EOY3 Mastery questions** Shade in 0·7 of this rectangle. Fill in the numerators to make the answer less than 1. Find three different ways to complete the calculation. $\frac{\square}{8} + \frac{\square}{8} =$ **EOY3 Mastery with GD questions** This is 0·4 or $\frac{2}{5}$ of a bag of marbles. How many marbles are in a full bag? Fill in the numerators to make the calculation correct. How many ways can you do it? Explain how you know you have found them all. $\frac{\square}{8} + \frac{\square}{8} = 1$
Mon 2nd Nov - Fri 27th Nov	Fractions (5 lessons?)	• **Recognise mixed numbers and improper fractions and convert from one form to another.** • **Write mathematical statements >1 as a mixed number** **e.g.** $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ • **Add and subtract fractions with the same denominator beyond 1 and multiples of the same number.** **Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths**	**Types of task** • **Initial task** : • Show how 1 5/6 – 1 1/3 can be solved using a number line and drawings of cakes. • **Pictorial representations:** • Developing conceptual understanding of what happens when we add or subtract fractions is a challenge for many learners, but it is a key foundation for success in this area. The use of arrays to support understanding is shown in the NCETM video "Adding fractions with different denominators". • It is important that children continue to develop further their understanding of fractions as positions on number lines and that they link these to equivalent fractions. A 0 to 3 number line helps children to see that fractions can be greater than 1 and to think about mixed numbers and improper fractions. This could be displayed on a working wall and referred to frequently. • **Key facts focus:** Learn the fraction equivalences e.g. 7 ÷ 10 = 7/10 = 0.7, 8 ÷ 100= 8/100 = 0.08 (see the Hampshire maths team's Number Facts Documents). These facts could be displayed too on number lines • **Solving problems** A shop has 3 metres of red ribbon at the beginning of the day. It sells 25cm, then 1.5m and then a further ¾ of a metre of this. How much red ribbon is left? Prove it. • Longer investigative problem solving like those provided by Nrich should be part of children's mathematical learning journeys. This is important for all children and especially when helping higher achieving learners to get to greater depth. **Key teaching points and prior learning – Year 5** • Build on and make links with Units 5.1, and 5.3 • **Y4: Recognise and write decimal equivalents of any number of tenths or hundredths** • **Y4: Recognise and write decimal equivalents to ½; ½; ¾**	**Check and refresh:** Counting forwards and backwards using simple fractions and decimals noting equivalences **Reference documents to support subject knowledge and CPA approach** • https://www.ncetm.org.uk/classroom-resources/primm-3-07-finding-equivalent-fractions-and-simplifying-fractions/ • https://www.ncetm.org.uk/classroom-resources/primm-3-08-common-denomination-more-adding-and-subtracting/ • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf **EOY4 Mastery questions** Put these fractions on the number line: $\frac{2}{3}, \frac{1}{2}, \frac{3}{6}, \frac{4}{9}$ Put these fractions on the number line: $\frac{4}{5}, \frac{7}{10}, \frac{5}{10}, \frac{2}{5}$ Match each fraction to its decimal equivalent. $\frac{1}{2}$ $\frac{4}{10}$ $\frac{3}{4}$ $\frac{1}{4}$ 0·25 0·75 0·4 0·5 Circle the equivalent fraction to 0·25. $\frac{2}{5}$ $\frac{5}{2}$ $\frac{25}{100}$ $\frac{100}{25}$ Round to the nearest whole number. $8\frac{3}{8}$ 8·38 8·83 **EOY4 Mastery with GD questions** Insert the symbol >, < or = to make each statement correct. $\frac{2}{5}$ of 5 ◯ $\frac{1}{4}$ of 4 $\frac{1}{7}$ of 7 ◯ $\frac{2}{7}$ of 14 $\frac{2}{3}$ of 9 ◯ $\frac{1}{3}$ of 18 Make up three similar statements using >, < or =.

Date	Unit Focus Lessons	Year 4 Objectives Unit 4.4 20 Lessons	Year 5 Objectives Unit 5.4 20 Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 2nd Nov - Fri 27th Nov	Geometry	• **Compare and classify geometric shapes, including quadrilaterals based on their properties and sizes** • **Identify acute and obtuse angles** • **Complete a simple symmetric figure with respect to a specific line of symmetry** • **Describe positions on a 2-D grid as co-ordinates in the first quadrant ((**x,y) co-ordinates) • **Find the area of rectilinear shapes by counting squares** (relate to tables facts on array grids)	**Types of task** • **Use sorting diagrams** • eg Carroll and Venn diagrams to classify a range of quadrilateral shapes looking at number of sides, and equal sides (regular polygons). Define quadrilateral. • **Find different ways** to fold a cut out square or rectangle in half (and quarters). • Record different solutions- discuss what is the same and what is different. Make links with fractions of a shape. • **Complete symmetrical figures** using horizontal, vertical and diagonal lines of symmetry. • Place the shape on the line of symmetry and away from the line of symmetry. Show the line of symmetry as a dotted line. **Key teaching points and prior learning –** • Y3: Sort and classify 2-D and 3-D shapes using numbers of faces, edges and vertices. • Y3: Use the vocabulary of **parallel, perpendicular, horizontal and vertical lines** to describe and classify 2-D shapes • **Y3: Recognise 3-D shapes in different orientations and describe them** • Y3: Know the names of common 3-D shapes • Y3: Sort and group according to prisms and pyramids • Y3: Construct prisms and pyramids with prepared nets, describe the shape of the faces.	**Watch out for:** Accurate use of vocabulary for geometry eg polygon, parallel, sides, line of symmetry, diagonal etc **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf **EOY3 Mastery questions** Have a range of 3-D shapes in a 'feely bag'. Can you feel for the cube, the cuboid, the pyramid, the cylinder and the cone? Explain how you know. Describe what you are feeling to your classmates and see if they guess what the shape is. Can you draw a triangle with: ■ 1 right angle? ■ 2 right angles? Can you draw a quadrilateral with: ■ 1 right angle? ■ 2 right angles? ■ 5 right angles? ■ No right angle? If some of these are impossible, can you explain why? **EOY3 Mastery with GD questions** True or false? The shape of a cross section of a sphere is always a circle. The shape of a cross section of a cylinder is always a circle. The shape of a cross section of a cone is always a circle. Explain your reasoning. Can you identify a 3-D shape where the cross section is always a square?  How many different triangles can you find on a 3×3 pin geoboard? How do you decide that they are different? How many different quadrilaterals can you find on a 3×3 pin geoboard? How do you decide that they are different? 
Mon 2nd Nov - Fri 27th Nov	Measurement (time and timetables) Geometry (shape, space and angle)	• **Complete, read and interpret information in tables, including times tables** • **Solve problems involving converting between units of time.** • **Identify 3-D shapes, including cubes and other cuboids, from 2-D representations** • **Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles** • **Identify angles at a point and one whole turn (360°), at a point on a straight line and half a turn (180°) and other multiples of 90°.** Know that there are four right angles in a complete turn and two right angles in half a turn.	**Types of task** • **Initial task** • Show children a picture of a regular octagon and a rectangle (which is not a square too). Ask the children to list as many things they can that are the same and different about the shapes. Encourage the use of correct mathematical vocabulary. • **Consolidating and extending knowledge** • Children should be increasing the range of 2-D and 3-D shapes they know. They should learn about the properties of these shapes eg lines of symmetry, lengths of sides, size of angles, faces etc. • They should be aware that shapes can have multiple classifications eg a square is quadrilateral, a rectangle, a rhombus, and a parallelogram. • Children should know that regular shapes have all sides the same length and all angles the same size. • **Key facts focus:** To know complements to 360. • Know complements to 180 Recognise multiples of 90. • Know that the angles in a triangle total 180 degrees • Know that the angles in a quadrilateral total 360 degrees • Know that the angles of a straight line total 180 degrees • 360 ÷ 4 = 90 1/4 of 360 = 90 360 ÷ 2 = 180 1⁄2 of 360 = 180 3⁄4 of 360 = 270 • **Solving problems** • Referring to a range of 2-D or 3-D shapes represented on a sheet of A4 paper "How many different ways can you find to sort these shapes?" Working with a partner one child puts together a group of shapes based on their own criteria and the other has to work out what criteria they used eg "All these shapes have at least one line of symmetry" …"None of these shapes have any parallel lines." • Games like "guess my shape" where one person thinks of a shape and other children or another child have to ask questions about the properties of the shape. Only "yes" or "no" answers can be given. How many questions need to be asked before the shape is discovered?	• Longer investigative problem solving like those provided by Nrich should be part of children's mathematical learning journeys. This is important for all children and especially when helping higher achieving learners to get to greater depth. **Key teaching points and prior learning – Year 5** • **Y4: Read, write and convert between analogue and digital 12 and 24-hour clocks** • **Y4: Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days** **Check and refresh:** Pupils' ability to convert between different units of time. Children's knowledge of the names and properties of a range of 2-D and 3-D shapes **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf **EOY4 Mastery questions** Below are five quadrilaterals: a rectangle, a rhombus, a square, a parallelogram and an unnamed quadrilateral. Write the names of each of the quadrilaterals. Draw lines from each shape to match the properties described in the boxes below.  **EOY4 Mastery with GD questions** • Captain Conjecture says that a rectangle is a regular shape because it has four right angles. Do you agree? Explain your reasoning. • Captain Conjecture says that a quadrilateral can sometimes only have three right angles. Do you agree? Explain your reasoning.

Date	Unit Focus Lessons	Year 4 Objectives Unit 4.5 15 Lessons	Year 5 Objectives Unit 5.5 15 Lessons	Types of tasks, Key teaching points, prior learning, Mastery – Year 4 Types of tasks, Key teaching points, prior learning, Mastery– Year 5
START OF NEW ACADEMIC YEAR				
Mon 30th Nov - Fri 18th Dec	NPV Measurement (length, mass) Time (5)	• **Convert between units (km to m, m to cm, cm to mm (x) and vice versa (÷)** • **Measure and compare mass (g/kg)** • **Count up and down in hundredths; recognising that hundredths arise from dividing an object by 100 and dividing tenths by 10.** (bar-model and number-line) • **Recognise the place value of each digit in a 4-digit number (1000s,100s, 10s and ones)** • **Find 1000 more or less than a given number** • **Order and compare numbers beyond 1000** (represent on number lines) • **Read, write and convert time between analogue and digital 12 and 24-hour clocks** • **Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days**	**Types of task** • **Use bar models showing** • **½ and ¼, ¾ and 1/5s and 1/10; 1/10 and 1/100 to model proportions of the 'whole unit' related to key facts. Eg ½ and ¼ of 1cm, 1m, 1km to identify key facts and derive associated facts** • Repeat for mass to discuss related facts. • **Count in PV and decimal steps (1/10, 1/100)** • Use place value counters, dienes and number lines to model Use a context eg a metre stick to link with recording on a number line when solving problems • **Practical tasks involving appropriate measuring equipment for length and mass to solve problems**. • **Make links between a 'scale' and a number line and place value models.** • **Compare lengths and mass as part of problem-solving using number lines as one way of recording solutions.** • **Identify familiar objects which weigh 1 kg or lengths which are 1m/ 1km long to support reasonableness of solutions etc** • **Reasoning tasks involving place value addition and subtraction in the context of measurements**. • Eg a sack holds 3kg of potatoes and 200g (3/4 of a kg) are sold- how much is left? • Eg a sack of rice weighs 1450g/ 1kg 450g and 1000 g is added /used - how heavy is the sack now? • Give solutions using different units and alongside bar model drawings. • The opportunity to consider whether and how to change/ convert the units before adding and subtracting important rather than overly complicated calculations. **Identify key facts using bar models to show ½, ¼ and ¾ of 1 hour, 1 day, 1 minute** **Key teaching points and prior learning –** • Build on and revisit Units 4.1, 4.2, 4.3 and 4.4 • Key number facts for 1000 derived from 100 • Know that there are 1000g = 1 kg and derive associated facts: 500g = ½ kg ; 250 g = ¼ kg ; 750 g = ¾ kg; 100g = 1/10 kg; 10g = 1/100 kg • **Y3: Measure and compare lengths (mm/cm/m)** • **Y3: Measure and compare the perimeter of simple 2-D shapes** in practical contexts • **Y3: Solve problems involving length** • **Y3: Count up and down in tenths, recognise that tenths arise from dividing an object into 10 equal parts**	• **Y3: Tell the time from an analogue clock, including using Roman numerals I to XII, 12-hour and 24-hour clocks. Use vocabulary such as a.m./p.m., midnight and noon** • **Y3: Estimate and read the time with increasing accuracy to the nearest minute** • **Y3: Record and compare time in terms of seconds, minutes, hours and o'clock, comparing durations of events** **Y3: Know the number of seconds in a minute and the number of days in each month, year and leap year** **Check and refresh:** • Units of measurement for length, mass Reading a scale with all numbers there; • in divisions of 1s, 2s,5s and 10s, with marks indicating half way between whole units Reading a scale where not all numbers on the scale are given and estimate points in between • Reading the time to the nearest minute **Watch out for:** • Confusing the relationship between units of measurement not realising that the smaller the unit the greater the number of units needed to measure • Measuring from the end of the ruler rather than from the beginning of the scale **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897803/Maths_guidance_year_4.pdf **EOY3 Mastery questions**  **EOY3 Mastery with GD questions** 
Mon 30th Nov - Fri 18th Dec	NPV/ measurement (Mass and capacity) All four operations	• **Round decimals with two decimal places to the nearest whole number and to one decimal place** • **Convert between different units of metric measure (g/kg; ml/l)** Link to place value understanding of scaling up and down by 1000 (x / ÷) • **Estimate capacity** using standard units to measure liquid (l/ml) and read scales graded in different sized steps (e.g. 0,10,20,30…. 0 , 25 , 50 , 75…. 0, 20, 40,60…)	**Types of task** • **Initial task** • A short quiz where children are asked to estimate the weight or capacity of a range of supermarket items. These could be shown and passed around with the weights/capacities covered up. Children could be asked to give their answers in different units of measure eg a tin of baked beans in grams and them in kilograms. • **Possible contexts:** • Looking at the value for money of some items from a supermarket eg cost per kg/per 100g etc, might provide a good starting point. • **Pictorial representations:** Reading scales should be linked to reading number lines. The number line is crucial to support learners when developing further their understanding of how rounding numbers works. • The use of Gattegno charts, place value grids, base 10 apparatus, place value counters will help to support learners understanding when multiplying and dividing by 10, 100 and 1000. • **Estimating** • When developing their knowledge of measures, it is important children become familiar with some benchmarks they can use before calculating and when considering the reasonableness of their answers. • For capacity these might include a 500ml, 1l and a 2l drinks bottles. • For mass a 500g, 1 kg bags of sugar or rice are useful to become familiar with. • Include opportunities to estimate a range of objects, including possibly a bag of supermarket shopping, to help children to improve the reasonableness of their estimating. • **Key facts focus:**	**Key teaching points and prior learning – Year 5** • Build on and make links with Unit 5.1, Unit 5.2 and Unit 5.4 Measurement • **Y4: Convert between kilometres, metres, centimetres and millimetres** • **Y4: Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres** • **Y4: Solve length problems involving fractions and decimals to two decimal places** **Y4: Round decimals** in the context of length **to the nearest whole number** **Check and refresh:** The relationship between grams and kilograms. The relationship between millilitres and litres. **Reference documents to support subject knowledge and CPA approach** • https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897804/Maths_guidance_year_5.pdf • https://www.ncetm.org.uk/media/xega5ms1/ncetm_spine2_segment17_y4.pdf **EOY4 Mastery questions** ○ An empty box weighs 0·5kg. Ivy puts 10 toy bricks inside it and the box now weighs 2kg. How much does each brick weigh? ○ Put these amounts in order starting with the largest. • Half of 3 litres • Quarter of 2 litres • 300 ml

			• 1kg = 2.20 lbs • 1 l = 1.8 pints • **Solving problems** • When solving problems children should estimate their answers first and consider the reasonableness of their answers when they have solved their problems. Frequent opportunities to discuss the selection of mental, mental with jottings or formal written methods should be provided. • A 400g tin of butter beans contains 160g of water. The rest of the 400g is weight of the beans. How much do they weigh and what fraction of the whole of the tin is this? What fraction of the whole of the weight is the water? • Longer investigative problem solving like those provided by Nrich should be part of children's mathematical learning journeys. This is important for all children and especially when helping higher achieving learners to get to greater depth.	Explain your thinking. **EOY4 Mastery with GD questions** How much does the car weigh in grams? How much does the doll weigh in grams?  Fill in the missing boxes so that the amounts are in order from smallest to greatest. $\frac{1}{2}$ a litre | ☐ millilitres | $\frac{1}{3}$ of 2 litres | ☐ millilitres | $\frac{1}{4}$ of 3 litres