St Bridget's CE Primary Maths Progression Map

REFERENCING: NC14, NCETM PD MATERIALS, KS1/KS2 DFE TEST FRAMEWORK, MNP DFE/NCETM ACCREDITED TEXTBOOK

Specific NCETM PD Materials have been referenced but the whole spine for each area should be studied to ensure sequencing and progression of ideas

Please use the non statutory guidance (Ready to Progress materials) to support identifying key learning at each stage

FRACTIONS, DECIMALS, PERCENTAGES, RATIO & PROPORTION

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
COUNTING IN FRACTIONAL STEPS						
Part whole, counting, partitioning and inverse operations work will act as foundation stones to objectives in other years.		**Pupils should count in fractions up to 10, starting from any number and using the ½ and 2/4 equivalence on the number line** ***NCETM PD Materials Link*** *3.0 Guidance on the teaching of fractions in Key Stage 1* 3.1 Preparing for fractions: the part–whole relationship 3.2 Unit fractions: identifying, representing and comparing *MNP Chapter 13 MNP Link* *This is a large unit on fractions. It provides a review of previously-learnt concepts and extends pupils to find fractions of whole numbers/quantities by the end of the unit. The unit begins by having pupils make equal parts: focusing on making halves, quarters and thirds. Then pupils learn to name fractions of the same*	**Count up and down in tenths** *NCETM PD Materials Link* *3.1 Preparing for fractions: the part–whole relationship* *3.2 Unit fractions: identifying, representing and comparing* *3.3 Non-unit fractions: identifying, representing and comparing* *3.4 Adding and subtracting within one whole* *MNP Chapter 11 Link* *In this chapter, pupils will spend an extended period exploring and working with fractions. As they will be exploring fractions in greater depth than in the previous curriculum, the greatest number of lessons in Year 3 has been devoted to fractions. Pupils will begin the chapter by*	**Count up and down in hundredths** *NCETM PD Materials Link* *3.2 -3.4 as before* *MNP Chapter 6 Link* *In this chapter pupils will be introduced to hundredths. They will learn about mixed number fractions and improper fractions. They will learn how to convert between mixed numbers and improper fractions. They will learn how to add and subtract fractions and will solve addition and subtraction word problems* *MNP Chapter 8 Link* *Pupils will learn about tenths and hundredths. They will learn how to count, order and record decimals in different ways. They Will begin to see equivalence between tenths and hundredths and*		

		denominations. After this, pupils learn about equal fractions, primarily looking at halves and quarters. They then move on to comparing and ordering fractions and counting wholes and parts. Pupils learn to count in quarters and thirds, finishing the unit by finding parts of a set and part of a quantity **Lesson 9 Counting wholes and parts** **lesson 10 Counting in halves** **Lesson 11 Counting in quarters** **lesson 12 Counting in thirds**	*counting in tenths and then making number pairs (the fraction equivalent to number bonds) before moving on to adding and subtracting fractions. Pupils will explore equivalent fractions and look at simplifying fractions before comparing fractions with different denominators. Towards the end of the chapter, pupils will be finding fractions of whole numbers as part of a set and looking at sharing 1 and more than 1. The chapter wraps up by applying content knowledge to sophisticated word problems* **Lesson 1 Counting in tenths**	*will be able to compare and order the numbers. They will continue linear number sequences, round decimals to the nearest whole number. They will link tenths and hundredths with dividing by 10 and 100.* *Chapter 6 Link* **Lesson 1 Counting in hundredths** **Chapter 8 link** **Lesson 1 Writing tenths** **lesson 2 Writing tenths** **lesson 3 Writing tenths** **lesson 4 Writing hundredths** **lesson 5 writing hundredths** **lesson 6 writing hundredths** **lesson 7 Writing hundredths**		
RECOGNISING FRACTIONS						
	Recognise, find and name a half as one of two equal parts of an object, shape or quantity ***NCETM PD Materials Link*** *3.0 Guidance on the teaching of fractions in Key Stage 1* *MNP Chapter 14 MNP* *In this chapter on fractions, pupils will be learning about making halves and quarters before moving on to making the connection between fractions and division in the last lesson.*	**Recognise, find, name and write fractions 1/3, ¼, 2/4, and ¾ of a length, shape, set of objects or quantity** ***NCETM PD Materials Link*** *3.3 Non-unit fractions: identifying, representing and comparing* *MNP Chapter 13 MNP Link* **Lesson 1 Making equal parts** **Lesson 2 Showing half and quarter** **Lesson 3 Showing quarters** **Lesson 4 Showing thirds** **Lesson 5 Naming fractions**	**Recognise , find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators** *NCETM PD Materials Link* *3.1-3.4 as detailed above* *MNP Chapter 11 Link* **Lesson 21 Finding part of a set** **Lesson 22 Finding part of a set** **Lesson 23 Finding the fraction of a number**	**Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten** *NCETM PD Materials Link* *3.2 -3.4 as before* *MNP Chapter 6 & 8 Link* **Lesson 1 Counting in hundredths** **Chapter 8** **Lesson 16 Dividing whole numbers by 10** **Lesson 17 Dividing whole numbers by 100**	**Recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents** *NCETM PD Materials Link* *3.1-3.5 as detailed before* *MNP Chapter 6 Link* *This chapter develops pupils' ability to handle more diverse problems involving fractions, including dividing and multiplying fractions by whole numbers. To begin the chapter, pupils divide whole numbers by whole numbers, giving rise to*	

	They will use their knowledge of sharing equally to create equal pieces of paper during the In Focus tasks **Lesson1 Making halves** **Lesson 2 Making quarters** **lesson 3 Sharing and grouping**	**Lesson 6 Making equal fractions**			*fractions. Pupils then show improper fractions and mixed numbers using pictures. As they progress through the unit, they find equivalent fractions, compare and order fractions and utilise the number bond strategy, known as number pairs, in their work with fractions. Next, pupils review adding fractions, with a focus on fractions with different denominators and fractions that create improper fractions and mixed numbers. Then they subtract fractions that are different, finding common denominators and subtracting mixed numbers and improper fractions. At the end of the chapter, pupils begin to multiply fractions by whole numbers and multiply mixed numbers by whole numbers. The final lesson involves solving word problems that require multiple steps and bar model representations*	
			Recognise that tenths arise from dividing an object into ten equal parts and in dividing one-digit numbers of quantities by ten *NCETM PD Materials Link 3.1-3.4 as detailed above* *MNP Chapter 11 Link* **Lesson 1 Counting in tenths**			

	Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity ***NCETM PD Materials Link*** *3.0* *MNP Chapter 14 MNP Lesson 2 Making quarters*		**Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators** *NCETM PD Materials Link 3.1-3.4 as detailed above* *Link with all lessons MNP Chapter 11*			
COMPARING FRACTIONS						
		Chapter 13 Lesson 7 Comparing and ordering fractions Lesson 8 comparing and ordering fractions	**Compare and order unit fractions, and fractions with the same denominators** *NCETM PD Materials Link 3.1-3.4 as detailed above* *MNP Chapter 11 Link* **Lesson 15 Comparing Fractions** **lesson 16 Comparing Fractions** **Lesson 17 Comparing Fractions**		**Compare and order fractions whose denominators are all multiples of the same number** *NCETM PD Link* 3.*7 Finding equivalent fractions and simplifying fractions* *3.8 Common denomination: more adding and subtracting* Chapter 6 link **Lesson 4 Comparing and ordering fractions** **Lesson 5 comparing and ordering fractions** **Lesson 6 Comparing and ordering fractions**	**Compare and order fractions including fractions >1** *MNP Chapter 3 Link* *This is a chapter on adding, subtracting, multiplying and dividing fractions. The chapter begins with pupils simplifying fractions and moves on to comparing and ordering fractions. Pupils are working with basic fractions and mixed numbers. They then begin to add and subtract fractions with different denominators, including mixed numbers. Bar model diagrams are incorporated to support pupils' understanding before moving on to multiplication and division. Pupils will be required to divide fractions by whole numbers and will explore different methods* **Lesson 3 Comparing and ordering fractions** **lesson 4 Comparing and ordering fractions** **lesson 5 Comparing and ordering fractions**
COMPARING DECIMALS						

				Compare numbers with the same numbers of decimal places up to two decimals places NCETM PD Materials Link *1.23 Composition and calculation: tenths* *1.24 Composition and calculation: hundredths and thousandths* *MNP Chapter 8 Link* *In this chapter, pupils will learn about tenths and hundredths. They will learn how to count, order and record the decimals in different ways. They will begin to see equivalence between tenths and hundredths and will be able to compare and order the numbers. Pupils will learn to continue linear number sequences as well as round decimals to the nearest whole number. They will also link tenths and hundredths with dividing by 10 and 100* **Lesson 9 Comparing and ordering decimals** **lesson 11 Comparing and ordering decimals**	**Read, write, order and compare numbers with up to three decimals places** NCETM PD Materials Link *1.23 Composition and calculation: tenths* *1.24 Composition and calculation: hundredths and thousandths* *MNP Chapter 7 link* *In this chapter, pupils explore decimals. To begin this chapter, they learn to read and write decimal numbers. This is followed by comparing decimal numbers to find which is greater and smaller. Pupils then add and subtract decimals before turning decimals into fractions. The chapter ends with pupils rounding decimals to the nearest whole number and decimal position* **Lesson1 Writing decimals** **Lesson 2 reading and writing decimals** **Lesson 3 Reading and writing decimals** **Lesson 4 Comparing decimals** **Lesson 5 Comparing decimals**	**Identify the value of each digit in numbers given to three decimal places** NCETM PD Materials Link *1.23 Composition and calculation: tenths* *1.24 Composition and calculation: hundredths and thousandths* **Secondary NCETM PD Link** ***1.1 Place value, estimation and rounding*** *This core concept covers the structure of our place-value system (particularly as it relates to decimals) and rounding numbers to a required number of decimal places or significant figures* *MNP Chapter 4 Link* *In this chapter, pupils will be working with decimals. To begin with, pupils will read and write decimals using Base 10 materials before moving on to dividing and multiplying decimals by 1-digit numbers with no regrouping or renaming. Pupils will then be asked to write fractions as decimals using division and pictorial methods before looking at multiplying fractions which involve some regrouping and renaming by 1-digit numbers. Pupils will look at dividing decimals again, this time when regrouping*

						and renaming with 1-digit numbers is required. They then move on to multiplying and dividing decimals by 2-digit numbers, which involves regrouping and renaming, using a variety of methods and strategies, including: number bonds, the worded method (writing down a problem in words and numbers), long division and the column method **Lesson1 reading and writing decimals**
ROUNDING INCLUDING DECIMALS						
				Round decimals with one decimals place to the nearest whole number *NCETM PD Materials Link* 1.23 Composition and calculation: tenths *MNP Chapter 8 Link* *as above* Lesson 13 Rounding decimals Lesson 14 Rounding decimals	**Round decimals with two decimal places to the nearest whole number and to one decimal place** *NCETM PD Materials Link* 1.24 Composition and calculation: hundredths and thousandths *MNP Chapter 7 Link* ***In this chapter, pupils explore decimals. To begin this chapter, they learn to read and write decimal numbers. This is followed by comparing decimal numbers to find which is greater and smaller. Pupils then add and subtract decimals before turning decimals into fractions. The chapter ends with pupils rounding decimals to the nearest whole number and decimal position***	**Solve problems which require answers to be rounded to specified degrees of accuracy** *MNP Chapter 1 Link* *In this first unit of Year 6, pupils are refining their knowledge of place value, working with numbers between 1 000 000 and 10 000 000. They begin the chapter reading and writing numbers to 10 000 000 using number discs, numerals and words. An additional lesson using an abacus is provided to deepen and extend their sense of number and place value. Pupils are then asked to round and compare numbers to 10 000 000, followed by placing them in order from smallest to greatest. The*

					Lesson 15 Rounding Decimals	*unit ends with pupils rounding numbers to various values and determining when it is appropriate to round number*
EQUIVALENCE						
		Write simple fractions eg. ½ of 6=3 and recognise the equivalence of 2/4 and ½ ***NCETM PD Materials Link*** **3.0-3.2** *MNP Chapter 13 MNP Link* **Lesson 6 Making equal fractions**	**Recognise and show, using diagrams, equivalent fractions with small denominators** *NCETM PD Materials Link 3.1-3.4 as detailed above and* 3.7 Finding equivalent fractions and simplifying fractions *MNP Chapter 11 Link*	**Recognise and show, using diagrams, families of common equivalent fractions** *NCETM PD Materials Link 3.1-3.4 as detailed above and 3.7* *MNP Chapter 6 link* **lesson 4 Finding equivalent fractions Lesson 5 Finding equivalent fractions**	**Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Chapter 6 link Lesson 3 Finding equivalent fractions**	**Use common factors to simplify fractions; use common multiples to express fractions in the same denomination MNP Chapter 3 link Lesson 1 Simplifying fractions Lesson 2 Simplifying fractions**
				Recognise and write decimals equivalents of any number of tenths or hundredths Chapter 8 link Lesson 1 Writing tenths lesson 2 Writing tenths lesson 3 Writing tenths lesson 4 Writing hundredths lesson 5 writing hundredths lesson 6 writing hundredths lesson 7 Writing hundredths Lesson 15 Writing fractions as decimals	**Read and write decimals numbers as fractions (e.g. 0.71=71/100) Chapter 7 Link Lesson7 writing decimals as fractions**	**Associate a fraction with division and calculate decimals fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)** ***Secondary NCETM PD Materials Link*** ***1.3 Ordering and comparing*** *This core concept covers the conversion of decimals to fractions (and vice versa), ordering positive and negative integers, fractions and decimals, and the expression of numbers in standard form*
					Recognise and use thousandths and relate then to tenths, hundredths and decimal equivalents	

					All chapter 7 lessons	
				Recognise and write decimals equivalents to ¼, ½, ¾ *NCETM PD MATERIALS LINK* *3.10 Linking fractions, decimals and percentages* Chapter 6 Link **Lesson 4 Finding equivalent fractions** **Lesson 5 Finding equivalent fractions**	**Recognise the per cent symbol % and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction** *NCETM PD MATERIALS LINK* *3.10 Linking fractions, decimals and percentages* MNP Chapter 8 Link *This chapter covers the expectations in Year 5 for percentage. It begins with comparing quantities and exposing percentage as an amount out of 100. The chapter finishes by having pupils convert fractions to hundredths, both by expanding fractions and by simplifying them* **Lesson 1 Comparing quantities** **Lesson 2 Finding Percentages** **Lesson 3 Finding Percentages**	**Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts** *NCETM PD MATERIALS LINK* *3.10 Linking fractions, decimals and percentages* MNP Chapter 7 link *In this chapter, pupils will be exploring how to calculate the percentage of numbers and quantities. They will be learning about how to solve for percentage change and use percentage to compare amounts. In the first lesson, pupils will be finding the percentage of a whole number. This will involve both division and multiplication skills. They will then move on to finding the percentage of a quantity, measured in amounts such as litres and millilitres. In the third lesson, pupils will be looking at difference and percentage change before finally moving on to using percentage as a way to compare numbers and amounts* **Lesson 1 Finding the percentage of a number** **Lesson 2 Finding the percentage of a quantity** **lesson 3 Finding percentage Change**

						Lesson 4 Using percentage to compare
ADDITION AND SUBTRACTION OF FRACTIONS						
			Add and subtract fractions with the same denominator within one whole (e.g. 5/7 + 1/7 =6/7) *NCETM PD Materials Link 3.1-3.4 as detailed above* *MNP Chapter 11 Link* **Lesson 18 Adding Fractions** **Lesson 19 Subtracting Fractions** **Lesson 20 Subtracting Fractions**	**Add and subtract fractions with the same denominator** *NCETM PD Materials Link 3.1-3.4 as detailed above* *NCETM PD Materials link 3.5 Working across one whole: improper fractions and mixed numbers* MNP Chapter 6 link **Lesson 8 Adding fractions** **Lesson 9 Adding fRactions** **Lesson 10 Adding fractions** **Lesson 11 Subtracting Fractions** **Lesson 12 Subtracting Fractions**	**Add and subtract fractions with the same denominator and multiples of the same number** *NCETM PD Materials Link 3.1-3.4 as detailed above* Chapter 6 link **Lesson 8 Adding fractions** **lesson 9 adding fractions** **lesson 10 Adding fractions** **Lesson 11 adding fractions** **Lesson 12 Subtracting Fractions** **lesson 13 Subtracting Fractions** **Lesson 14 Subtracting Fractions**	**Add and subtract fractions with different denominators and mixed numbers,** *NCETM PD Materials Link* 3.8 Common denomination: more adding and subtracting **MNP Chapter 3 link** **Lesson 6 Adding and Subtracting Fractions** **Lesson 7 Adding and Subtracting Fractions** **Lesson 8 Adding and Subtracting fRactions** **Lesson 9 Adding and Subtracting Fractions** **Lesson 10 Adding and Subtracting Fractions**
					Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements>1 as a mixed number (e.g. 2/5+4/5=6/5 =1 1/5) *NCETM PD Materials link 3.5 Working across one whole: improper fractions and mixed numbers* **Chapter 6 Link** **lesson 2 Writing improper fractions and mixed numbers**	**Secondary NCETM PD Materials Link** ***2.1 Arithmetic procedures*** *This core concept offers guidance on developing a strong understanding of the mathematical structures that underpin the standard procedures for calculation with decimals, fractions and directed number*
MULTIPLICATION AND DIVISION OF FRACTIONS						

					Multiply proper fractions and mixed numbers by whole numbers. Supported by materials and diagrams *3.6 Multiplying whole numbers and fractions* **Chapter 6 Link** **Lesson15 Multiplying Fractions by whole numbers** **lesson16 Multiplying fractions by whole numbers** **Lesson 17 Multiplying Mixed Numbers** **Lesson 17 Multiplying Mixed numbers** **Lesson18 Multiplying Mixed numbers by whole numbers**	**Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g.1/4 x 1/2=1/8)** *NCETM PD Link* *3.9 Multiplying fractions and dividing fractions by a whole number* **MNP Chapter 3 link** **Lesson 11 Multiplying fractions** **Lesson 12 Multiplying Fractions** **Lesson 13 Multiplying Fractions**
						Multiply one-digit numbers with up to two decimals places by whole numbers *NCETM PD Materials link* 2.19 Calculation: ×/÷ decimal fractions by whole numbers **MNP Chapter 4 link** **Lesson 6 Multiplying decimals** **lesson 7 Multiplying decimal** **Lesson 8 Multiplying decimals** **Lesson 9 Multiplying decimals**
						Divide proper fractions by whole numbers (e.g.1/3÷2=1/6) *NCETM PD Link*

						3.9 Multiplying fractions and dividing fractions by a whole number **MNP Chapter 3 Link** **Lesson 14 Dividing a fraction by a whole number** **lesson 15 Dividing a fractions by a whole number** **lesson 16 Dividing a fraction by a whole number**
MULTIPLICATION AND DIVISION OF DECIMALS						
						Multiply one-digit numbers with up to two decimals places by whole numbers *NCETM PD Materials link* *2.29 Decimal place-value knowledge, multiplication and division* **MNP Chapter 4 link** **Lesson 6 Multiplying decimals** **lesson 7 Multiplying decimal** **Lesson 8 Multiplying decimals** **Lesson 9 Multiplying decimals**
				Find the effect of dividing a one-digit or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths ***NCETM PD MATERIALS Link***	*NCETM PD Materials link* 2.19 *MNP Chapter 3 Link* *In this unit, pupils are multiplying and dividing 3- and 4-digit numbers by single- and double-digit numbers. The unit begins by finding and defining multiples and factors and common factors. Pupils*	**Multiply and divide numbers by 10,100 and 1000 where the answers are up to three decimal places** *NCETM PD Materials link* **2.13 as before and** *2.29 Decimal place-value knowledge, multiplication and division* **MNP Chapter 4 Link**

				2.13 Calculation: multiplying and dividing by 10 or 100 *NCETM PD MATERIALS LINK* *2.29 Decimal place-value knowledge, multiplication and division* MNP Chapter 8 link **Lesson 16 Dividing whole numbers by 10** **Lesson 17 Dividing whole numbers by 100**	*begin to work with prime numbers and determine what makes a number prime or composite. After this, they work with square and cube numbers before moving on to multiplying by 10, 100 and 1000. When multiplying, pupils are encouraged to use a variety of methods, including: number bonds, column methods and the grid method. Number bonds are used to represent multiplicative word problems. Pupils then move on to multiply by 2-digit numbers before beginning to divide by 10, 100 and 1000. The unit ends as pupils learn to divide, giving rise to remainders using multiple methods, including number bonds and long and short division*	**Lesson 2 Dividing whole numbers** **lesson 3 Dividing whole numbers**
						Identify the value of each digit to three decimals places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places *NCETM PD Materials link* *2.29 Decimal place-value knowledge, multiplication and division* Chapter 4 lesson1 Writing and reading decimals
					Chapter 7 link	**Associate a fraction with division and calculate**

					Lesson 7 Writing fractions as decimals	**decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g.3/8)**
						Use written division methods in cases where the answer has up to two decimal places *NCETM PD MATERIALS LINK* *2.29 as before* *MNP Chapter 4 link* *In this chapter, pupils will be working with decimals. To begin with, pupils will read and write decimals using Base 10 materials before moving on to dividing and multiplying decimals by 1-digit numbers with no regrouping or renaming. Pupils will then be asked to write fractions as decimals using division and pictorial methods before looking at multiplying fractions which involve some regrouping and renaming by 1-digit numbers. Pupils will look at dividing decimals again, this time when regrouping and renaming with 1-digit numbers is required. They then move on to multiplying and dividing decimals by 2-digit numbers, which involves regrouping and renaming, using a variety of methods and strategies, including: number bonds, the worded method (writing down a problem in words and*

						numbers), long division and the column method.
PROBLEM SOLVING						
			Solve problems that involve all of the above *NCETM PD Materials Link 3.1-3.4 as detailed above* *MNP Chapter 6* **Lesson 28 Solving word problems** **Lesson 29 Solving word problems** **Lesson 30 Solving word problems**	**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** **MNP Chapter 6** **Lesson 13 Solving Word problems**	**Solve problems involving numbers up to three decimal places**	
				Solve simple measure and money problems involving fractions and decimals to two decimal places **MNP Chapter 9 Link** **Pupils will learn how to count in pounds and pence. They will make links between tenths and hundredths and decimals notation for money.** **All lessons in Ch 9and Ch 10 mass, volume, length**	**Solve problems which require knowing percentage and decimals equivalents of ½, ¼. 1/5, 2/5/ 4/5 and those with a multiple of 10 or 25**	
					Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates NCETM PD Materials Link *2.18 Using equivalence to calculate* *2.19 Calculation: ×/÷ decimal fractions by whole numbers* 2.25 Using compensation to calculate	

					MNP Chapter 3 and 4 link as above and *Chapter 6 link* *This chapter develops pupils' ability to handle more diverse problems involving fractions, including dividing and multiplying fractions by whole numbers. To begin the chapter, pupils divide whole numbers by whole numbers, giving rise to fractions. Pupils then show improper fractions and mixed numbers using pictures. As they progress through the unit, they find equivalent fractions, compare and order fractions and utilise the number bond strategy, known as number pairs, in their work with fractions. Next, pupils review adding fractions, with a focus on fractions with different denominators and fractions that create improper fractions and mixed numbers. Then they subtract fractions that are different, finding common denominators and subtracting mixed numbers and improper fractions. At the end of the chapter, pupils begin to multiply fractions by whole numbers and multiply mixed numbers by whole numbers. The final lesson involves solving word problems that require multiple steps and bar model representations.*	

RATIO AND PROPORTION						
						Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts *NCETM Secondary Materials Link* *3 Multiplicative reasoning* *Theme 3 addresses the idea that any two numbers can be connected by multiplication. This gives rise to ideas of ratio, proportionality, percentage increase and decrease, rates of change, enlargement, similarity and trigonometric ratios* *3.1 Understanding multiplicative relationships* *This core concept explores fractions, percentages, ratio and proportion (direct and inverse) as contexts in which multiplicative relationships are used* *MNP Chapter 8 Link* *In this chapter, pupils will be comparing quantities, including numbers, objects, fractions and mass before moving on to solving word problems. In the first six lessons, pupils will use bar models and concrete materials to compare amounts. They will be using both pictorial and abstract multiplication and division to support their*

						learning while simplifying and comparing ratios. In the final three lessons, pupils will be solving word problems involving ratio by constructing bar models to support their understanding **Lesson1 Comparing quantities** **lesson 2 Comparing Quantities** **Lesson 3 Comparing quantities** **Lesson 4 Comparing quantities** **lesson 5 Comparing quantities** **Lesson6 Comparing numbers**
						Solve problems involving the calculation of percentages (eg of measures and such as 155 of 360) and the use of percentage comparison **see chapter 7 percentages**
						Solve problems involving similar shapes where the scale factor is known or can be found NCETM PD Materials Link *2.30 as before and* *2.25 Using compensation to calculate* ***MNP Chapter 8 link plus geometry and position and movement chapters*** *In this chapter, pupils will be comparing quantities, including numbers, objects, fractions and mass before*

						*moving on to solving word problems. In the first six lessons, pupils will use bar models and concrete materials to compare amounts. They will be using both pictorial and abstract multiplication and division to support their learning while simplifying and comparing ratios. In the final three lessons, pupils will be solving word problems involving ratio by constructing bar models to support their understand*ing
						Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Concrete Resources/ Manipulatives : Identifying and Representing						
	Sheets of square paper *Paper shapes (set each)* *Scissors (each)* *Objects for counting* *Counters (between two)* *Paper plates (four between two)*	*Sheets of square paper (each)* *Various four-sided shapes on paper (each)* *Fraction strips (card/paper) (between two)* *Fraction number lines (between two)* *Fraction cards (between two)* *Circular representations of fractions (between two)* *Fraction circles (set between two)* *Lengths of ribbon* *Strips of card (between two)* *Counters to represent objects* *Sorting circles/trays (two between two)*	*Linking cubes (between two)* *0–1 number lines* *Laminated blank number lines (one between two)* *Squared paper (each)* *Fraction circles* *Strips of paper for folding (several each)* *Strips of paper for folding fractions (several per pupil)* *Circular representations of fractions (between two)* *Fraction cards: halves; quarters; sixths; twelfths (between two)* *Paper circles (several each)* *Fraction strips (card/paper) (several each)*	*Blank number line (increments marked)* *Blank 100-square* *Six-sided dice* *Fraction cards (between two)* *Blank number lines (increments marked)* *0; 1; 3; 5 and 8 digit cards (between two)* Square cards divided into tenths (between two) Card strips divided into tenths (between two) Place-value discs (between two) Decimal place-value charts (between two) Laminated card strips (set between two)	*Circular representations of fractions (useful but not essential)* *Coloured strips of paper/card for cutting and folding (useful but not essential)* *Access to a fraction wall (useful but not essential* *Linking cubes (between two)* *Base 10 materials (between two)* *Place-value discs – 10, 1, 0.1, 0.01, 0.001 (between two)* *1–2 digit cards (between two)* *Squared paper (between two)*	Fraction strips (card/paper) (several strips per child) Circular representations of fractions (between two) Pattern blocks (between two) Whiteboards and pens (between two) 1–9 digit cards (set between two *Counters (between two)* *Linking cubes (between two)* *No additional resources required for this lesson* *Bar model strips (between two* Base 10 materials (between two)

			Circular representations of fractions: quarters, halves, sixths (between two) *Whiteboards and pens* *Counters* *Fraction cards: fraction of a whole number (between two)* *Paper (three pieces each)* *Paper for cutting/folding/shading (several pieces each)* *Strips of paper*	Card strips divided into hundredths (between two) Base 10 materials (between two) Laminated number lines (various increments) (between two) 0–9 digit cards (set between two) Six-sided dice (one between two) Rulers (cm) (between two) Objects to measure (between two) Laminated number lines (10 increments) (between two) Square cards divided into hundredths (between two) Ten frames (between two) Card strips (between two) Square cards (between two)	*Blank number lines (between two)* *Card strips divided into hundredths (between two)* *Card strips divided into tenths (between two)* *Cards for Activity Time (between two)* *Decimal strips (between two)* *Place-value charts (between two)* *Place-value discs – 1, 0.1, 0.01, 0.001* *1–9 digit cards (between two)* *Number lines (between two)*	Place-value charts (between two) Place-value cards (between two) 0–3 digit cards (between two) String (between two) Calculators (between two) Place-value discs (between two) 0; 2; 3 and 9 digit cards (between two)