Year 3 Maths Spring medium Term plan

Multiplication and Division

NC Objectives:

•Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.

•Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for twodigit numbers times one-digit numbers, using mental and progressing to formal written methods.

•Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Week	Small step	Key Questions	Notes and Guidance	Assessment
	Comparing Statements	What other number sentences does the array show? If you know your 4 times-table, how can you use this to work out your 8 times-table? What's the same and what's different about 8 × 3 and 7 × 4?	Children use their knowledge of multiplication and division facts to compare statements using inequality symbols. It is important that children are exposed to a variety of representations of multiplication and division, including arrays and repeated addition.	
	Related calculations	What is the same and what is different about the place value counters? How does this fact help us solve this problem? If we know these facts, what other facts do we know? Can you prove your answer using manipulatives?	Children use known multiplication facts to solve other multiplication problems. They understand that because one of the numbers in the calculation is ten times bigger, then the answer will also be ten times bigger. It is important that children develop their conceptual understanding through the use of concrete manipulatives.	
	Multiply 2 digits by 1	How does multiplication link to	Children use their understanding of	

	digit (1)	addition? How does partitioning help you to multiply 2-digits by a 1-digit number? How does the written method match the concrete representation?	repeated addition to represent a two-digit number multiplied by a one-digit number with concrete manipulatives. They use the formal method of column multiplication alongside the concrete representation. They also apply their understanding of partitioning to represent and solve calculations. In this step, children explore multiplication with no exchange.	
	Multiply 2 digits by 1 digit (2)	What happens when we have ten or more ones in a column? What happens when we have twenty or more ones in a column? How do we record our exchange? Do you prefer Jack's method or Amir's method? Can you use either method for all the calculations?	Children continue to use their understanding of repeated addition to represent a two-digit number multiplied by a one digit number with concrete manipulatives. They move on to explore multiplication with exchange. Each question in this step builds in difficulty.	
	Divide 2 digits by 1 digit (1)	How can we partition the number? How many tens are there? How many ones are there? What could we use to represent this number? How many equal groups do I need? How many rows will my place value chart have? How does this link to the number I am dividing by?	Children divide 2-digit numbers by a 1-digit number by partitioning into tens and ones and sharing into equal groups. They divide numbers that do not involve exchange or remainders. It is important that children divide the tens first and then the ones.	
	Divide 2 digits by 1 digit (2)	Why have we partitioned 42 into 30 and 12 instead of 40 and 2? What do you notice about the partitioned numbers and the divisor? Why do we partition 96 in different	Children divide 2-digit numbers by a 1-digit number by partitioning into tens and ones and sharing into equal groups. They divide numbers that involve exchanging between the tens and ones.	

		ways depending on the divisor?	The answers do not have remainders. Children use their times-tables to partition the number into multiples of the divisor.	
	Divide 2 digits by 1 digit (3)	How do we know 13 divided by 4 will have a remainder? Can a remainder ever be more than the divisor? Which is your favourite method? Which methods are most efficient with larger two digit numbers?	Children move onto solving division problems with a remainder. Links are made between division and repeated subtraction, which builds on learning in Year 2 Children record the remainders as shown in Tommy's method. This notation is new to Year 3 so will need a clear explanation.	
	Scaling	Why might someone draw the first bar model? What have they misunderstood? What is the value of Amir's counters? How do you know? How many adults are at the concert? How will you work out the total?	It is important that children are exposed to problems involving scaling from an early age. Children should be able to answer questions that use the vocabulary "times as many". Bar models are particularly useful here to help children visualise the concept. Examples and non-examples should be used to ensure depth of understanding.	
	How many ways?	What are the names of the shapes on the shape cards? How do you know you have found all of the ways? Would making a table help? Without listing, can you tell me how many possibilities there would be if there are 5 different shape cards and 4 different number cards?	Children list systematically the possible combinations resulting from two groups of objects. Encourage the use of practical equipment and ensure that children take a systematic approach to each problem. Children should be encouraged to calculate the total number of ways without listing all the possibilities. e.g. Each T-shirt can be matched with 4 pairs of trousers so altogether 3 × 4 = 12 outfits.	
Measurement: Money **NC Objectives** **•Add and subtract amounts of money to give change, using both £ and p in practical contexts.**				

	Pounds and Pence	What is the value of the coin/note? What does p mean? Why do we have different values of coins and notes?	Children need to know the value of each coin and note and understand what these values represent. They should understand that money can be represented in different ways but still have the same value. Children will need to be able to add coin values together to find the total amount.	
	Converting pounds and pence	How many pennies are there in £1? How can this fact help us to convert between pounds and pence? Explain what you need to do to convert pounds to pence. Explain how you convert pence to pounds.	Children convert between pounds and pence using the knowledge that £1 = 100 p Children group pence to make pounds when counting money. They apply their place value knowledge and use their number bonds to 100	
	Adding Money	What number facts could you use to calculate mentally? What would be the most efficient way to group the coins? (E.g. 20 p + 20 p + 10 p = 50) Can you group any of the coins to make a pound? Can you partition any of the amounts to help you? Do we need to think of a different way to partition? How many different ways can you make a pound?	Children build on their understanding of different coins and their knowledge of converting. Children use their understanding of the value of each coin before they start to add across a pound boundary. When adding across a pound boundary children should be encouraged to look for number bonds (E.g. 70 p and 30 p), or ways to partition numbers differently to make a pound.	
	Subtracting money	How many more to the next ten? When is the partitioning method not efficient? Which number should I place on the number line first?	Children develop their knowledge of the value of coins from Year 2 and use number lines to solve subtraction problems involving money. They continue to make connections between place value and	

		Shall we count on or back on the number line?	money. Children use a number line to count on to help finding change. They may also explore other methods and compare which is most efficient.	
	Giving change	What do we mean by 'change' in the context of money? Why do we partition to give change? Which method do you find most effective?	Children use their subtraction skills with money to calculate change. They continue to use a number line and a part whole model to support their calculations. Children apply previous skills and knowledge to contextual problems.	
Statistics: **NC Objectives:** **•Interpret and present data using bar charts, pictograms and tables.** **•Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.**				
	Pictograms	What is each symbol worth? How does the pictogram help you understand the information? Which is the greatest amount? Which is the smallest amount? What other questions could you ask about the pictogram?	Children will build on prior understanding of pictograms from Year 2. They continue to read and interpret information from pictograms, make comparisons and ask questions about data. It is important that children understand the value of each symbol used and what it means when half a symbol is used.	
	Bar Charts	How is a bar chart similar to a pictogram? How does the bar chart help you understand the information? Which scale should we use? How do we know whether to have a scale going up in 1, 2, 5 or 10?	Children draw bar charts from information given in pictograms and tables. They interpret information from bar charts and ask and answer questions relating to the data. Children read and interpret bar charts with scales of 1, 2, 5 and 10. They decide which scale will be the most appropriate when drawing their own bar charts.	
	Tables	What are we trying to find out?	Children interpret information from tables	

		How does the table help you understand the information? What other questions could I ask and answer using the information in the table?	to answer both one and two-step problems. They use their addition and subtraction skills to answer questions accurately and ask their own questions about the data in tables.	
Measurement: Length and Perimeter **NC Objectives:** **•Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).** **•Measure the perimeter of simple 2D shapes**.				
	Measure length	What would be the best equipment to measure X with? (e.g. tape measure, ruler, metre stick) Look at each side of different measuring equipment – what's the same, what's different? What do we have to remember when using a ruler to measure? Which side are we going to use to measure? What unit of measure would we use to measure X? What should you do if it the object does not start from 0?	Children are introduced to millimetres for the first time and build on their understanding of centimetres and metres. It is important that child have a variety of hands on experiences and opportunities to explore the concept of a millimetre.	
	Equivalent lengths – m and cm	If there are 100 cm in 1 metre, how many centimetres would there be in 2 metres? How many centimetres in 3 metres? How many other equivalents can you think of? Can you explain how you are partitioning each measurement? Could you partition it in any other way? Why is it most effective to partition the	Children understand that 100 cm is equivalent to 1 m. Once they are secure with this, they can start to convert between metres and centimetres by partitioning.	

		hundreds and then the tens and ones?		
	Equivalent lengths – mm and cm	If there are 10 mm in 1 cm, how many mm would there be in 2 cm? Can you explain how you are partitioning each number? Can you partition it any other way? Why is it most effective to partition the hundreds and then the tens and ones?	Children understand that 10 mm is equivalent to 1 cm Once they are secure with this, they can start to convert between centimetres and millimetres by partitioning	
	Compare lengths	Can you order the children's' heights from shortest to tallest? How could you make it easier to compare and order these measurements? Estimate whose tower you think will be the tallest. Explain why.	Children compare and order lengths based on measurements in mm, cm and m. They use their knowledge of converting between units of measurement to help them compare and order.	
	Add lengths	How did you add the distances travelled by Olivia? Can you think of a different way? Which way do you think is the most efficient? How did you find the total of their heights? Was there a more efficient way of doing this? Explain how you added the lengths.	Children add lengths including examples where there are mixed units and they need to convert. Children to be encouraged to look for the most efficient way to calculate and develop their mental addition strategies.	
	Subtract lengths	What is the difference between the length of the two objects? How would you work it out? How are Poppy's models different? How are they the same? Which model do you prefer? Why? What is the most efficient way to subtract mixed units?	Children subtract lengths including examples where there are mixed units and they need to convert. Children should be encouraged to look for the most efficient way to calculate and develop their mental subtraction strategies.	

	Measure Perimeter	What is perimeter? Show me the perimeter of… Which of the images can we work out the perimeter for? Which ones can we not? Why? Which shape do you predict will have the longest perimeter? Why? Does it matter where you start when you measure the length of the perimeter? What do you notice about the perimeter of the rectangle and the square?	Children are introduced to perimeter for the first time. They explore what perimeter is and what it isn't. Children measure the perimeter of simple 2D shapes. They may compare different 2D shapes which have the same perimeter. Children make connections between the properties of 2D shapes and measuring the perimeter.	
	Calculate Perimeter	How can we calculate the perimeter of each shape? Can we calculate the perimeter using a different method? What is the same about the 2 methods? What is different? How can we work out the length of the missing side?	Children use their understanding of the properties of shape to calculate the perimeter of simple 2D shapes. It is important to note they will not explore the formula for a rectangle at this point. They explore different methods for calculating the perimeter of a shape. For example, they may use repeated addition or they may make connections to multiplication.	
Fractions: **NC Objectives:** **•Count up and down in tenths** **•recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10** **• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.** **•Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.** **•Solve problems that involve all of the above.**				
	Unit and non-unit fractions	What is a unit fraction? What is a non-unit fraction? In the representation, what is the unit fraction shown? What is the non-unit	Children recap their understanding on unit and non-unit fractions from Year 2. They explain the difference between a unit and non unit fraction. Children look at unit and	

		fraction shown?	non-unit fractions of shapes and amounts.	
	Making the whole	What fraction is represented? What fraction is equivalent to the whole? What fraction of the apples are green, what fraction are red? What fractions make the whole? Could we represent the fractions of apples in a part whole model?	Children begin by counting up or down in fractions to make the link with the whole. They look at the whole of shapes and quantities and see that when a fraction is equivalent to a whole, the numerator and denominator are the same.	
	Tenths	How many tenths are shaded? How many more tenths do I need to make a whole? When I am writing tenths, the _____ is always 10	Children explore what a tenth is. They recognise that tenths arise from dividing one object into 10 equal parts. Children represent tenths in different ways and use words and fractions to describe them. For example, one tenth and 1 /10	
	Count in Tenths	Let's count in tenths. What comes next? Explain how you know. If I start at ___ tenths, what will be next? What tenth comes between ___ and ___? When we get to 10/10 what else can we say? What happens next?	Children count up and down in tenths. They continue to represent tenths in multiple ways and to use words and fractions to describe them. For example, one tenth and 1/ 10 Children also explore what happens when counting past 10/ 10 and link this to their understanding of wholes	
	Tenths as decimals	What is a tenth? How many different ways can we write a tenth? What does equivalent mean? What is the same and what is different about decimals and fractions?	Children are introduced to tenths as decimals for the first time. They compare fractions and decimals written as words, in fraction form and as decimals and link them to pictorial representations. Children learn that the number system extends to the right of the decimal point into the tenths column.	
	Fractions of a number line	How can we count past 1? How many lines do you need to draw to	Children use a number line to represent fractions beyond one whole. They count	

		split a number line/shape into quarters? In a fraction, what does the denominator tell us?	forwards and backwards in fractions. Children need to know how to divide a number line into specific fractions. i.e. when dividing into quarters, we need to ensure our number line is split into four sections.	
	Fractions of a set of objects (1)	Which operation is finding a fraction of an amount similar to? How many equal groups do we need? Which part of the fraction tells us this? How does the bar model help us?	Children find a unit fraction of an amount by dividing an amount into equal groups. They build on their understanding of division by using place value counters to find fractions of larger quantities including where they need to exchange tens for ones.	
	Fractions of a set of objects (2)	What denominator tell us? What does the numerator tell us? What is the same and what is different about two thirds and two fifths? How many parts is the whole divided into and why?	Children need to understand the denominator of the fraction tell us how many equal parts the whole has been divided into. Eg. 1/3 means dividing the whole into 3 equal parts. They need to understand that the numerator tells them how many parts of the whole there are. Eg. . 2/ 3 means dividing the whole into 3 equal parts, then counting the amount in 2 of these parts.	
	Fractions of a set of objects (3)	Can we represent the problem in a bar model? When finding 5/ 6 , what will we need to do and why? What is the whole? How can we represent this problem?	Children will now apply their knowledge and understanding of fractions to solve problems in various contexts. They build and recap their understanding of different measures.	